TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 6 – COMPARISON OF ALTERNATIVES

Since the publication of the Draft Environmental Impact Statement (DEIS), the following substantive changes have been made to this chapter:

- The Introduction, **Section 6.1**, has been revised to provide a brief summary of the evolution of alternatives and to explain the structure of this chapter.

- **Section 6.2** has been revised to indicate that the description of mainline options and interchange and local service road options were developed during the DEIS.

- **Section 6.3** has been revised to indicate that the evaluation of mainline options, interchange and local service road options, and identification of a preferred alternative were developed during the DEIS. This section documents the process used in the DEIS. No new data or information has been provided in this section.

- **Section 6.4** has been inserted as a new section in the FEIS. It provides an evaluation of the Refined Preferred Alternative (RPA), comparing it with the DEIS preferred alternative (Alternative C4)

- Changes to Alternative C4 to define the RPA have been summarized, and the impacts of the RPA and Alternative C4 have been compared, in eight subsections of the I-69 Section 6 corridor in **Section 6.4.1**.

- The overall end-to-end impacts of the RPA and Alternative C4 have been compared in **Section 6.4.2**.

- Adjustments have been made to estimated wetland impacts for Alternative C4 in **Section 6.4.2** based on more precise wetland delineations conducted after the DEIS was published.

- Adjustments have been made to the estimates of residential and business relocations for Alternative C4 in **Section 6.4.2** using updated information on use of existing structures.

- The overall cost of the RPA and Alternative C4 have been compared by development phase and subsection in **Section 6.4.3**.

- The RPA has been identified as the FEIS preferred alternative in **Section 6.4.4**. The estimated costs and impacts of the RPA have been compared to Tier 1 estimates in **Section 6.5**.

- **Section 6.6** has been updated to provide a brief summary of information provided in this chapter.

6.1 Introduction

As described in **Chapter 1, Introduction**, the decision to complete I-69 between Evansville and Indianapolis was made during the I-69 Tier 1 FEIS and was approved in the Tier 1 Record of Decision (ROD),[1] issued on March 24, 2004. The Tier 1 ROD eliminated the No-Build Alternative, selected a specific Tier 1 alternative corridor (Alternative C3) for the entire I-69 project, and specified how the Tier 2 study process was to be conducted.

The Tier 1 ROD allowed the consideration of alignments outside the Tier 1 corridor to avoid significant impacts within the corridor. Any alternative alignments for I-69 Section 6 would be required to link I-69 Section 5 in Martinsville to I-465 in Indianapolis. For I-69 Section 6, alternative alignments were considered in the screening process, described in **Chapter 3, Alternatives**, which culminated in the elimination of alignments outside the selected Tier 1 corridor and the definition of four build alternatives that follow SR 37 until they approach the end of I-69 Section 6 at the I-69/I-465 interchange. These alternatives, referred to as Alternatives C1, C2, C3, and C4 were evaluated in the DEIS, and Alternative C4 was identified as the DEIS preferred alternative.

After the DEIS was published, a series of refinements were made to Alternative C4 based on public and agency comments, more detailed engineering, and value engineering studies. The resulting configuration for I-69 Section 6 is referred to the Refined Preferred Alternative (RPA). Refinements made to Alternative C4 to create the RPA are described in **Section 3.8**.

This chapter documents the evaluation of Alternatives C1 through C4 conducted in the DEIS, including the identification of Alternative C4 as the DEIS preferred alternative. A new section is added in this FEIS to compare the impacts of Alternative C4 and the RPA. The evaluations and comparison consider right of way and relocations, cost, and impacts on the natural and manmade environment. The alternatives are reviewed based on local conditions and effectiveness in serving the project purpose and need, as described in **Chapter 2, Purpose and Need**, and on input from local agencies, advisory committees, and the public following numerous public meetings. Impacts are measured by the information quantified for the alternatives in **Chapter 5, Environmental Consequences**. Estimated costs are identified for each alternative in **Section 5.5** with additional detail provided in **Appendix D**.

6.1.1 Process for Evaluating Alternatives

As described in **Section 6.2**, alternatives are composed of different combinations of I-69 mainline designs, interchange layouts, and local service road configurations. As described in **Section 3.5**, Alternatives C1, C2, and C3 were developed with the express purpose of representing a range of options for each of these components so that the public, agencies, and stakeholders would have the opportunity to provide input. Based on that input, Alternative C4

[1] *Although there is not a No-Build Alternative carried forward in this Tier 2 EIS, a "no-build scenario" is used in several sections of **Chapter 5, Environmental Impacts** to provide a baseline for measuring overall project performance*

was developed as a hybrid of the other alternatives, and all four were carried forward for evaluation in the DEIS.

A two-stage process was used to evaluate the alternatives and identify a preferred alternative in the DEIS, recognizing that decisions regarding the I-69 mainline (interstate highway lanes, medians, shoulders, side slopes) are generally independent of decisions regarding interchanges and local service road configurations (see **Section 3.6**). In the first stage, the relative cost and impacts of the mainline options were compared, and a preferred mainline option was identified. In the second stage, interchange and local service road components were compared in small geographic areas called "decision areas."

The preferred alternative was determined by combining the preferred mainline option with the interchange and local service road components selected for each decision area. Selecting a mainline option first provided a common baseline for reviewing decision areas. This allowed localized trade-offs to be defined and considered for interchange layouts and local service roads, including right of way needs, relative cost, and relative impacts, as well as less quantifiable measures related to land use and preferences expressed by local agencies, emergency responders, and other stakeholders. **Section 6.3** presents a more detailed description of the alternatives evaluation process used to define a preferred alternative in the DEIS.

As part of the alternative definition and screening process for I-69 Section 6, alternatives were developed which avoided or minimized impacts to wetlands and streams to the extent practical. Impacts to wetlands and streams which were unavoidable were calculated based on the proposed right of way for each alternative. Throughout the process, avoidance and minimization of impacts to jurisdictional aquatic resources were considered. The preferred alternative identified in the DEIS was refined in the FEIS, including adjustments to further reduce impacts to wetlands and streams. Where wetland and stream impacts cannot be avoided, mitigation will be established as described in **Chapter 7, Mitigation and Commitments.**

6.1.2 Subsections and Decision Areas

The I-69 Section 6 corridor was divided into eight geographic subsections to organize the description of alternatives in **Section 3.6** for Alternatives C1, C2, and C3; **Section 3.7** for Alternative C4; and **Section 3.8** for the RPA. These geographic subsections are shown on **Figure 3-11** through **Figure 3-23** and in the detailed map series showing each of the alternatives at the end of **Chapter 3, Alternatives**. The subsections were defined based on similar characteristics of the surrounding area to provide a structure for describing issues and differences among the alternatives.

As the alternatives were defined in greater detail, the subsections used in early discussions and presentations were broken down further into decision areas, where specific options exist for interchanges and local service road configurations. These interchange layouts and local service road configurations were designed to be combined in various ways (mixed and matched) with

any of the mainline options[2] without compromising the capacity of the highway. Decision area evaluations of Alternatives C1 through C4 are provided in **Section 6.3.2**.

Since the definition of the RPA was based on refinement of Alternative C4 rather than an evaluation of multiple interchange and local service road options, decision areas are not used in the review of the RPA. Instead, the differences in impacts between Alternative C4 and the RPA are reviewed at the subsection level. The results are provided in **Section 6.4.1**. The intent of comparing Alternative C4 and the RPA is to identify the changes in impacts resulting from the refinements to Alternative C4. This approach also allows the I-69 mainline, interchanges, and local service road configurations of each alternative to be compared in combination, including features that are outside the boundaries of decision areas.

Table 3-5 defines the I-69 Section 6 decision areas used in the DEIS by geographic subsection. Options existed within each decision area for interchange layouts and local service road configurations. These options were all included in at least one of the alternatives, which supported an investigation of impacts in this chapter. The subsections and the options within each decision area are generally described below:

Subsection 1: Indian Creek to SR 39

- 1-1 SR 39 interchange design
- 1-2 Jordan Road connection
- 1-3 Rogers Road connection

Subsection 2: SR 39 to Morgan Street/Twin Branch Road

- 2-1 Burton Lane grade separation or closure
- 2-2 Ohio Street interchange or grade separation design
- 2-3 Grand Valley Boulevard connection
- 2-4 SR 252 and SR 44 interchange design
- 2-5 Twin Branch Road connection/ Cikana State Fish Hatchery

Subsection 3: Morgan Street to Henderson Ford Road

- 3-1 Morgan Street and Myra Lane grade separation
- 3-2 Egbert Road grade separation design

Subsection 4: Henderson Ford Road to Banta Road in Morgan County

- 4-1 Henderson Ford Road interchange design
- 4-2 New Harmony Road connection
- 4-3 Perry Road grade separation or closure

[2] *An exception in the ability to "mix and match" interchange and local service road of decision areas was in Martinsville between SR 39 and Grand Valley Boulevard, where the Alternative C1 mainline would be elevated above cross streets at all locations. Alternatives C2, C3, and C4 would remain at the existing grade of SR 37. The elevated section of Alternative C1 required that all cross streets pass underneath I-69.*

4-4 Waverly Road or Whiteland Road grade separation

Subsection 5: Banta Road to Fairview Road

5-1 SR 144 interchange design

5-2 West local service road/Olive Branch Road grade separation

5-3 Smith Valley Road interchange design

5-4 West local service road/Fairview Road grade separation

5-5 Wakefield Road connection

Subsection 6: Fairview Road to Wicker Road

6-1 County Line Road interchange design

6-2 West local service road (continued from Subsection 5)

Subsection 7: Wicker Road to Banta Road in Marion County

7-1 Southport Road interchange design

Subsection 8: Banta Road to and including I-465

8-1 I-69/I-465 system interchange design

Except for Subsection 2, where Alternative C1 required certain interchange and local service road configurations, project components in the decision areas were structured to be used in combination with any of the mainline options, regardless of the options selected in each area. The decision-making process for defining the preferred alternative in the DEIS was intended to identify the best balance between cost, right of way requirements, environmental impact, effectiveness in meeting the project purpose and need, and the preferences expressed by local governments, regulatory agencies, and the public. Identifying that balance, while meeting the overall performance objectives identified in the project purpose and need, is the purpose of this chapter.

6.2 Alternatives Descriptions

All the build alternatives (C1, C2, C3, C4, and the RPA) are described in detail in **Chapter 3, Alternatives**. Each alternative is illustrated in the map series provided at the end of that chapter. The alternatives are composed of a mainline component and a grouping of interchange and local service road components. The mainline components of the alternatives are briefly described below and in **Section 6.2.1**. A range of interchange and local service road options are described within each decision area and subsection in **Section 6.3.2**.

As described in **Section 3.7**, Alternative C4 was developed following extensive review and comment on Alternatives C1, C2, and C3. Alternatives C1, C2, and C3 were presented to city and county engineers and planners, emergency service providers, government officials, resource agencies, Community Advisory Committee members, utility providers, and various stakeholder groups at the local level. They were also displayed at the I-69 Section 6 project office. Input was encouraged from all groups and individuals, and this input was used to develop Alternative C4 as a hybrid of selected components from the other alternatives.

The development of Alternative C4 began with the same mainline as Alternative C2. This is described as Mainline Option M2 in **Section 6.2.1**. This mainline option was designed for extensive reuse of SR 37 infrastructure while meeting the standards ordinarily applied by INDOT and FHWA for interstate highways in Indiana. Interchanges and local service road configurations were taken from Alternatives C1, C2, and C3 to form an alternative that seemed to best meet the performance objectives of the project purpose and need, at a reasonable cost and with minimized impacts. The impacts of Alternative C4 were determined in the same manner as Alternatives C1, C2, and C3 in **Chapter 5, Environmental Consequences**, and all four alternatives were evaluated to define a preferred alternative in the DEIS.

Since Alternative C4 is a hybrid made up of interchange and local service road components of Alternatives C1, C2, and C3, most decision areas include the same interchange or local service road options in at least two of the alternatives. When the alternatives are the same, recommendations identify both (i.e. Alternative C1/C2) in that decision area.

Mainline options are described in **Section 6.2.1** and are evaluated in **Section 6.3.1**. An overview of interchanges and local service road configurations presented in the DEIS is provided in **Section 6.2.2**, and these options are reviewed in detail in **Section 6.3.2**. Recommendations are provided in each decision area for which option to carry forward in combination with the recommended mainline option as the preferred alternative in the DEIS.

The RPA was defined by making refinements to the preferred alternative (Alternative C4) of the DEIS based on public and agency input, additional engineering analysis, and value engineering studies. Refinements to Alternative C4 to define the RPA are described in **Section 3.8**.

6.2.1 Mainline Options

As described in **Section 3.5**, the I-69 mainline would use design criteria for new or reconstructed freeways presented in Chapter 53 of the Indiana Design Manual (IDM), with a 70-mph design speed. As shown in **Table 3-3**, it was assumed in the DEIS that I-69 would have four lanes between Indian Creek and SR 144, six lanes from SR 144 to Southport Road, and eight lanes from Southport Road to I-465.

Since I-69 Section 6 will follow the route of SR 37, which is a four-lane divided highway that already meets many of the design criteria in the IDM, one mainline option (M3) was defined to maximize reuse of the existing roadway. This option could require a “design exception” by INDOT and FHWA. Other options would meet minimum or desirable design criteria in the IDM. Minimum design criteria are the smallest dimensions of lane width, shoulder width, median width, etc. that are allowable for a particular class of roadway without a design exception. Desirable design criteria are the dimensions that would be preferred to provide a more “ideal” condition if there were no constraints.

The mainline options, referred to as Mainline Option M1, M2, and M3, are briefly described below. Additional detail is provided in **Section 3.5.1**, and the dimensions of lane widths, shoulders, medians, and clear zones of the mainline options are illustrated with cross section

views in **Figure 3-8** (four-lane section), **Figure 3-9** (six-lane section), and **Figure 3-10** (eight-lane section).

- Mainline Option M1 – Desirable Design Criteria. This mainline option would be designed to meet IDM desirable design criteria for a new freeway wherever practical and to meet minimum design criteria at other locations. This would be the widest of the mainline options since it would use a 60-foot wide median, which is the desirable width identified in the IDM for new urban freeways and exceeds the minimum required width identified in the IDM for new rural freeways. IDM minimum design criteria require 4-foot paved inside shoulders for 4-lane segments, 12-foot paved inside shoulders for 6-lane and 8-lane segments, and 12-foot paved outside shoulders throughout. Side slopes and clear zones would be provided that meet design criteria specified in the IDM.
- Mainline Option M2 – Narrow Median, Standard Shoulders and Side Slopes. Where it is feasible to reuse existing SR 37 infrastructure, this mainline option would use the existing SR 37 center median, which is as narrow as 48 feet at some locations. Although the existing median would not meet IDM minimum design criteria, it would meet the minimum criteria specified in the AASHTO Interstate Design Policy[3] and would not require a design exception. Median cable barrier or double-sided guardrail would be considered at some locations. The existing 4-foot paved inside shoulder would be maintained for 4-lane segments and widened to a 12-foot paved shoulder for 6-lane and 8-lane segments. The existing 10-foot paved outside shoulder would be widened to 12 feet, and outside side slopes and clear zones would be provided to meet IDM design criteria. North of Southport Road, where I-69 would be newly constructed at a higher elevation, a median barrier would be provided with a median width of 26.5 feet.
- Mainline Option M3 – Narrow Median, Narrow Shoulders, Existing Ditches. Where reuse of existing SR 37 infrastructure is feasible, this mainline option would reuse the median of SR 37 in the same manner as mainline option M2. Unlike the other mainline options, it would also reuse the existing outside shoulder and existing side slopes, ditches, and clear zones wherever possible for 4-lane segments. Approximately 80 percent of the existing outside shoulders south of SR 144 are 10 feet wide. Shoulders narrower than 11 feet do not meet the minimum design criteria of the IDM, but could be reused if a design exception is approved by INDOT and FHWA during design development based on cost and benefit. The AASHTO Interstate Design Policy states that 12-foot outside shoulders should be considered. A 12-foot paved outside shoulder is typically used for new freeways and would be provided for 6-lane and 8-lane segments. Thus, Option M3 would be the same as Option M2 north of SR 144. As with Option M2, a median barrier would be provided with a median width of 26.5 feet north of Southport Road, where I-69 would be newly constructed at a different elevation than SR 37. Option M3 would be the narrowest mainline option and would allow the most reuse of existing travel lanes and other SR 37 infrastructure.

[3] *American Association of State Highway and Transportation Officials. A Policy on Design Standards, Interstate System. January 2005.*

As described in **Section 3.6**, Mainline Options M1, M2, and M3 were joined with interchange and local service road components to form Alternatives C1, C2, and C3, respectively. These associations are generally not required for either the mainline or the other components to function. In most locations, any of Mainline Options M1, M2 or M3 could work with the interchange and local service road components of Alternatives C1, C2 or C3. The same can be said about Alternative C4, which is a hybrid of the other alternatives, as described in **Section 3.7**. Mainline options were combined with the other components in the DEIS for purposes of presenting all potential features and to establish alternatives for testing.

An exception to the interchangeability of mainline options with other components occurs within Subsection 2, roughly from SR 39 to SR 44 through Martinsville. Mainline Option M1 would be raised 22 feet above the existing SR 37 grade between SR 39 and SR 44 to provide sufficient clearance for crossroads to pass underneath. Walls would be used to minimize the impact of long side slopes, as shown in **Figure 6-1**, which would reduce right of way impacts to adjacent properties. This is commonly referred to as an "elevated" section. In contrast, Mainline Options M2 and M3 would be constructed at the same elevation as existing SR 37 to save pavement and earthwork construction costs. Crossroads for M2 and M3 would be elevated to pass over the I-69 mainline.

Figure 6-1: Typical Freeway Retaining Wall

All local road crossings of I-69 in Martinsville would be underpasses with Mainline Option M1, as shown in **Figure 6-2**. Mainline Options M2 and M3 would require that crossings be on overpasses since I-69 would be at the existing grade of SR 37.

Figure 6-2: Elevated Freeway with Local Underpass – Mainline Option M1

Because the proposed crossing locations between SR 39 and Grand Valley Boulevard are close to each other, the I-69 mainline would either pass over all of them or under all of them. Mixing overpasses and underpasses through this area would be impractical since the mainline could not change from elevated to at-grade over such a short distance.

6.2.2 Interchanges and Local Service Roads

In addition to the mainline treatments, Alternatives C1, C2, C3, and C4 differ with respect to mainline alignment, interchange layouts and local service road configurations, including overpasses or underpasses at I-69. The alternatives are described in detail in **Sections 3.6** and **3.7**. All alternatives in the DEIS included the same set of interchanges with the exception of an Ohio Street interchange in Martinsville, which was included in some alternatives and not in others. These options are addressed in the evaluation of Decision Area 2-2.

Other than the Ohio Street interchange decision area, which includes the option of whether to build an interchange, all decision areas are comprised of options related to interchange details and local service road configurations. The options for interchanges include ramp configurations, whether I-69 passes over or under the crossing road, and possible shifts in the I-69 mainline alignment to reduce localized impacts. The options for local service roads also include the treatment of grade separated crossings of I-69, whether by overpass, underpass, or not at all. As described in **Section 3.5**, the decision area options were created to represent the range of actions that could be taken with respect to interchange layouts and local service road configurations, which are defined individually and evaluated within individual decision areas in **Section 6.3.2**.

6.3 Alternatives Evaluation (DEIS)

As described in **Section 6.1.1**, a two-stage process was used in the DEIS to evaluate the alternatives, beginning with an evaluation of mainline options, followed by an evaluation of interchanges and local service road configurations. Although it was necessary to match each mainline option with a set of interchange layouts and local service road configurations for purposes of public presentation, cost estimating, and testing of impacts, the mainline options are generally interchangeable except where Mainline Option 1 is elevated through Martinsville. All alternatives follow State Road 37, and except for Ohio Street in Martinsville and the approach to I-465 in Indianapolis, all alternatives have the same interchange locations.

Evaluating the mainline options separately from interchanges and local service road configurations provides an opportunity to review the relative costs and impacts of cross section design decisions (mainline options) on I-69 itself, independent from the cost and impact of the other components. By selecting a mainline option and using it as a baseline, interchange and local service road configurations can be reviewed independently from mainline design options.

The interchange and local service road options within each decision area are compared relative to each other based on the following factors:

- Right of way and relocations,
- Environmental impacts,
- Relative cost,
- Satisfaction of project purpose and need.

Acres of new right of way, the number and type of relocations, and environmental impact measures are identified in a series of tables for each interchange and local service road option within each decision area. These are then totaled by subsection. A narrative is provided for each decision area describing local issues and conditions, and how they relate to the options being considered. A recommendation is provided for each decision area, with a description of its effectiveness in serving the project purpose and need.

Mainline options are evaluated in **Section 6.3.1**, and a preferred mainline option is recommended. This is followed by a subsection by subsection review of interchanges and local service road configurations in **Section 6.3.2**. Overall end-to-end impacts of Alternatives C1, C2, C3, and C4 are presented in **Section 6.3.3**, and overall end-to-end costs are presented for these alternatives in **Section 6.3.4**. A preferred alternative was recommended in **Section 6.4** of the DEIS, with a summary of its effectiveness in serving the project purpose and need.

The preferred alternative was determined in the DEIS by combining the preferred mainline option with the interchange and local service road components selected for each decision area. Selecting a mainline option first provided a common baseline in reviewing decision areas. This allowed localized trade-offs to be considered for interchange layouts and local service roads, including relative performance, cost, and impacts, as well as less quantifiable measures related to land use and preferences expressed by local agencies, emergency responders, and other stakeholders.

6.3.1 Evaluation of Mainline Options

As described in **Section 6.2.1**, the mainline options differ in the degree to which they meet design criteria for interstate highways presented in the Indiana Design Manual. Exceptions can be allowed, with appropriate approvals by INDOT and FHWA, which results in a range of possible trade-offs with respect to performance, cost, and impacts. For the I-69 Section 6 project, design exceptions would only be considered to allow reuse of existing SR 37 travel lanes and shoulders on the four-lane section from Indian Creek to SR 144, a distance of approximately 17 miles. North of SR 144, where added travel lanes would be constructed outside the existing SR 37 lanes, all alternatives would be designed to meet or exceed the minimum standards of design.

The impacts and costs of the mainline options relate to their alignment and to the width of their "footprint" which is dependent on median, shoulder widths, and side slopes. The design standards used for other features of the options, such as mainline lanes, ramp tapers, etc. are identical for the mainline options. An overview of the trade-offs associated with the differences among the mainline options is provided below.

Mainline Option M1 would have the widest footprint (except in Martinsville), because the median, shoulders, and side slopes would be designed to meet the design criteria typically used for new freeway construction in Indiana. Option M1 is the only mainline option that would provide a 60-foot median, which is wider than the existing SR 37 median at most locations. The portion of Option M1 in Martinsville includes the same median, travel lane, and shoulder

dimensions, but the overall footprint is less since the walls installed on each side of this elevated section would eliminate side slopes.

Trade-offs associated with Mainline Option M1 outside of Martinsville would be the potential safety and operational benefits of a wider median and shoulders versus less reuse of pavement (since at least one side would need to be removed to make room for the wider median), a larger right of way footprint, a larger area of environmental impacts, and higher construction cost compared with the other mainline options. The median and shoulders would be the same in Martinsville, but retaining walls used with the elevated section would minimize the width of the footprint in this urbanized area. Option M1 was assumed in the definition of Alternative C1.

Trade-offs associated with Mainline Option M1 in Martinsville would be the potential safety and operational benefits of wider medians and shoulders versus a higher construction cost than the other alternatives and the visual and noise impacts associated with a freeway elevated 22 feet above local streets and neighborhoods. Since side slopes would be replaced by retaining walls, Mainline Option M1 in Martinsville would provide benefits of reduced right of way footprint, fewer relocations, and reduced environmental impacts for grade separations and interchanges.

Mainline Option M2 would have a moderate footprint since it would use the existing SR 37 center median and travel lanes, but the outside shoulders would be widened from 10 feet to 12 feet, which would require new side slopes and ditches at many locations. Mainline Option M2 would allow extensive reuse of SR 37 pavement and provide the safety and operational benefits of wider shoulders. Compared with Option M1 (outside of Martinsville), it would require less right of way, cause fewer environmental impacts, and have lower construction cost compared with Mainline Option M1. Option M2 was assumed in the definition of Alternatives C2 and C4.

Mainline Option M3 would have the smallest footprint since it would reuse the existing median and travel lanes of SR 37, as well as the existing 10-foot outside shoulders, side slopes, and ditches south of SR 144. Where it can be practically applied, Mainline Option M3 would typically require less right of way, have fewer relocations, cause fewer environmental impacts, and have lower construction cost than the other mainline options. Mainline Option M3 was assumed in the definition of Alternative C3.

The practicality of reusing the existing outside shoulders, side slopes, and ditches as assumed in Mainline Option M3 is limited by two factors, as follows:

- Required number of travel lanes. Because I-69 would require at least six lanes north of SR 144, there would be no potential to reuse the existing shoulders since they would be removed on both sides of existing SR 37 travel lanes to construct the additional mainline lanes. The median could still be used, but any new shoulder construction would be 12 feet wide to meet the current standard.
- FHWA Approval. The 10-foot outside shoulders of Mainline Option M3 would not meet the minimum acceptable design criteria used by INDOT for interstate highway construction in Indiana, but could be approved as meeting the minimum acceptable federal design criteria based on review by INDOT and FHWA. The decision of whether

to allow the use of these narrow shoulders would be evaluated during design based on site specific factors. For instance, an extended section of 10-foot shoulder next to guard rail would be unsafe for trucks, whereas a short section may be acceptable if conditions are more favorable for long sections on either side of the constrained shoulder.

The decision of which mainline option to use at different locations along the corridor is driven by several factors. Where the opportunity exists to reuse existing SR 37 pavement, the reduced width standards of Options M2 or M3 would best take advantage of this opportunity by allowing reuse of both northbound and southbound lanes. Option M3 would have lower cost and impacts than M2 where only four travel lanes are required, as long as the site conditions could meet requirements for retaining 10-foot outside shoulders. Where existing pavement can be reused but would require widening for additional travel lanes, Option M2 and M3 would be identical and would still allow more pavement reuse than Option M1 because they would maintain the existing median width.

Where the mainline is all new construction and existing pavement cannot be reused, Option M1 would be somewhat more impactful and expensive than Options M2 and M3 due to the wider median. These conditions vary throughout the corridor. A final consideration in defining preferred mainline options is continuity, since frequent changes in cross section over short distances are not acceptable for freeway operations.

The remainder of this section reviews conditions and opportunities in eight subsections, from the beginning of I-69 Section 6 near Indian Creek and SR 39 in Martinsville to I-465 in Indianapolis. Environmental impacts and costs are reviewed in each subsection, and recommendations are presented for a preferred mainline option. When presented on a subsection basis, the impacts shown for the mainline options reflect the footprint of the option that is created by the typical section, elevation, and curvature for that option within the subsection. Even where the footprint of two alternatives may be identical, their impacts can differ due to differences in the location or elevation of the mainline through a subsection.

The preferred mainline option is used as a baseline in the next section for the evaluation of interchanges and local service road options that are reviewed in smaller decision areas. The recommended mainline options and decision area recommendations make up the preferred alternative recommended in the DEIS. See **Section 3.5.1** and **Section 3.8** for additional discussion of the preferred mainline option.

6.3.1.1 Mainline Options, Subsection 1: Indian Creek to SR 39

Subsection 1, from the beginning of I-69 Section 6 at Indian Creek to SR 39 at the south end of Martinsville, passes through a sparsely developed area of Indian Creek floodplain to the existing interchange of SR 37 and SR 39. Right of way needs and environmental impacts of the mainline options are presented in **Table 6-1**.

Table 6-1: Mainline Impacts, Subsection 1: Indian Creek to SR 39

Impact Criteria	Subsection 1 Impacts		
	M1	M2	M3
New Right of Way (ac)	20	19	13
Total Wetlands (ac)	0.06	0.01	--
Total Streams (lf)	1,179	1,149	987
Floodplain (ac)	43	42	34
Agricultural Land (ac)	14	13	10
Upland Forest (ac)	2.3	2.2	1.1
Core Forest (ac)	--	--	--

Evaluation

This subsection begins at the northern terminus of I-69 Section 5, which has a median width of 48 feet and 12-foot outside shoulders. The existing SR 37 bridge over Indian Creek will require replacement in order to provide appropriate clearance over the existing floodway, and the bridge structure over SR 39 through the interchange will be replaced. As a result, there would be little or no opportunity to reuse existing SR 37 pavement in this section.

Although **Table 6-1** shows a potential benefit with Mainline Option M3 in all environmental impact categories, the narrow median and reduced width of outside shoulders are not consistent with design standards that apply for new freeway construction in Indiana.

Recommendation

Mainline Option M2 is recommended in Subsection 1. Mainline Option M2 would provide continuity with the design standards applied in the adjacent section of I-69 Section 5, and would comply with the design standards required for new interstate highway construction in Indiana.

6.3.1.2 Mainline Options, Subsection 2: SR 39 to Morgan Street

Subsection 2, from SR 39 to Morgan Street/Twin Branch Road, passes through the urbanized area of Martinsville. Mainline Option M1 would be all new construction, with I-69 elevated above existing SR 37 by approximately 22 feet, with retaining walls along each side. Mainline Option M2 would reuse the median and travel lanes, but would reconstruct and widen the outside shoulders and construct new side slopes. Mainline Option M3 would maximize the reuse of existing SR 37 by retaining the median, inside and outside shoulders, and drainage system of the current roadway. Right of way needs and environmental impacts of the mainline options are presented in **Table 6-2**.

Table 6-2: Mainline Options, Subsection 2: SR 39 to Morgan St/Twin Branch Rd

Impact Criteria	Subsection 2 Impacts		
	M1	M2	M3
New Right of Way (ac)	27	22	9
Relocations, Residential - Single Family	1	1	--
Relocations, Residential - Mobiles Home	--	29	1
Total Wetlands (ac)	0.03	0.02	--
Total Streams (lf)	7,678	7,562	5,601
Floodplain (ac)	21	23	17
Agricultural Land (ac)	1	1	--
Upland Forest (ac)	10.4	10.2	5.5
Core Forest (ac)	--	--	--

Evaluation

Elevating I-69 through Martinsville with retaining walls along each side would minimize relocations by creating a narrower footprint for I-69. As shown in **Table 6-2**, only one single family home would be relocated due to mainline construction with Option M1. The more significant benefit would occur outside the mainline. With I-69 elevated, crossing streets would remain at their existing grade, as shown in **Figure 6-1** and avoid side slopes at overpasses and underpasses. This would reduce right of way, relocations, and environmental impacts where Burton Lane and Grand Valley Boulevard cross I-69 (see **Sections 6.1.1.2.1** and **6.1.1.2.3**).

As shown in **Figure 6-2**, elevating I-69 through Martinsville as in Option M1 would also create a visual barrier due the high wall. Portions of Martinsville east and west of I-69 would be separated by this new visual barrier, and the continuous retaining wall would create a new visual feature for adjacent properties. The City of Martinsville and many stakeholders and business owners along existing SR 37 have stated clear opposition to the construction of this new barrier in the community.

By reusing the full pavement section of SR 37, including the existing 10-foot outside shoulders, Option M3 would also avoid many of the relocations required with the other options, and all categories of environmental impact would be lower, as shown in **Table 6-2**. Option M2 would require more right of way and relocations, and impact more environmental features than the other options due to the wider cross section over the 4.3-mile length of this subsection.

Recommendation

Option M2 is recommended in this subsection. It would retain the existing median, inside shoulders, and travel lanes of SR 37, while meeting applicable design standards. Option M1

would also meet design standards, and would reduce the number of relocations, but the impact of the continuous retaining wall through Martinsville is not acceptable to the community. Option M3 would have less impact, but reusing the 10-foot outside shoulders would require design approval from FHWA based on design level site specific studies. Option M2 would present an initial design assumption for the preferred option that could later be reduced to the typical section of Option M3 if approved at specific locations by FHWA.

6.3.1.3 Mainline Options, Subsections 3 and 4: Morgan Street to Banta Road (Morgan Co)

Subsection 3 extends from Morgan Street/Twin Branch Road just north of Martinsville to Henderson Ford Road. Subsection 4 extends from Henderson Ford Road to Banta Road in Morgan County. These two subsections are reviewed together since conditions are generally the same throughout this 11-mile section. The area is typified by low density residential areas, agricultural property, and scattered woodlands, with limited development except at the north end near the town of Waverly. The White River parallels the corridor to the west, passing close to the I-69 alignment in the vicinity of New Harmony Road. Right of way needs and environmental impacts of the mainline options are presented in **Table 6-3** and **Table 6-4**.

Table 6-3: Mainline Options, Subsection 3: Morgan St to Henderson Ford Rd

Impact Criteria	Subsection 3 Impacts		
	M1	M2	M3
New Right of Way (ac)	37	41	4
Relocations, Residential – Single Family	3	5	5
Relocations, Business	--	1	1
Total Wetlands (ac)	1.51	1.38	0.34
Total Streams (lf)	2,368	2,370	1,986
Floodplain (ac)	31	33	20
Agricultural Land (ac)	2	4	--
Managed Land – Publicly Owned (ac)	1.4	0.8	--
Upland Forest (ac)	21.3	19.9	8.2
Core Forest (ac)	2.1	2.1	0.4

Table 6-4: Mainline Options, Subsection 4: Henderson Ford Road to Banta Road

Impact Criteria	Subsection 4 Impacts		
	M1	M2	M3
New Right of Way (ac)	111	108	38
Relocations, Residential – Single Family	15	14	13
Relocations, Business	6	6	2
Total Wetlands (ac)	2.58	2.47	1.82
Total Streams (lf)	8,653	8,533	6,115
Floodplain (ac)	22	22	14
Agricultural Land (ac)	37	34	4
Upland Forest (ac)	36.0	36.0	16.7
Core Forest (ac)	5.3	5.4	2.1

Evaluation

Together, these two subsections constitute about 40% of the I-69 Section 6 corridor. There is a significant opportunity to reduce project cost by reusing SR 37 infrastructure, including the existing median, inside shoulders, and travel lanes, as in Option M2. As in Subsection 2, right of way needs, environmental impacts, and costs could be reduced further by also reusing the existing 10-foot outside shoulders and side slopes of SR 37, as in Option M3.

Recommendation

Option M2 is recommended in this subsection. It would retain the existing median, inside shoulders and travel lanes of SR 37, while meeting applicable design standards. Option M1 would require more right of way and have higher cost. Option M3 would have less impact, but reusing the 10-foot outside shoulders would require approval from FHWA based on design level site specific studies. Option M2 would present an initial design assumption for the preferred option that could later be adjusted to Option M3 if approved at specific locations by FHWA.

6.3.1.4 Mainline Options, Subsections 5 and 6: Banta Road to Wicker Road

Subsection 5 extends from Banta Road to Fairview Road in Morgan County, and Subsection 6 extends from Fairview Road to Wicker Road. These two subsections are reviewed together since conditions are generally the same throughout this 6.5-mile section. They pass through an area that is primarily agricultural, with increasing residential density from south to north as SR 37 approaches the Marion County line at the end of Subsection 6. Right of way needs and environmental impacts of the mainline options are presented in **Table 6-5** and **Table 6-6**.

Table 6-5: Mainline Options, Subsection 5: Banta Road to Fairview Road

Impact Criteria	Subsection 5 Impacts		
	M1	M2	M3
New Right of Way (ac)	74	71	77
Relocations, Residential – Single Family	6	8	4
Relocations, Business	--	2	2
Total Wetlands (ac)	0.02	--	--
Total Streams (lf)	3,372	3,345	3,207
Floodplain (ac)	32	42	42
Wellhead Protection Areas (ac)	99	103	105
Agricultural Land (ac)	32	33	29
Managed Land, Privately Owned (ac)	3.4	1.4	4.6
Upland Forest (ac)	5.5	3.7	6.4
Core Forest (ac)	--	--	--

Table 6-6: Mainline Options, Subsection 6: Fairview Road to Wicker Road

Impact Criteria	Subsection 6 Impacts		
	M1	M2	M3
New Right of Way (ac)	20	16	10
Relocations, Residential - Single Family	--	1	1
Relocations, Business	--	1	--
Total Wetlands (ac)	--	--	--
Total Streams (lf)	421	345	247
Floodplain (ac)	7	6	4
Wellhead Protection Areas (ac)	64	60	54
Agricultural Land (ac)	9	5	5
Upland Forest (ac)	3.7	2.8	1.5
Core Forest (ac)	--	--	--

Recommendation

With respect to selecting a typical mainline section, either Mainline Option M2 and or Option M3 is recommended. These options would have the same typical section throughout these two subsections. Their impacts differ because of how they are aligned through the decision areas. In Subsection 5, the M2 mainline would be shifted east of SR 37 near Stones Crossing Road to

minimize impacts of local service roads to the Greenwood Mobile Home Park, while the M3 mainline would more closely follow SR 37. Shifting the mainline away from SR 37 would result in more mainline impacts in some categories for Option M2, as shown in **Table 6-5**, but impacts to the mobile home park would be reduced. These localized issues are evaluated in the review of Decision Area 5-2 in **Section 1**.

In Subsection 6, the M2 mainline is wider than the M3 mainline near County Line Road due to the earth fill required to elevate I-69 over County Line Road. The M3 mainline would remain at existing SR 37 grade through this area. The high cost and impact of elevating the I-69 mainline would be offset by reduced cost and impacts for construction on County Line Road and Bluff Road. These details are discussed in the review of Decision Area 6-1 in **Section 6.3.2.6**.

The typical section of Option M2 and M3 would retain the existing median, inside shoulders, and travel lanes of SR 37, while meeting applicable design standards. Both would have 12-foot outside shoulders since that standard for new construction would apply when lanes are added on each side. Option M1 would require more right of way and have higher cost since at least one side of SR 37 would have to be removed to provide the larger median.

6.3.1.5 Mainline Options, Subsections 7 and 8: Wicker Road to and including I-465

Subsection 7 extends from Wicker Road to Banta Road, and Subsection 8 extends from Banta Road to I-465. These subsections are reviewed together since conditions are generally the same throughout this section. This is a highly developed area including an interchange with Southport Road, multiple crossing roadways, and large open water gravel pits adjacent to I-465. At Southport Road, the Southern Dunes Apartments and the Southport Landing Shopping Center are located west of SR 37, and Aspen Lakes Apartments are located east of SR 37. Right of way needs and environmental impacts of the mainline options are presented in **Table 6-7** and **Table 6-8.**

Evaluation

From Wicker Road to Southport Road, I-69 would be 6 lanes. The typical section of Option M2 or M3, which would use the same median widths, shoulder widths, and side slopes with six lanes, would allow a narrower median to be used and would reduce impacts on adjacent development compared to Option M1. The horizontal and vertical alignment of current alternatives through this area are such that little or no pavement from existing SR 37 would be reused, but refinements may allow this.

From Southport Road to I-465, the I-69 mainline would have eight travel lanes and would remain elevated to pass over Banta Road, Edgewood Avenue, and Epler Avenue. The I-69 mainline would be completely new construction in this segment. The use of Option M2 or M3, which are identical for an 8-lane section, would allow a narrower median to be used and would reduce impacts on adjacent development compared to Option M1.

Table 6-7: Subsection 7: Mainline Options, Wicker Road to Banta Road (Marion Co)

Impact Criteria	Subsection 7 Impacts		
	M1	M2	M3
New Right of Way (ac)	45	58	28
Relocations, Residential – Single Family	2	1	1
Total Wetlands (ac)	0.02	0.02	0.02
Total Streams (lf)	789	803	638
Floodplain (ac)	25	35	16
Wellhead Protection Areas (ac)	96	98	79
Agricultural Land (ac)	9	17	4
Upland Forest (ac)	4.8	6.9	3.9
Core Forest (ac)	--	--	--

Table 6-8: Subsection 8: Banta Road to and including I-465

Impact Criteria	Subsection 8 Impacts		
	M1	M2	M3
New Right of Way (ac)	21	11	13
Relocations, Residential – Single Family	--	1	1
Relocations, Business	2	--	1
Total Wetlands (ac)	--	--	--
Total Streams (lf)	38	199	199
Floodplain (ac)	21	12	13
Wellhead Protection Areas (ac)	24	18	21
Agricultural Land (ac)	4	3	3
Upland Forest (ac)	--	--	--
Core Forest (ac)	--	--	--

Recommendation

The typical section used by Option M2 and Option M3 is recommended. These options would have the same typical section through these two subsections, but impacts would differ because of how they are aligned at Southport Road. The M1 mainline is shifted west of SR 37 at Southport Road because of the Alternative C1 Southport Road interchange configuration. This shift would reduce the stream impact of the mainline, but would cause business relocations. The M2 mainline is shifted east because of the Alternative C2 and C4 interchange configurations, and the M3 mainline remains on the SR 37 because of the Alterative C3 interchange configuration.

The I-69 mainline shifts affect the impacts in Subsections 7 and 8. The overall impact of I-69 Section 6 at Southport Road and at I-465 is driven more by interchange and local service road details than by the alignment of the mainline. These features are reviewed for Southport Road in Decision Area 7-1 in **Section 6.3.2.7** and for I-465 in Decision Area 8-1 in **Section 6.3.2.8**.

6.3.1.6 Preferred Mainline Option

A summary of the right of way, relocations, and environmental impacts of Mainline Options M1, M2, and M3 is provided below, followed by a recommendation of a preferred mainline option. The preferred mainline option is used as a baseline in the evaluation of interchanges and local service road configurations in **Section 6.3.2**.

Right of Way and Relocations: The right of way and relocation estimates for Mainline Options M1, M2, and M3 over the length of the I-69 Section 6 corridor are shown in **Table 6-9**. Due to its narrow footprint, Mainline Option M3 would require about 40 percent fewer acres of new right of way than Mainline Options M1 or M2, and would have fewer residential and business relocations.

Table 6-9: Right of Way and Relocations of Mainline Options

Mainline Option	M1	M2	M3
Right of way (acres)			
Existing Right of way	667	660	653
New Right of way	**354**	**346**	**191**
Total Right of way	1,021	1,006	844
Relocations (number)			
Residential - Single Family Home	27	31	25
Residential - Mobile Home	--	29	1
Business	8	10	6
Total Relocations	**35**	**70**	**32**

Relative Environmental Impacts: The same GIS tools used to isolate the right of way and relocations of the mainline options were used in conjunction with field reviews for land use, wetlands, and streams to investigate environmental impacts. The results are shown in **Table 6-10**.

As with right of way and relocations, the effect of the narrower footprint of Mainline Option M3 is apparent in the review of environmental impacts of mainline sections. South of SR 144, where I-69 will have four lanes, Mainline Option M3 reuses all SR 37 infrastructure, including outside shoulders that do not meet the width standards used for Indiana interstate highways. New right of way needs are less with Mainline Option M3 since the existing shoulders and side slopes fit within the existing SR 37 right of way. As a result, impacts on wetlands, streams, floodplains, agricultural lands, and forests would all be lower with Mainline Option M3.

Table 6-10: Environmental Impacts of Mainline Options

Mainline Option	M1	M2	M3
Total Wetland Impacts (ac)	4.22	3.90	2.18
Total Stream Impacts (lf)	24,498	24,306	18,980
Floodplain (ac)	202	215	160
Wellhead Protection Areas (ac)	283	279	259
Agricultural Land (ac)	108	110	55
Publicly Owned Managed Land (ac)	1.4	0.8	-
Privately Owned Managed Land (ac)	3.4	1.4	4.6
Upland Forest (ac)	84	82	43
Core Forest (ac)	7.4	7.5	7.5

Preferred Mainline Option: Mainline Option M2 is selected as the mainline option for the preferred alternative of I-69 Section 6. Mainline Option M2 would allow extensive reuse of SR 37 pavement, and the 12-foot outside shoulders would meet acceptable design criteria. The median and pavement of SR 37 would be reused except where I-69 is elevated with new pavement at interchanges and grade separations, and on the section from just north of Fairview Road to I-465.

Mainline Option M1 would require fewer relocations in Martinsville, but the City of Martinsville and local stakeholders deemed the continuous retaining wall unacceptable due to its divisive effect on the community (see **Figure 6-1**). In other subsections, Mainline Option M1 would have the highest cost and impacts.

Mainline Option M3 would require less right of way and have fewer environmental impacts than the other options, but the 10-foot outside shoulders would not meet the minimum acceptable design criteria used for interstate highway construction in Indiana. The 10-foot shoulders could still be approved by INDOT and FHWA during design based on site specific factors, as they meet the minimum acceptable federal design criteria. Assuming Mainline Option M2 as the preferred mainline option represents a “worst case” scenario at this stage of the process.

Because I-69 would require at least six lanes north of SR 144, the existing shoulders would be removed to construct the additional mainline lanes with any of the options. The median could still be used, but any new shoulder construction would be 12 feet wide to meet the current standard.

6.3.2 Evaluation of Interchanges and Local Service Roads

This section reviews the performance, new right of way and relocations, environmental impacts, and effectiveness in serving project purpose and need of Alternative C1, C2, C3, and C4 in 23 decision areas within eight subsections. A summary table of impact measures for the decision areas and mainline is provided at the end each subsection. As the preferred mainline option, Mainline Option M2 is assumed in the review of all subsections, as described in **Section 6.3.1.6**.

6.3.2.1 Subsection 1: Indian Creek to SR 39

Subsection 1, from Indian Creek to SR 39 in Martinsville, passes through a sparsely developed area of the White River floodplain at Indian Creek to the SR 37/SR 39 interchange. Alternatives in the DEIS varied in how the I-69/SR 39 interchange was laid out and how local service roads were configured. This subsection includes the following decision areas (see **Figure 6-4**).

- Decision Area 1-1. SR 39 interchange layout
- Decision Area 1-2. Jordan Road connection
- Decision Area 1-3. Rogers Road connection

Decision Area 1-1: SR 39 Interchange Layout

Decision

The objective in this decision area was to define the type of interchange to be included in the preferred alternative at SR 39. The existing interchange is a trumpet configuration, which is well suited for a junction of three roadways. Alternatives in the DEIS varied in layout and how local service roads were connected.

Alternatives (see **Figure 6-3**)

- C1: The existing trumpet interchange would be replaced by a diamond interchange. Rogers Road would be rerouted so that its intersection with SR 39 is separated from the interchange. (See Decision Area 1-3 for discussion of Rogers Road.)
- C2: The existing trumpet interchange would be replaced by a diamond interchange. The intersection of the southbound I-69 ramps with SR 39 and Rogers Road would be converted to a 5-legged roundabout.
- C3, C4: The existing trumpet interchange would be reused. The intersection of the southbound I-69 ramps with SR 39 and Rogers Road would be converted to a 5-legged roundabout.

Figure 6-3: Decision Area 1-1 Configurations

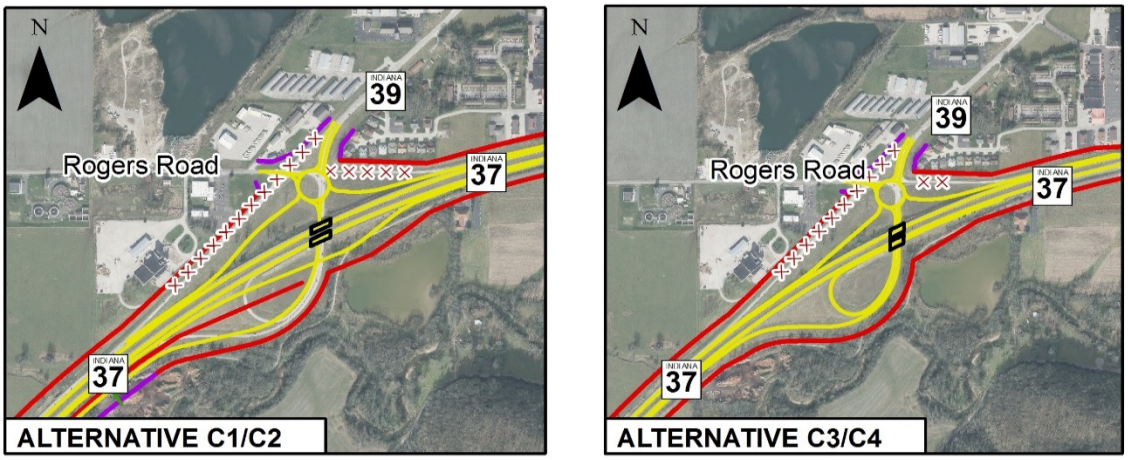
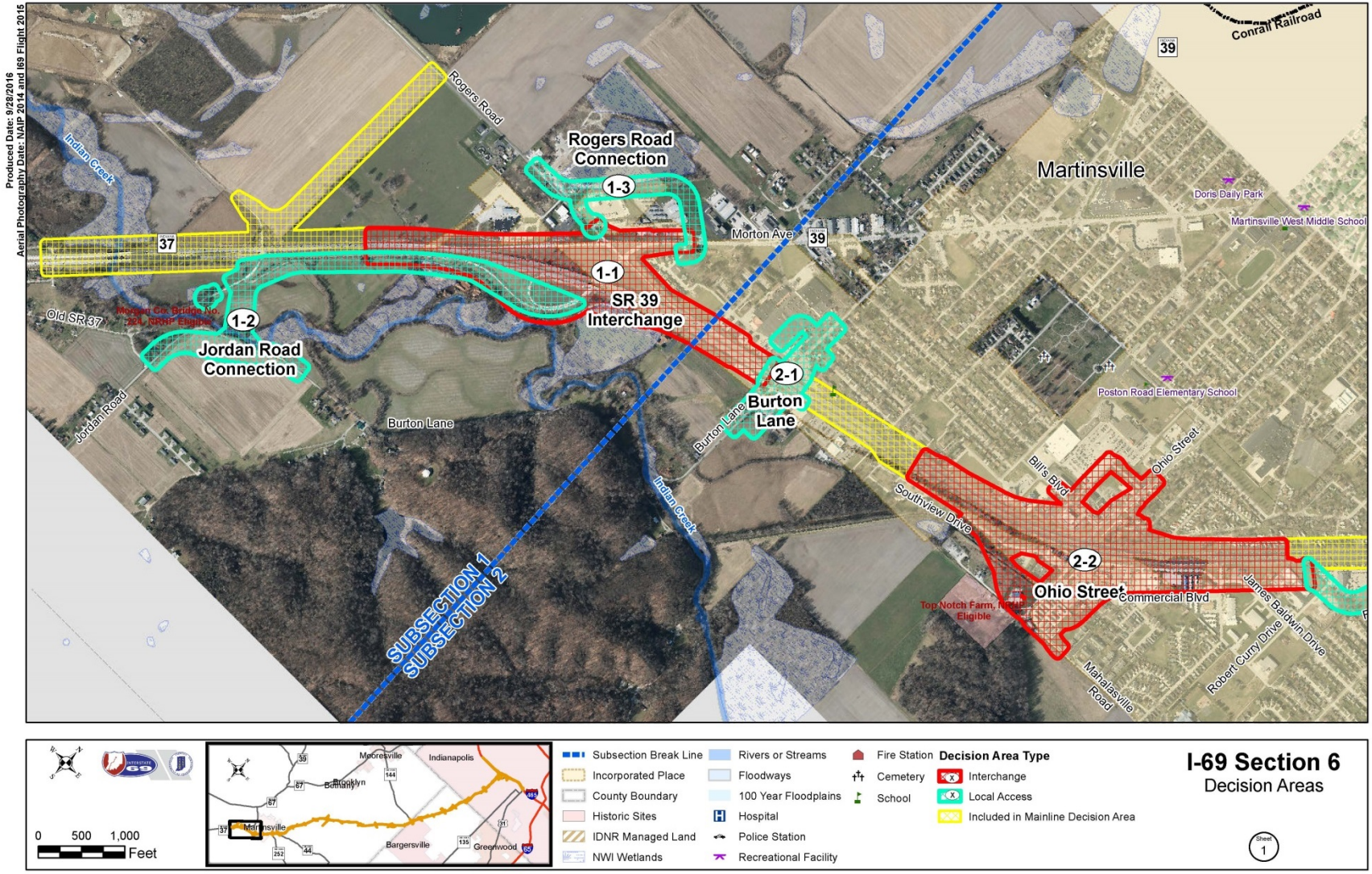


Figure 6-4: Decision Area Locations - Subsections 1 and 2



Evaluation

Retaining the existing interchange configuration would minimize cost and disruption of construction, but replacing the interchange with a diamond interchange layout would provide better service if another roadway, such as a south or southeast link, is added in the future. Environmental impacts, including right of way, of the alternatives are shown in **Table 6-11**.

Most of the right of way for the alternatives is already in use for the existing SR 37/SR 39 interchange. All alternatives would require relocation of the Centerstone Behavioral Health Clinic on Southview Drive, since the new construction would cut off existing access to the property. The higher stream and wetland impacts of Alternative C3/C4 are within the interchange area where they have been previously disturbed.

Alternative C3/C4 would cost less than the other alternatives because it would use most of the existing SR 37/SR 39 interchange. Reconstruction of the existing SR 37 bridges over SR 39 would be required with any alternative due to low clearance and poor condition. The cost for Alternatives C1 and C2, would be similar.

Table 6-11: Environmental Impacts, Decision Area 1-1: SR 39 Interchange

Impact Criteria	Decision Area 1-1 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	4	5	4	4
Relocations - Business	1	1	1	1
Total Wetlands (ac)	0.09	0.14	0.25	0.25
Total Streams (lf)	95	121	618	618
Floodplain (ac)	9	11	12	12
Agricultural Land (ac)	--	1	1	1
Upland Forest (ac)	--	--	0.1	0.1
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C3/C4 was recommended in this decision area in the DEIS due to the economic and constructability benefits of reusing the existing SR 39 interchange. In addition to its lower cost, reuse of the existing trumpet interchange would minimize disruption during construction. There is no identified need to extend a new local road connection across Indian Creek at the SR 39 interchange, so the added flexibility of a diamond configuration is not needed. If necessary in the future, the northbound I-69 ramps at the SR 39 interchange could be converted to a diamond configuration to accommodate such a connection.

Rationale

All alternatives would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area. The existing SR 39 interchange layout would be reused, providing economic and constructability benefits that would not be provided by reconstructing it as a diamond interchange.

Decision Area 1-2: Jordan Road Connection

Decision

The objective in this decision area was to determine whether a local service road should be provided from the interchange area across Indian Creek to Jordan Road and Burton Lane to access properties east of I-69 in the Liberty Church Road area. This area has been identified for development as a business park by the City of Martinsville Comprehensive Plan[4] and the Morgan County SR 37/SR 144 Corridor Plan.[5] Current access from the north would be limited if Burton Lane is closed at I-69 (see Decision Area 2-1). The alternatives varied in whether a local service road is constructed, and if so, whether it would cross Indian Creek to link with Jordan Road and Burton Lane or end at Indian Creek, thus providing access only to property between I-69 and Indian Creek.

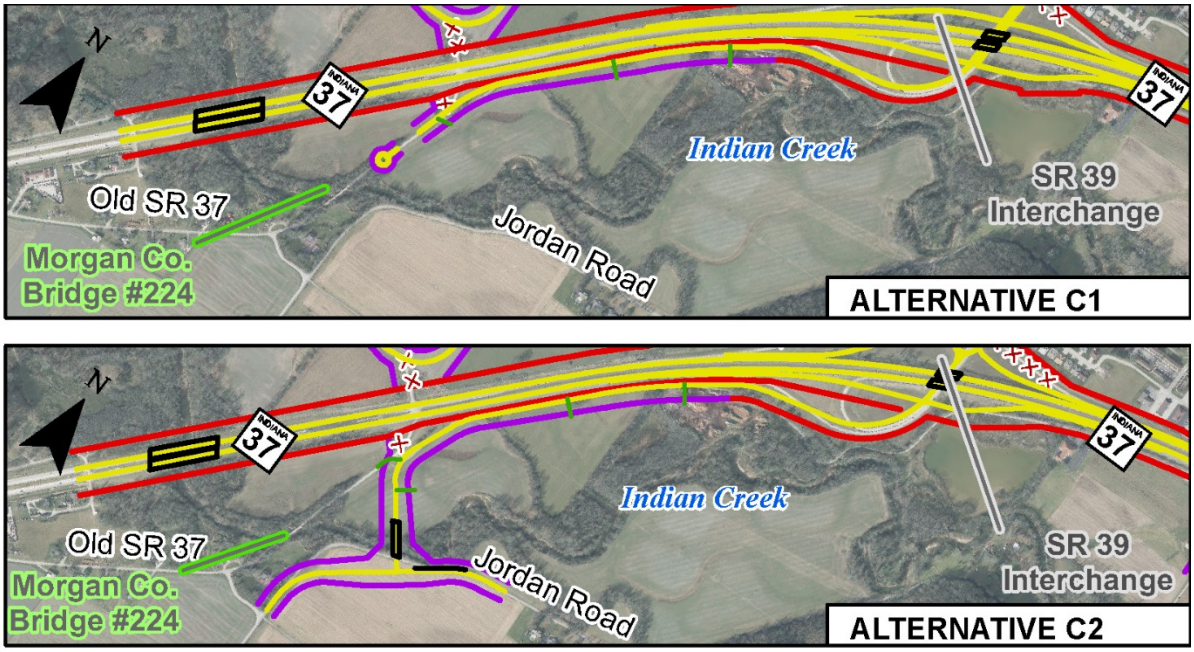
Alternatives (See **Figure 6-5**)

- C1: A local service road would be provided between I-69 and Indian Creek that would extend from the SR 39 interchange to Old SR 37.
- C2: A local service road would be provided between I-69 and Indian Creek that would extend from the SR 39 interchange to Old SR 37, then cross Indian Creek to intersect Jordan Road and Burton Lane.
- C3, C4: No new local service road would be provided between I-69 and Indian Creek. The area south of Indian Creek would continue to be accessed via Burton Lane. (This alternative is not shown in the figure since it includes no physical changes.)

[4] *Strategic Development Group; Hannum, Wagle & Cline; & The Planning Workshop. Comprehensive Plan for the City of Martinsville. January, 2010*

[5] *Strategic Development Group; Hannum, Wagle & Cline; & The Planning Workshop. Morgan County SR 37 / 144 Corridor Plan. February, 2010*

Figure 6-5: Decision Area 1-2 Configurations



Evaluation

A key question regarding access to the Liberty Church Road area is the disposition of Burton Lane, which provides an existing link with Martinsville. If a grade separation is provided at I-69 (Decision Area 2-1), access from Martinsville would be adequate. Otherwise, the route to this area would be less direct. A local service road extension would pass through Indian Creek floodplain. Environmental impacts, including right of way, of the alternatives are shown in **Table 6-12**.

Table 6-12: Environmental Impacts, Decision Area 1-2: Jordan Road

Impact Criteria	Decision Area 1-2 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	8	18	--	--
Total Wetlands (ac)	0.61	0.61	--	--
Total Streams (lf)	459	861	--	--
Floodplain (ac)	13	23	--	--
Agricultural Land (ac)		5	--	--
Upland Forest (ac)	0.3	0.6	--	--
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Since more roadway is being constructed, including a new bridge over Indian Creek, Alternative C2 would cost more, require more right of way, and have greater impact to environmental features than Alternative C1. Alternative C3/C4 would have no cost, no right of way requirement, and no impact to environmental features.

Recommendation

Alternative C3/C4 was recommended in this decision area in the DEIS. There was no demonstrated need to construct an additional local connection across Indian Creek at this location if a Burton Lane grade crossing of I-69 was provided to maintain access between Martinsville and the existing crossing, as recommended in Decision Area 2-1.

Rationale

All alternatives would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area, but stream, floodplain, and forest impacts would be reduced near Indian Creek by using existing Burton Lane for access to the Liberty Church Road area instead of constructing a new local service road connection.

Decision Area 1-3: Rogers Road Connection.

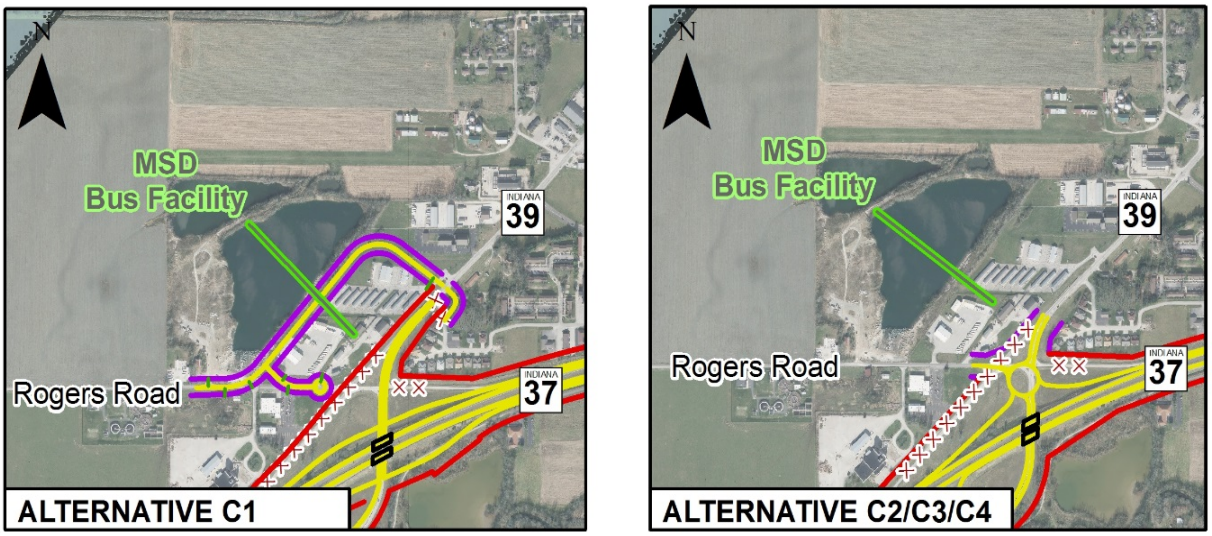
Decision

The objective in this decision area was to determine how access to Rogers Road west of SR 39 should be maintained with the new I-69/SR 39 interchange in the preferred alternative. The alternatives varied in whether a local service road is constructed around the Martinsville School District's bus facility and adjacent storage facility to a new intersection with SR 39 or if Rogers Road connects directly to the ramp junction and SR 39 at a roundabout.

Alternatives (See **Figure 6-6**)

- C1: Rogers Road would be rerouted behind the Martinsville School District's bus facility and adjacent storage facility to intersect with SR 39 further from the interchange.
- C2, C3, C4: Rogers Road would remain at its existing location and the SR 39 intersection would be reconstructed as a new 5-legged roundabout intersection of SR 39, the I-69 southbound ramps and Rogers Road.

Figure 6-6: Decision Area 1-3 Configurations



Evaluation

The intersection of Rogers Road and SR 39 is located too close to the ramp junction intersection of the new SR 39 interchange. The options are to shift the Rogers Road intersection away from the ramp junction or to join them at a single location, which would require a roundabout to serve all five movements. Environmental impacts, including right of way, of the alternatives are shown in **Table 6-13.**

Alternative C1 would require 9 acres of new right of way, with 1 residential relocation, and would impact 5 acres of floodplain. Alternative C2/C3/C4 would be constructed on state-owned right of way, with no impact to environmental features. Alternative C1 would have the highest cost due to construction, right of way acquisition, relocation, and utility work.

Table 6-13: Environmental Impacts, Decision Area 1-3: Rogers Road

Impact Criteria	Decision Area 1-3 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	8	--	--	--
Relocations – Single Family Residential	1	--	--	--
Total Wetlands (ac)	--	--	--	--
Floodplain (ac)	5	--	--	--
Upland Forest (ac)	--	--	--	--
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C2/C3/C4 was recommended in the DEIS. The 5-legged roundabout intersection can be constructed within existing state right of way and is well suited to the use. It would cost less and have no new right of way requirement or environmental impact.

Rationale

All alternatives would be effective in meeting Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area, but right of way needs would be minimized by using a roundabout in state-owned right of way at Rogers Road rather than relocating Rogers Road.

Total Subsection 1 Impacts.

Table 6-14 shows a comparison of the total Subsection 1 environmental impacts for each alternative in the DEIS. This includes the impacts of interchanges and local service roads described within the decision areas combined with the impacts of the preferred Mainline Option M2 within this subsection.

Table 6-14: Environmental Impacts, Subsection 1: Indian Creek to SR 39 (DEIS)

Impact Criteria	Subsection 1 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	41	44	26	25
Relocations (units)				
Relocations – Single Family Residential	1	--	--	--
Relocations – Business	1	1	1	1
Total Relocations	2	1	1	1
Total Wetlands (ac)	0.87	0.92	0.42	0.42
Total Streams (lf)	1,823	2,251	1,887	1,887
Floodplain (ac)	71	78	56	56
Agricultural Land (ac)	13	19	14	14
Upland Forest (ac)	2.5	2.8	2.3	2.3
Core Forest (ac)	--	--	--	--

1. *Impacts for subsections include all impacts in the I-69 right of way. I-69 mainline impacts are included in this table, based on the selection of Mainline Option M2 as the preferred mainline option. See* ***Section 6.3.1.6*** *for description of the preferred mainline option.*

6.3.2.2 Subsection 2: SR 39 to Morgan Street/Twin Branch Road

Subsection 2, from SR 39 to Morgan Street/Twin Branch Road, passes through the urbanized area of Martinsville. The south part of this subsection passes through the White River floodplain at Indian Creek, which extends across the corridor into Martinsville west of I-69. The terrain is relatively level past Martinsville High School north of Grand Valley Boulevard, then follows a steep grade to higher elevation near SR 44. Climbing lanes would be provided on the mainline of I-69 with all alternatives between Grand Valley Boulevard and SR 44 (northbound), and between Morgan Street and SR 44 (southbound).

Grade separations and interchanges would be spaced relatively close together in Martinsville to maintain mobility to and across I-69, and development is located close to the SR 37 right of way. Relocations would be required at each access and crossing point for the construction of roadway approaches to I-69 bridges. Alternatives C2, C3, and C4 assume that I-69 would remain at the existing elevation of SR 37 between SR 39 and Grand Valley Boulevard. **Section 6.3.1.2** describes why Alternative C1, which would have elevated I-69 through this section, is no longer considered in decision areas in this subsection.

Alternatives in this subsection differed regarding whether Burton Lane had a grade separation; whether Ohio Street had an interchange; and how interchanges, grade separations and local service roads would be configured at other locations. This subsection includes the following decision areas, as shown in **Figure 6-7**.

- Decision Area 2-1. Burton Lane grade separation or closure
- Decision Area 2-2. Ohio Street interchange or grade separation design
- Decision Area 2-3. Grand Valley Boulevard connection
- Decision Area 2-4. SR 252 and SR 44 interchange design
- Decision Area 2-5. Twin Branch Road connection/Cikana State Fish Hatchery

Decision Area 2-1: Burton Lane

Decision

The objective in this decision area was to determine whether Burton Lane should be closed at I-69 or it should be connected across I-69 with an overpass in the preferred alternative.

Alternatives (see **Figure 6-8**)

- C1: Burton Lane would pass under I-69. Alternative C1 is not consistent with the prior decision made in Subsection 2 decision areas, as discussed in **Section 6.3.1.2**.
- C2, C4: Burton Lane would pass over I-69
- C3: Burton Lane would be closed at I-69.

Figure 6-7: Decision Area Locations - Subsection 2

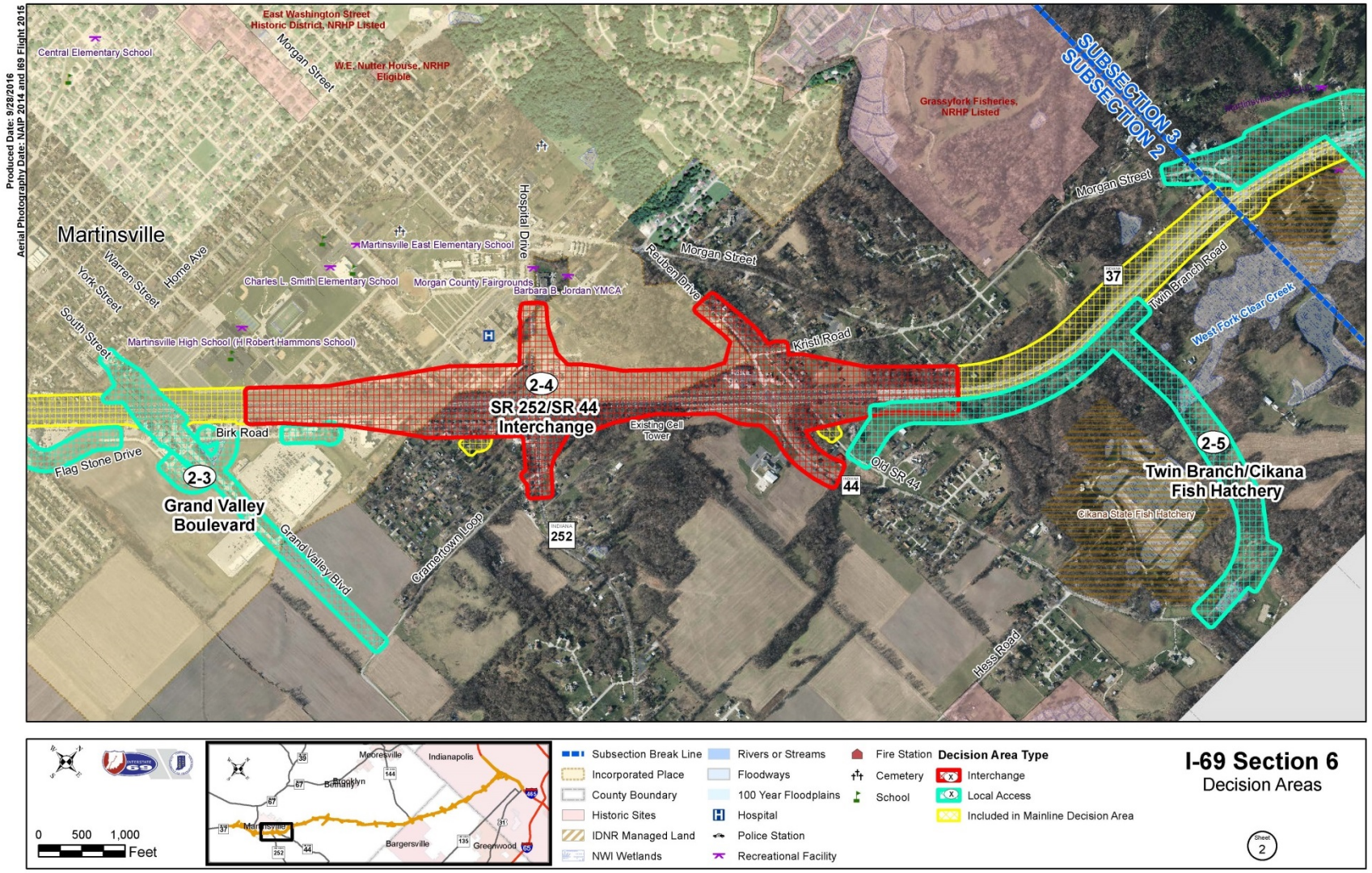
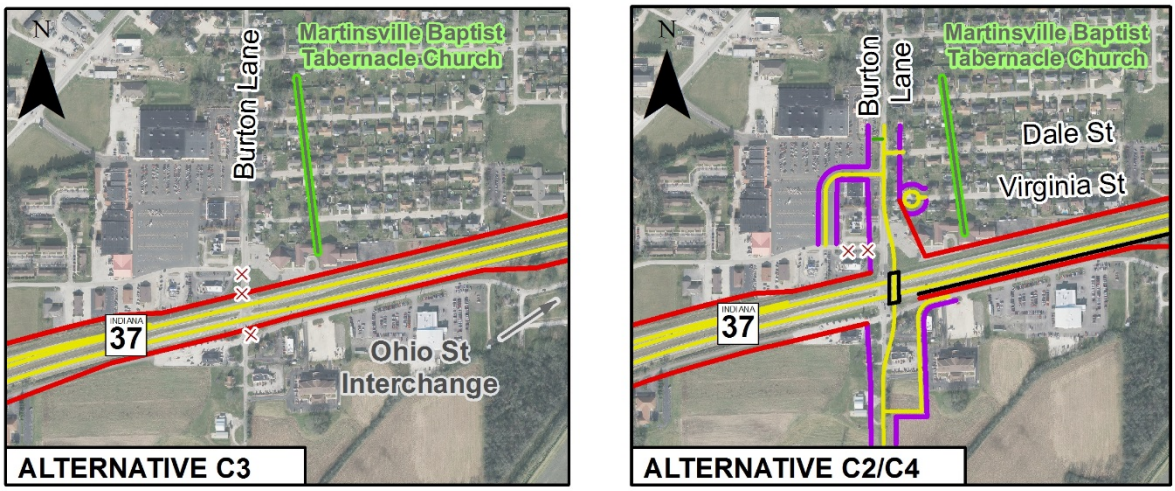


Figure 6-8: Decision Area 2-1 Configurations



Evaluation

The City of Martinsville and local businesses have expressed a preference for an overpass at Burton Lane. It would maintain access and circulation in the immediate area and would provide direct access from Martinsville to areas south of Indian Creek, as described in the discussion of Decision Area 1-2 (see **Section 6.3.2.1**). To access Burton Lane on the east side of I-69 with no overpass, motorists would have to use the Ohio Street interchange or overpass (approximately 0.8 mile away) or the SR 252 interchange (approximately 2.8 miles away) via local roadways. Environmental impacts, including right of way, of the alternatives are shown in **Table 6-15**.

Table 6-15: Environmental Impacts, Decision Area 2-1: Burton Lane

Impact Criteria	Decision Area 2-1 Impacts[1]			
	Alt C1[2]	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	--	8	--	8
Relocations – Single Family Residential	--	4	--	4
Relocations – Business	--	6	--	6
Relocations – Religious Facility/School	--	1	--	1
Total Wetlands (ac)	--	--	--	--
Floodplain (ac)	--	1	--	1
Agricultural Land (ac)	--	1	--	1
Upland Forest (ac)	--	--	--	--
Core Forest (ac)	--	--	--	--

1. *All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.*
2. *Alternative C1 assumes an elevated I-69 mainline, which is eliminated from consideration. See **Section 6.3.1.2**.*

Providing the Burton Lane overpass with Alternative C2/C4 would require 9 acres of new right of way with 11 relocations, including the Martinsville Baptist Tabernacle Church and Tabernacle Christian School at the northwest corner of Burton Lane and SR 37. Environmental impact would be limited to 1 acre of floodplain and 1 acre of agricultural land. Closing Burton Lane would avoid these costs and impacts, but the advantage of crossing I-69 would not be available.

Recommendation

Alternative C2/C4 was recommended in this decision area in the DEIS. It would maintain local circulation patterns in Martinsville and provide access from the center of Martinsville to the Liberty Church Road area south of Martinsville near Indian Creek.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area, and Goal 5 to support growth in economic activity in the Section 6 study area. A Burton Lane overpass would maintain the existing access to economic development areas east of Martinsville and would avoid the need for a new local service road between SR 39 and the Liberty Church Road area. See Decision Area 1-2. An overpass would comply with the preference of the City of Martinsville and most other stakeholders and public commenters that I-69 remain at the existing SR 37 elevation through Martinsville.

Decision Area 2-2: Ohio Street

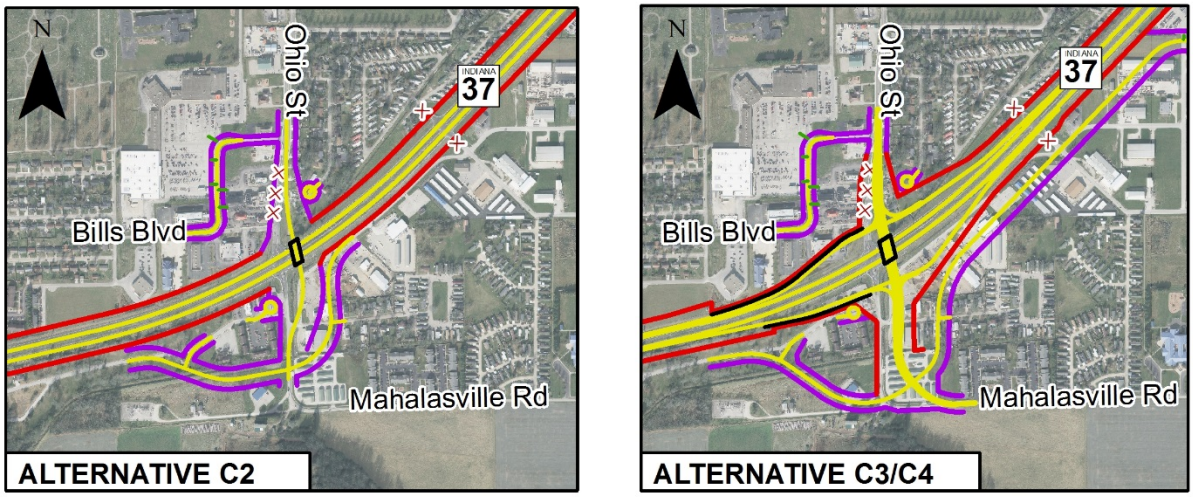
Decision

The objective in this decision area was to determine whether Ohio Street should be provided with an interchange at I-69 or be connected across I-69 with an overpass in the preferred alternative. An Ohio Street interchange was not included in Tier 1 as a potential interchange for I-69 Section 6, but it is included in the Martinsville Comprehensive Plan[3] and the Morgan County SR 37/SR 144 Corridor Plan.[4]

Alternatives (See **Figure 6-9**)

- C1: Ohio Street would pass under I-69. Alternative C1 is not consistent with the prior decision made in Subsection 2 decision areas, as discussed in **Section 6.3.1.2**.
- C2: No interchange would be provided and Ohio Street would pass over I-69.
- C3, C4: A diamond interchange with Ohio Street would be provided, with Ohio Street passing over I-69.

Figure 6-9: Decision Area 2-2 Configurations



Evaluation

Whether it is part of an overpass (Alternative C2) or an interchange (Alternative C3/C4), Ohio Street would be realigned slightly east to reduce impacts on commercial properties on the west, and local roadways would be realigned to intersect Ohio Street further from the bridge location. Environmental impacts, including right of way, of the alternatives are shown in **Table 6-16.**

Table 6-16: Environmental Impacts, Decision Area 2-2: Ohio Street

Impact Criteria	Decision Area 2-2 Impacts[1]			
	Alt C1[2]	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	--	18	42	42
Relocations – Single Family Residential	--	12	17	17
Relocations – Mobile Home	--	--	12	12
Relocations - Business	--	4	15	15
Total Wetlands (ac)	--	--	0.09	0.09
Total Streams (lf)	--	1,428	1,819	1,819
Floodplain (ac)	--	11	22	22
Upland Forest (ac)	--	--	--	--
Core Forest (ac)	--	--	--	--

1. *All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.*
2. *Alternative C1 assumes an elevated I-69 mainline, which is eliminated from consideration. See* ***Section 6.3.1.2****.*

As shown in **Table 6-16**, providing an interchange at Ohio Street would require more right of way with more relocations. It would also have greater environmental impact and cost more than constructing an overpass with no interchange ramps.

Recommendation

Alternative C3/C4 was recommended in this decision area in the DEIS. An interchange at Ohio Street is included in Martinsville and Morgan County transportation plans, and it is preferred by most stakeholders and public commenters. Adjacent interchanges at SR 39 and SR 252 serve the edges of Martinsville, whereas the Ohio Street interchange would provide service to the center of the city. East of the interchange, Ohio Street links with Mahalasville Road, which would link I-69 with Morgan County communities located south of SR 252, including Mahalasville, Helmsburg, and Bean Blossom.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area, Goal 3 to reduce future traffic congestion on the highway network of the Section 6 study area, Goal 4 to improve traffic safety in the Section 6 study area, and Goal 5 to support growth in economic activity in the Section 6 study area. An Ohio street interchange would provide direct access from I-69 to the Martinsville downtown area, as requested by the City of Martinsville and as shown in city and county transportation plans. An Ohio Street overpass rather than underpass at the interchange would comply with the local preference that I-69 remain at the existing SR 37 elevation through Martinsville.

Decision Area 2-3: Grand Valley Boulevard

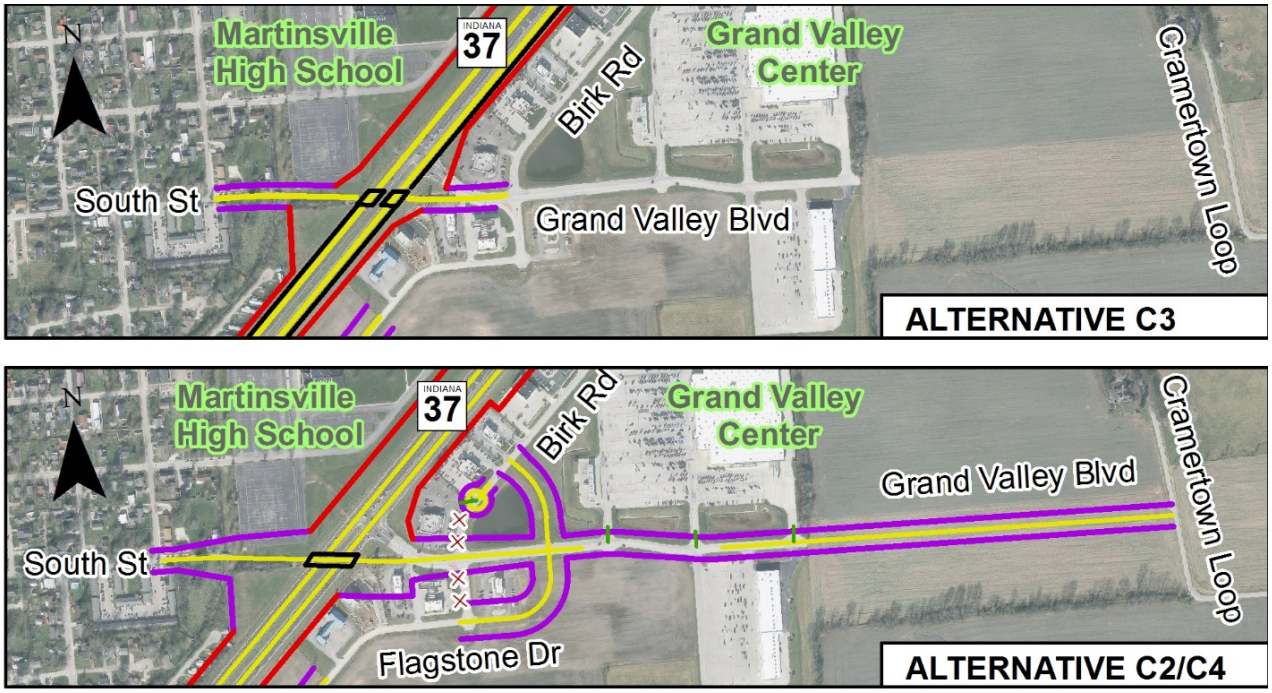
Decision

The objective in this decision area was to determine whether Grand Valley Boulevard should be extended east to connect to Cramertown Loop in the preferred alternative from its planned grade separation over I-69.

Alternatives (see **Figure 6-10**)

- C1: Grand Valley Boulevard would pass under I-69. Alternative C1 is not consistent with the prior decision made in Subsection 2 decision areas, as discussed in **Section 6.3.1.2**.
- C2, C4: Grand Valley Boulevard would pass over I-69, extended to Cramertown Loop
- C3: Grand Valley Boulevard would pass over I-69, not extended to Cramertown Loop.

Figure 6-10: Decision Area 2-3 Configurations



Evaluation

The Grand Valley Center and other retail developments in the vicinity will lose access to SR 37 when I-69 is constructed. A grade separation at Grand Valley Boulevard and local service road linkages parallel with SR 37 would meet local access needs of these properties, but access to I-69 to move north and south would be indirect and would require travel through residential neighborhoods of Martinsville. Extending Grand Valley Boulevard to Cramertown Loop with 1,500 feet of new local service road would eliminate this problem by providing a short, relatively direct path to the SR 252 interchange with I-69.

West of I-69, Grand Valley Boulevard would connect to South Street near Martinsville High School. Martinsville Schools requested that the Grand Valley Boulevard overpass be designed to minimize impacts to school parking lots and that Grand Valley Boulevard include sidewalks. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-17.**

Extending Grand Valley Boulevard to Cramertown Loop (Alternative C2/C4) would impact an additional 4 acres of agricultural land and 105 feet of stream, and it would add the cost of 1,500 feet of local service road construction.

Table 6-17: Environmental Impacts, Decision Area 2-3: Grand Valley Boulevard

Impact Criteria	Decision Area 2-3 Impacts[1]			
	Alt C1[2]	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	--	20	15	20
Relocations – Single Family Residential	--	2	2	2
Relocations – Duplex Unit	--	4	4	4
Relocations – Apartment Unit	--	4	4	4
Relocations – Business	--	3	3	3
Total Wetlands (ac)	--	0.07	0.07	0.07
Total Streams (lf)	--	1,062	1,167	1,062
Floodplain (ac)	--	1	1	1
Agricultural Land (ac)	--	5	1	5
Upland Forest (ac)	--	--	--	--
Core Forest (ac)	--	--	--	--

1. *All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.*
2. *Alternative C1 assumes an elevated I-69 mainline, which is eliminated from consideration. See **Section 6.3.1.2**.*

Recommendation

Alternative C2/C4 was recommended in this decision area in the DEIS. The extension of Grand Valley Boulevard to connect with Cramertown Loop would replace lost access to SR 37 in this area with a short, relatively direct path to I-69 at the new SR 252 interchange.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area, Goal 3 to reduce future traffic congestion on the highway network of the Section 6 study area, Goal 4 to improve traffic safety in the Section 6 study area, and Goal 5 to support growth in economic activity in the Section 6 study area. The extension of Grand Valley Boulevard to Cramertown Loop would replace lost access to the Grand Valley Shopping Center from SR 37 with a short, direct path to I-69 at the SR 252 interchange. A Grand Valley overpass of I-69 would comply with the local preference that I-69 remain at the existing SR 37 elevation through Martinsville.

Decision Area 2-4: SR 252 and SR 44 Interchange

Decision

The objective in this decision area was to determine what interchange layout should be included in the preferred alternative at SR 252 and SR 44. As described in **Section 3.6.2.2**, all alternatives would provide a “split diamond” configuration with connections to both roadways in the same

interchange. Ramp configurations differed in the priority they would provide to the connecting roadways.

Alternatives (See **Figure 6-11** and **Figure 6-12**)

- C1: A modified split diamond configuration would be used and Kristi Road would be closed at SR 44. This layout would allow vehicles access between SR 252 and I-69 in both directions without passing through the ramp terminal intersections at SR 44. Kristi Road would be closed at Reuben Drive since the intersection would be too close to the SR 44 interchange to provide safe traffic operation. Vehicles on the northbound access road from SR 252 to SR 44 could enter northbound I-69 or turn right onto eastbound SR 44. I-69 would pass over SR 252/Hospital Drive and under SR 44/Reuben Drive.

- C2, C3: A standard split diamond configuration would be used and Kristi Road would be open with right turn in, right turn out operation at Reuben Drive. This layout would allow vehicles to enter I-69 from either SR 44 or SR 252 without passing through the ramp terminal intersections at the other cross street. I-69 would pass under both SR 252/Hospital Drive and SR 44/Reuben Drive.

- C4: This alternative is the same as Alternative C1, except that vehicles traveling on the northbound access road from SR 252 would be allowed to turn left onto Reuben Drive. The Kristi Road intersection at Reuben Drive would also remain open, with right-turn in, right-turn out operation.

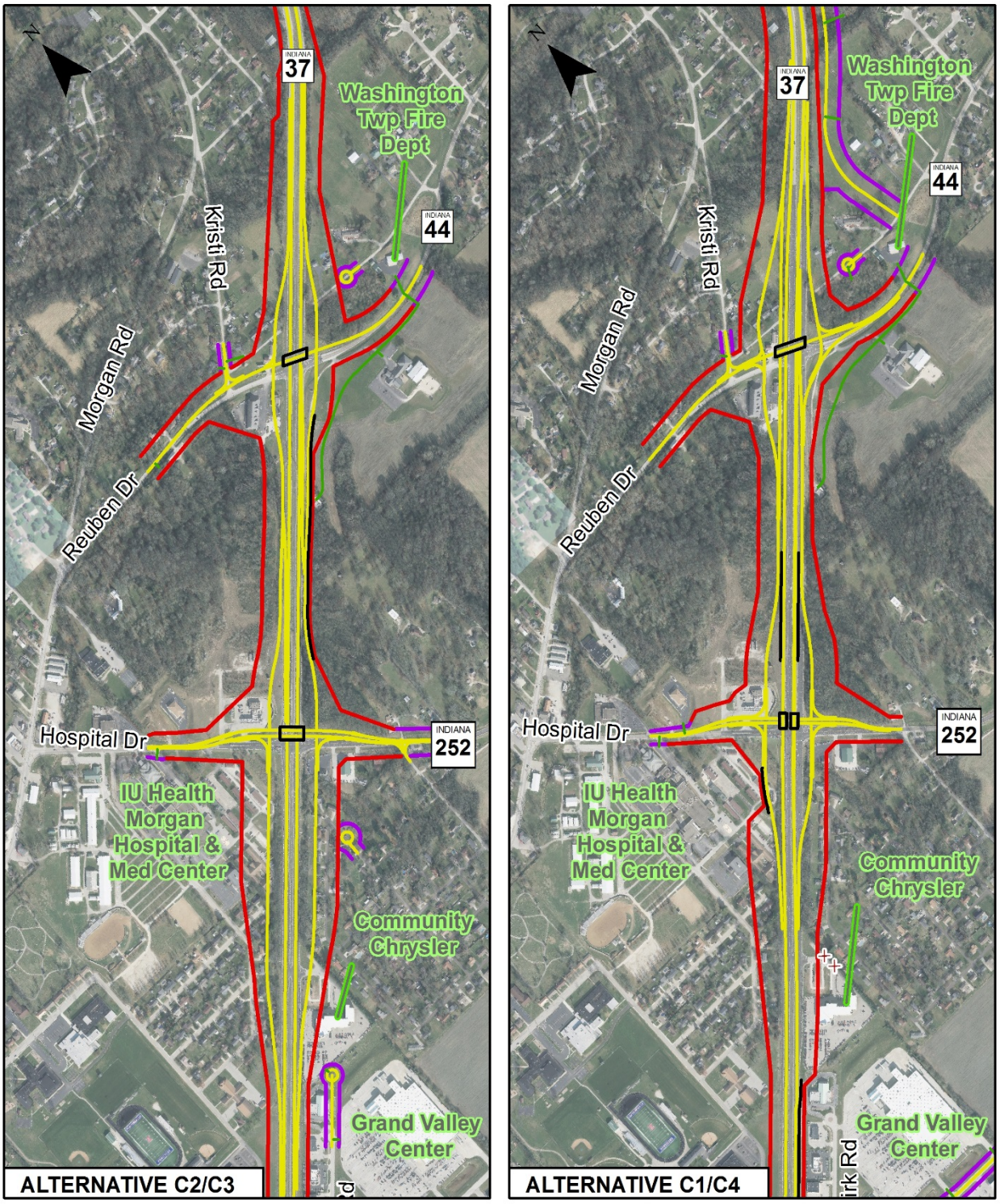
Evaluation

Split diamond interchange layouts are used when access is needed at two crossing roadways that are too close together to operate independently. The ramps on each end of the interchange are standard diamond ramps, and access roads are added between the cross roads to allow the ramps to be used from either crossing road. The alternatives vary in how these access roads are configured within the interchange area.

The alternatives also differ in the treatment of Kristi Road, which currently intersects Reuben Drive immediately west of SR 37. This intersection would be too close to the interchange ramp terminal intersection to maintain full access once I-69 is in place. The intersection is closed in Alternative C1 and right turn in/right turn out operation is provided with Alternatives C2, C3, and C4 since the complete loss of access to Kristi Road would impede emergency vehicle access.

Environmental impacts of the alternatives, including right of way, are shown in **Table 6-18**. As shown in **Table 6-18**, Alternative C2/C3 would require more right of way and cause more relocations than Alternatives C1 or C4. This is due to the longer interchange ramps south of the interchange. SR 252 would pass over I-69 with Alternative C2/C3, so the south ramps would start at a higher elevation than I-69. With I-69 on a downslope, a longer distance would be required to join I-69. With Alternative C1 and C4, ramps would be starting at a lower elevation than I-69, allowing them to join the mainline closer to SR 252.

Figure 6-11: Decision Area 2-4 Configurations



Alternative C4 would have one more business relocation than Alternative C1 because the mainline of Alternative C1 would be elevated above existing SR 37 just north of Grand Valley Boulevard and would use a retaining wall to avoid impacts to the Community Chrysler auto dealership, which is located immediately south of the northbound I-69 exit ramp.

Alternative C1 would have lower stream impacts since there would be no construction on Kristi Road. Other environmental impacts would be similar. Alternative C2/C3 would have lower cost due to the shorter ramps south of SR 252 and the requirement for less right of way and fewer relocations.

Figure 6-12: Kristi Road Intersection Variation - C4

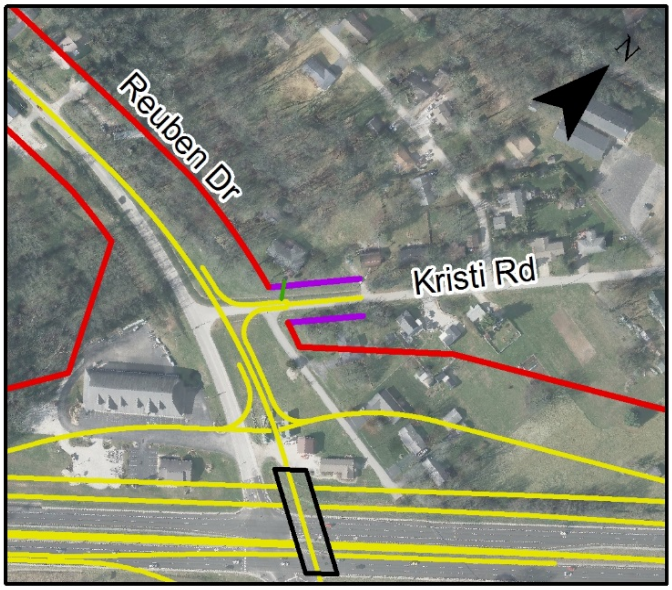


Table 6-18: Environmental Impacts, Decision Area 2-4: SR 252 and SR 44 Interchange

Impact Criteria	Decision Area 2-4 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	44	57	56	44
Relocations – Single Family Residential	30	37	35	30
Relocations – Duplex Unit	2	2	2	2
Relocations – Apartment Unit	--	8	8	--
Relocations – Business	12	18	18	13
Relocations – Non-Profit	--	1	1	--
Total Streams (lf)	540	1,024	758	1,063
Total Wetlands (ac)	--	--	--	--
Agricultural Land (ac)	1	1	1	1
Upland Forest (ac)	13.6	11.2	10.2	13.9
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C4 was recommended in this decision area in the DEIS. The modified split diamond interchange would prioritize movements to and from SR 252, which serves around 12,000 vehicles per day east of SR 37, compared to about 3,000 vehicles per day on SR 44. Access to Kristi Road from SR 44 was requested by the Washington Township Fire Department to reduce emergency response times north of SR 44 and west of I-69. This alternative includes an I-69 overpass at SR 252/Hospital Drive, which would allow ramps to the south to be shorter. This overpass was also requested by the City of Martinsville to enhance the vista from I-69 as a gateway to Martinsville.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area and Goal 4 to improve traffic safety in the Section 6 study area. A modified split diamond interchange would allow direct access between I-69 and SR 252 in both directions, without requiring travel through the SR 44 ramp terminal intersections. It would provide direct access from I-69 northbound to Reuben Drive and would allow westbound emergency responders to use Kristi Road to serve areas west of I-69 (e.g., Foxcliff subdivisions).

Decision Area 2-5: Twin Branch Road/Cikana State Fish Hatchery

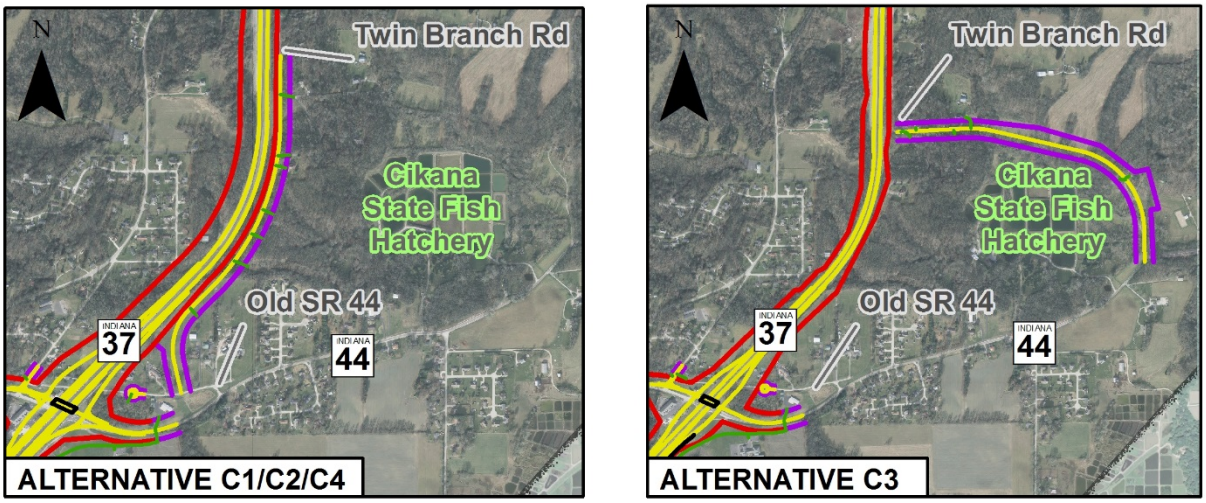
Decision

The objective in this decision area was to determine how access should be provided in the preferred alternative to the part of Cikana State Fish Hatchery located north of SR 44 and to residences along Twin Branch Road.

Alternatives (see **Figure 6-13**)

- C1, C2, C4: Extend Twin Branch Road south to Old SR 44 along the east side of I-69.
- C3: Extend new North Local Service Road to connect Twin Branch Road to SR 44 around the east side of the Cikana State Fish Hatchery south ponds.

Figure 6-13: Decision Area 2-5 Configurations



Evaluation

Twin Branch Road provides access from SR 37 to several residences east of SR 37. Access from SR 37 to the portion of Cikana State Fish Hatchery located immediately adjacent to SR 37 is provided by a private drive located just north of Twin Branch Road. Both Twin Branch Road and the drive to Cikana State Fish Hatchery would be closed with construction of I-69, and access would be provided to these areas by extending Twin Branch Road to the south. Alternative C1/C2/C4 would extend Twin Branch Road along the edge of I-69 until it intersects with Old SR 44. With Alternative C3, the Twin Branch extension would extend east around the east side of the Cikana State Fish Hatchery south ponds to intersect SR 44 further east. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-19**.

As shown in **Table 6-19**, extending Twin Branch Road to Old SR 44 next to I-69 (Alternative C1/C2/C4) rather than around the fish hatchery ponds (Alternative C3) would require less right of way and require no relocations. It would also have less impact on streams, floodplain, and agricultural land. Alternative C3 would avoid impacts to core forest but it would impact twice the upland forest of the other alternative. Alternative C1/C2/C4 would cost less since the local service road would be shorter and would require less right of way.

Recommendation

Alternative C1/C2/C4 was recommended in this decision area in the DEIS. The Twin Branch Road extension along the I-69 right of way would perform well, and require less right of way and no relocations, cost less, and have less environmental impact.

Table 6-19: Environmental Impacts, Decision Area 2-5: Twin Branch Rd/Cikana State Fish Hatchery

Impact Criteria	Decision Area 2-5 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	14	14	22	14
Relocations – Single Family Residential	--	--	2	--
Total Wetlands (ac)	--	--	0.17	--
Total Streams (lf)	215	215	1,335	215
Floodplain (ac)	--	--	10	--
Agricultural Land (ac)	--	--	2	--
Managed Land – Publicly Owned (ac)	--	--	0.4	--
Upland Forest (ac)	4.7	4.7	9.7	4.7
Core Forest (ac)	0.3	0.3	--	0.3

1. All impacts shown are outside the I-69 right of way. I-69 mainline impacts are not included in this table.

Rationale

Either alternative would be effective in meeting Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area, but the proposed alignment of Twin Branch Road along the east side of I-69 would provide the most direct access to the local service road at Cikana Fish Hatchery and nearby residences at the least cost and with the lowest level of natural impacts.

Total Subsection 2 Impacts

Table 6-20 shows a comparison of the total Subsection 2 environmental impacts for each alternative in the DEIS. This includes the impacts of interchanges and local service roads described in the decision areas combined with the impacts of the preferred Mainline Option M2 in this subsection.

Table 6-20: Environmental Impacts, Subsection 2; SR 39 to Morgan Street (DEIS)

Impact Criteria	Subsection 2 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	129	148	166	159
Relocations (units)				
Residential - Single Family	48	56	56	54
Residential – Duplex Units	6	6	6	6
Residential - Mobile Homes	--	29	13	29
Residential – Apartment Units	4	12	12	4
Business	22	31	36	37
Religious Facility/School	--	1	--	1
Non-Profit	--	1	1	--
Total Relocations	80	136	124	131
Total Wetlands (ac)	0.17	0.08	0.34	0.17
Total Streams (lf)	10,242	11,007	12,357	11,437
Floodplain (ac)	39	36	56	47
Agricultural Land (ac)	2	8	5	8
Upland Forest (ac)	28	26	30	29
Core Forest (ac)	0.3	0.3	--	0.3

1. *Impacts for subsections include all impacts in the I-69 right of way. I-69 mainline impacts are included in this table, based on the selection of Mainline Option M2 as the preferred mainline option. See **Section 6.3.1.6** for description of the preferred mainline option.*

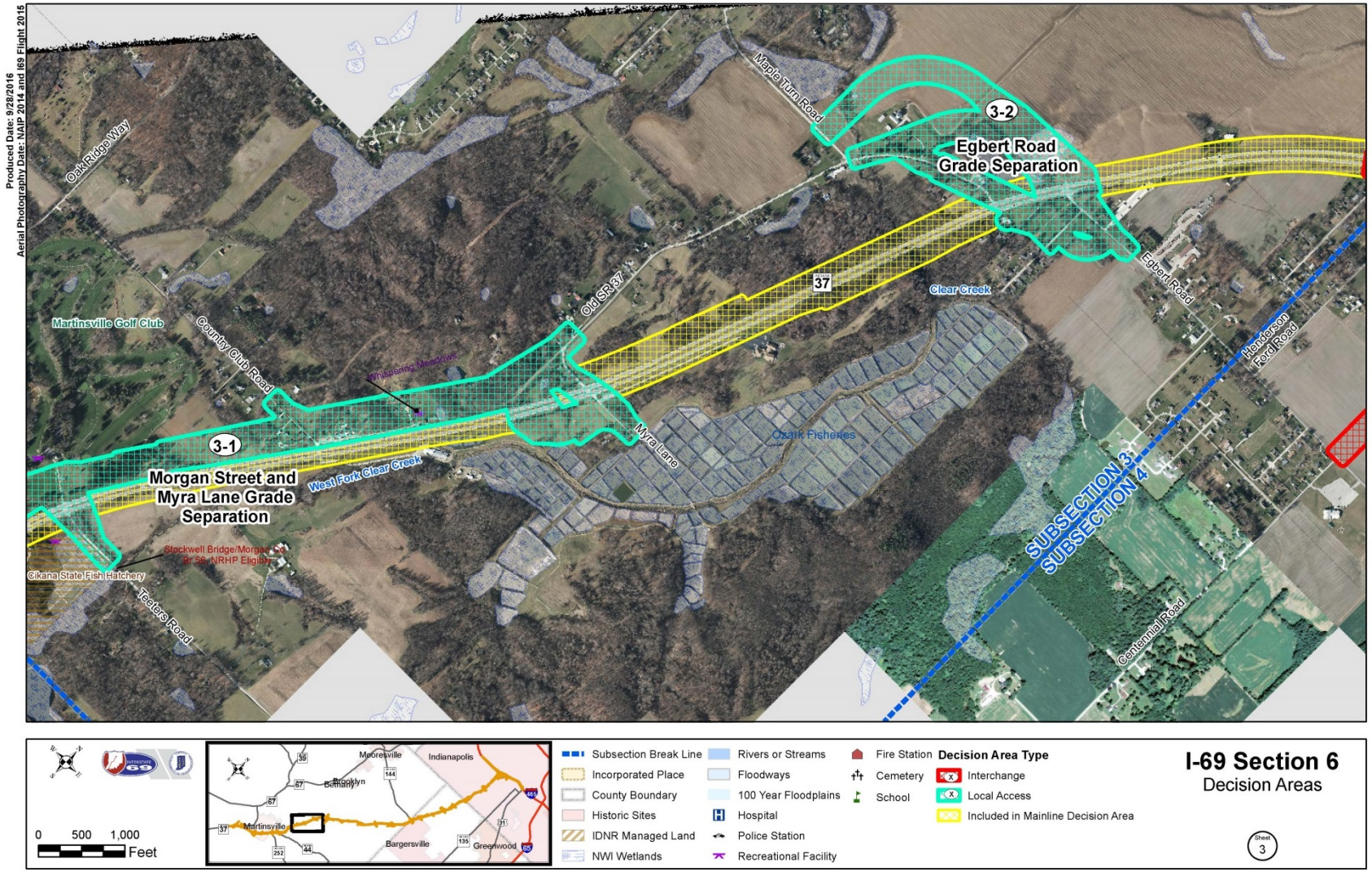
6.3.2.3 Subsection 3: Morgan Street to Henderson Ford Road

Subsection 3, from Morgan Street/Twin Branch Road to Henderson Ford Road, passes through low density residential areas and scattered woodlands. Major land uses are the Martinsville Golf Club west of SR 37, and the Cikana and Ozark fish hatcheries east of SR 37. The Prince of Peace Lutheran Church is located on Morgan Street just west of SR 37, and the First United Methodist Church is located adjacent east of SR 37 between Myra Lane and Egbert Road.

Local access needs in Subsection 3 would be addressed in all alternatives with a new local service road linking Morgan Street with Old SR 37 on the west side of I-69, and new grade separations across I-69 at Teeters Road, Myra Lane, and Egbert Road. The alternatives differed in how local service roads were configured and how the Myra Lane and Egbert Road crossings were designed. This subsection includes the following decision areas (see **Figure 6-14**).

- Decision Area 3-1. Morgan Street connection and Myra Lane grade separation
- Decision Area 3-2. Egbert Road grade separation

Figure 6-14: Decision Area Locations - Subsection 3



Decision Area 3-1: Morgan Street Connection and Myra Lane Grade Separation

Decision

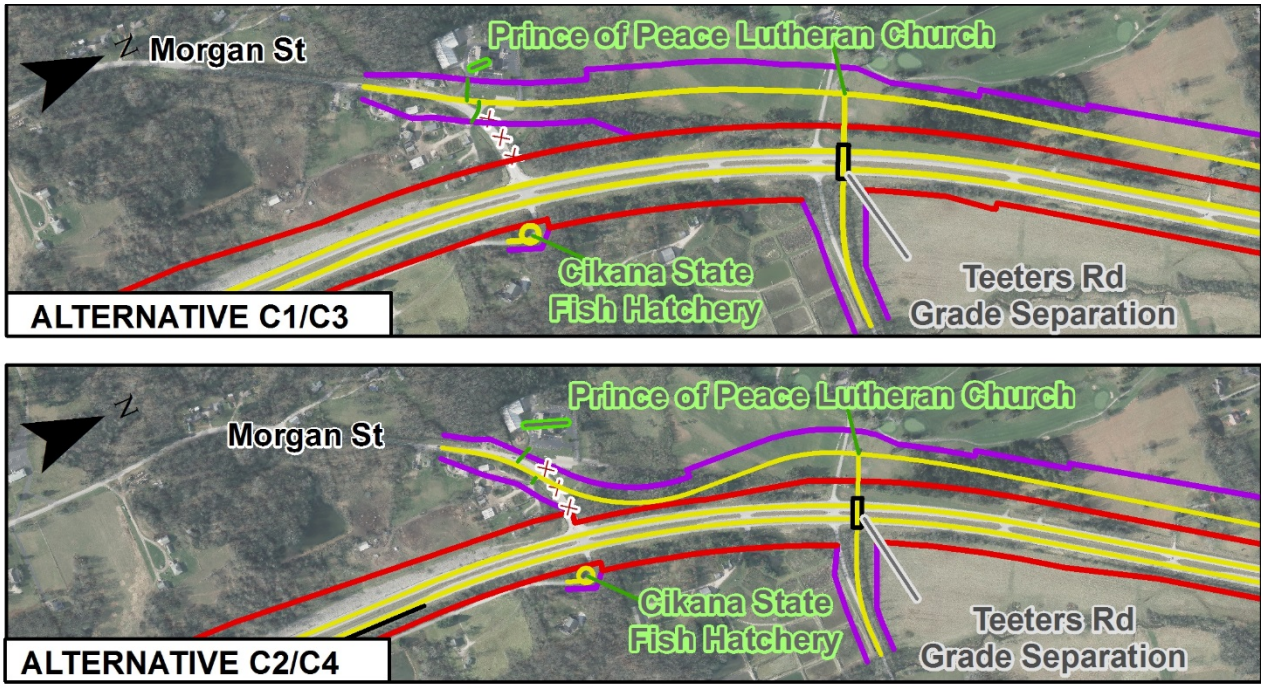
The objective in this decision area was to determine how the Morgan Street extension should be aligned near the Prince of Peace Lutheran Church in the preferred alternative, and whether the Myra Lane grade separation of I-69 should be an overpass or an underpass. The alignment at Prince of Peace Lutheran Church is evaluated first, followed by an evaluation of whether the Myra grade separation should be an overpass or underpass. The Morgan Street extension would intersect with a new Teeters Road overpass across I-69 with all alternatives.

Morgan Street Extension at Prince of Peace Lutheran Church

Alternatives (see **Figure 6-15**)

- C1, C3: Morgan Street would be extended straight through the parking area of the Prince of Peace Lutheran Church.
- C2, C4: The Morgan Street extension would be shifted closer to I-69 to avoid the parking area of the Prince of Peace Lutheran Church.

Figure 6-15: Decision Area 3-1 Configurations at Morgan Street



Evaluation

The alignment of the Morgan Street extension around the church parking area (Alternative C2/C4) was added as an option based on public input on the initial alternatives presented for I-69 Section 6. In the immediate area of the church parking area, the realignment would require about 3 fewer acres of new right of way and would avoid the relocation of one residence. Impacts to the natural environment would be the same for all the options. Alternative C2 or Alternative C4 was recommended in the DEIS since they would reduce impact to the church with no appreciable added cost or environmental impact. These alternatives were considered further since they differ at the Myra Lane overpass, as described below.

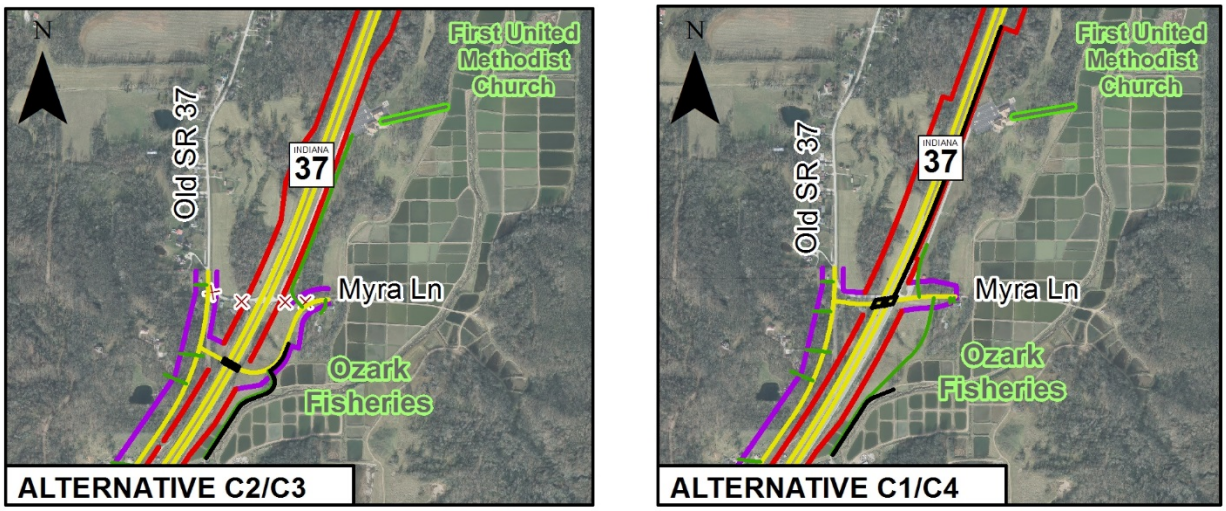
Myra Lane Overpass or Underpass

Alternatives (see **Figure 6-16**)

- C2: The Morgan Street extension would link with Old SR 37 near Myra Lane, and Myra Lane would pass over I-69.

- C4: The Morgan Street extension would link with Old SR 37 near Myra Lane, and Myra Lane would pass under I-69

Figure 6-16: Decision Area 3-1 Configurations at Myra Lane



Evaluation

If a Myra Lane overpass is provided, as in Alternative C2, Myra Lane would be shifted south of the current crossing location to allow more room to elevate the road over I-69 and to maintain access to First United Methodist Church and Ozark Fisheries. The driveway to Ozark Fisheries would be on a steep slope and would intersect Myra Lane on a curve.

Myra Lane would stay on its current alignment with an underpass (Alternative C4). Since Myra Lane currently approaches SR 37 from a lower elevation on each side, the underpass would cost less and require one acre less new right of way than the Myra Lane overpass of Alternative C2. Access roads to First United Methodist Church and Ozark Fisheries would stay where they are with a Myra Lane underpass, and Alternative C4 would be safer than Alternative C2 because Myra Lane would not be as steep or curved and would not have driveways intersecting the road at curves. Impacts to the natural environment would not differ for the alternatives at this location.

Total Decision Area

Environmental impacts of the alternatives, including right of way, are shown for the entire decision area including the Morgan Street extension and the Myra Lane grade separation in **Table 6-21**. As the table shows, Alternatives C2 and C4 would have nearly the same right of way needs and nearly the same impact on the environment. The cost of the Myra Lane underpass would be slightly less than an overpass due to the lower elevation of Myra Lane and the reduced length of local service road construction.

Table 6-21: Environmental Impacts, Decision Area 3-1: Morgan Street and Myra Lane

Impact Criteria	Decision Area 3-1 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	58	56	67	55
Relocations – Single Family Residential	12	11	11	12
Relocations – Business	1	1	1	1
Total Wetlands (ac)	2.0	1.6	2.5	1.6
Total Streams (lf)	2,079	1,761	2,200	1,771
Floodplain (ac)	7	7	10	7
Agricultural Land (ac)	8	7	8	7
Managed Land – Publicly Owned (ac)	1.5	2.4	1.1	2.4
Upland Forest (ac)	14.7	14.9	16.2	15.4
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

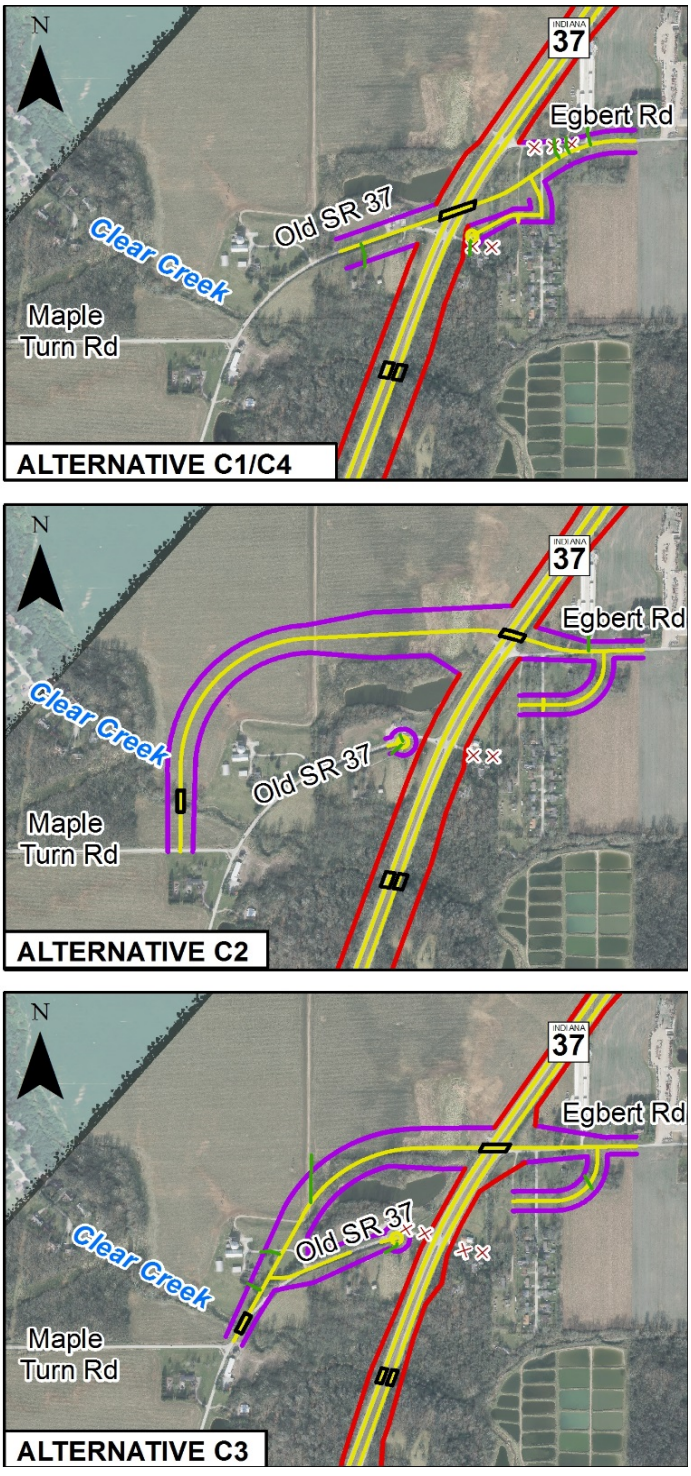
Recommendation

Alternative C4 was recommended in this decision area in the DEIS. It includes the realignment of the Morgan Street extension, which would reduce the impacts to church parking and utilities. It also includes an underpass of Myra Lane at I-69, which would provide a safer and more direct connection than an overpass. These benefits would be attained with construction cost, right of way need, and environmental impact at similar levels as the other alternatives.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area and Goal 4 to improve traffic safety in the Section 6 study area. The Morgan Street extension would avoid the Prince of Peace Lutheran Church parking area, and the Myra Lane underpass would be safer and more direct than an overpass, requiring less right of way, with lower wetland, stream, and floodplain impact.

Figure 6-17: Decision Area 3-2 Configurations



Decision Area 3-2: Egbert Road Grade Separation

Decision

The objective in this decision area was to determine what alignment should be in the preferred alternative for the Egbert Road overpass of I-69. All alternatives would connect Egbert Road to Old SR 37, but some would provide a more direct path than others, and the alternatives would have different costs and impacts.

Alternatives (See **Figure 6-17**)

- C1/C4: Egbert Road would cross I-69 heading southwest and connect to Old SR 37 on the alignment of Old SR 37.
- C2: Egbert Road would cross I-69 heading due west and then curve south around an existing pond to intersect Maple Turn Road just west of Old SR 37.
- C3: Egbert Road would cross I-69 as in Alternative C2, but it would turn south to link directly with Old SR 37.

Evaluation

The alternatives that cross I-69 heading due west, then curve south (Alternatives C2 and C3) would require a new bridge structure over Clear Creek. Alternative C2 would provide an indirect connection between Old SR 37 and Egbert Road, requiring traffic to jog onto Maple Turn Road. The alternative that crosses I-69 heading southwest (Alternative C1/C4) would cross at a skew, requiring a longer bridge structure, but the more direct alignment would require fewer miles of new local service road.

Environmental impacts of the alternatives, including right of way, are shown in **Table 6-22.** As shown in **Table 6-22**, Alternative C1/C4 would require less than half the area of new right of way needed for the other two alternatives, with similar relocations. The cost of Alternative C1/C4 would be lower since there would be less roadway construction and less right of way needed. The additional cost for a skewed bridge with Alternative C1/C4 would be offset by avoiding the need to construct a new bridge structure at Clear Creek. The environmental impact of Alternative C1/C4 would be less in all categories.

Table 6-22: Environmental Impacts, Decision Area 3-2: Egbert Road Grade Separation

Impact Criteria	Decision Area 3-2 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	14	28	27	14
Relocations – Single Family Residential	2	2	3	2
Relocations – Business	2	1	1	2
Total Wetlands (ac)	--	1.79	2.32	--
Total Streams (lf)	--	210	156	--
Floodplain (ac)	10	24	22	10
Agricultural Land (ac)	1	20	10	1
Upland Forest (ac)	--	0.1	2.9	--
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C1/C4 was recommended in this decision area in the DEIS. It was the most direct and cost-effective option, it required the least new right of way, and it had the fewest environmental impacts.

Rationale

All alternatives would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area, but the Egbert Road/Old SR 37 overpass

would be more direct than other alternatives, and would require less right of way, with lower wetland, stream, and floodplain impact.

Total Subsection 3 Impacts

Table 6-23 shows a comparison of the total Subsection 3 impacts identified for each alternative in the DEIS. This includes the impacts of interchanges and local service roads described within the decision areas combined with the impacts of the preferred Mainline Option M2 within this subsection.

Table 6-23: Environmental Impacts, Subsection 3: Morgan Street to Henderson Ford Road (DEIS)

Impact Criteria	Subsection 3 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	111	123	133	108
Relocations (units)				
Residential - Single Family	17	18	19	17
Business	3	3	3	3
Total Relocations	20	21	22	20
Total Wetlands (ac)	3.40	4.77	6.20	2.98
Total Streams (lf)	4,437	4,329	4,714	4,129
Floodplain (ac)	49	63	64	49
Agricultural Land (ac)	13	31	22	12
Managed Land – Publicly Owned (ac)	2	3	2	3
Upland Forest (ac)	35	35	39	36
Core Forest (ac)	2.1	2.1	2.1	2.1

1. *Impacts for subsections include all impacts in the I-69 right of way. I-69 mainline impacts are included in this table, based on the selection of Mainline Option M2 as the preferred mainline option. See* ***Section 6.3.1.6*** *for description of the preferred mainline option.*

6.3.2.4 Subsection 4: Henderson Ford Road to Banta Road (Morgan Co)

Subsection 4, from Henderson Ford Road to Banta Road in Morgan County, is the longest of the I-69 Section 6 subsections. Most of the corridor is agricultural with limited development except at the north end near the town of Waverly. The White River parallels this subsection to the west, passing close to the I-69 alignment in the vicinity of New Harmony Road.

One interchange is included in Subsection 4, at Henderson Ford Road. Other local access needs in Subsection 4 would be addressed with local service road segments at selected locations on each side of I-69, and by new grade separations across I-69 at Perry Road (some alternatives),

Big Bend Road, and Waverly Road or Whiteland Road. The alternatives differed in the layout of the Henderson Ford Road interchange, and in the location and layout of local service roads and grade separations. This subsection includes the following decision areas (see **Figure 6-19** through **Figure 6-21**).

- Decision Area 4-1. Henderson Ford Road interchange design
- Decision Area 4-2. New Harmony Road connection
- Decision Area 4-3. Perry Road grade separation or closure
- Decision Area 4-4. Waverly Road or Whiteland Road grade separation

Decision Area 4-1: Henderson Ford Road Interchange

Decision

The objective in this decision area was to determine what interchange layout should be used in the preferred alternative at Henderson Ford Road/Centennial Road.

Alternatives (see **Figure 6-18**)

- C1, C2, and C4 would use a standard diamond interchange, with a spacing of approximately 800 feet between the ramp terminal intersections.
- C3 would use a tight diamond interchange, with a spacing of approximately 350 feet between the ramp terminal intersections.

Figure 6-18: Decision Area 4-1 Configurations

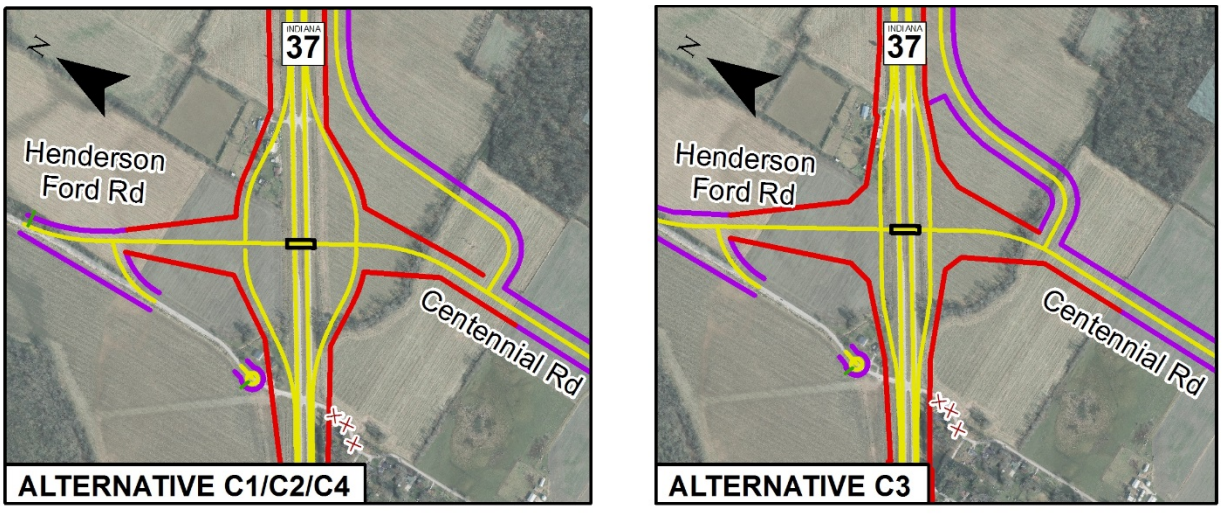


Figure 6-19: Decision Area Locations - Subsection 4 (Part 1)

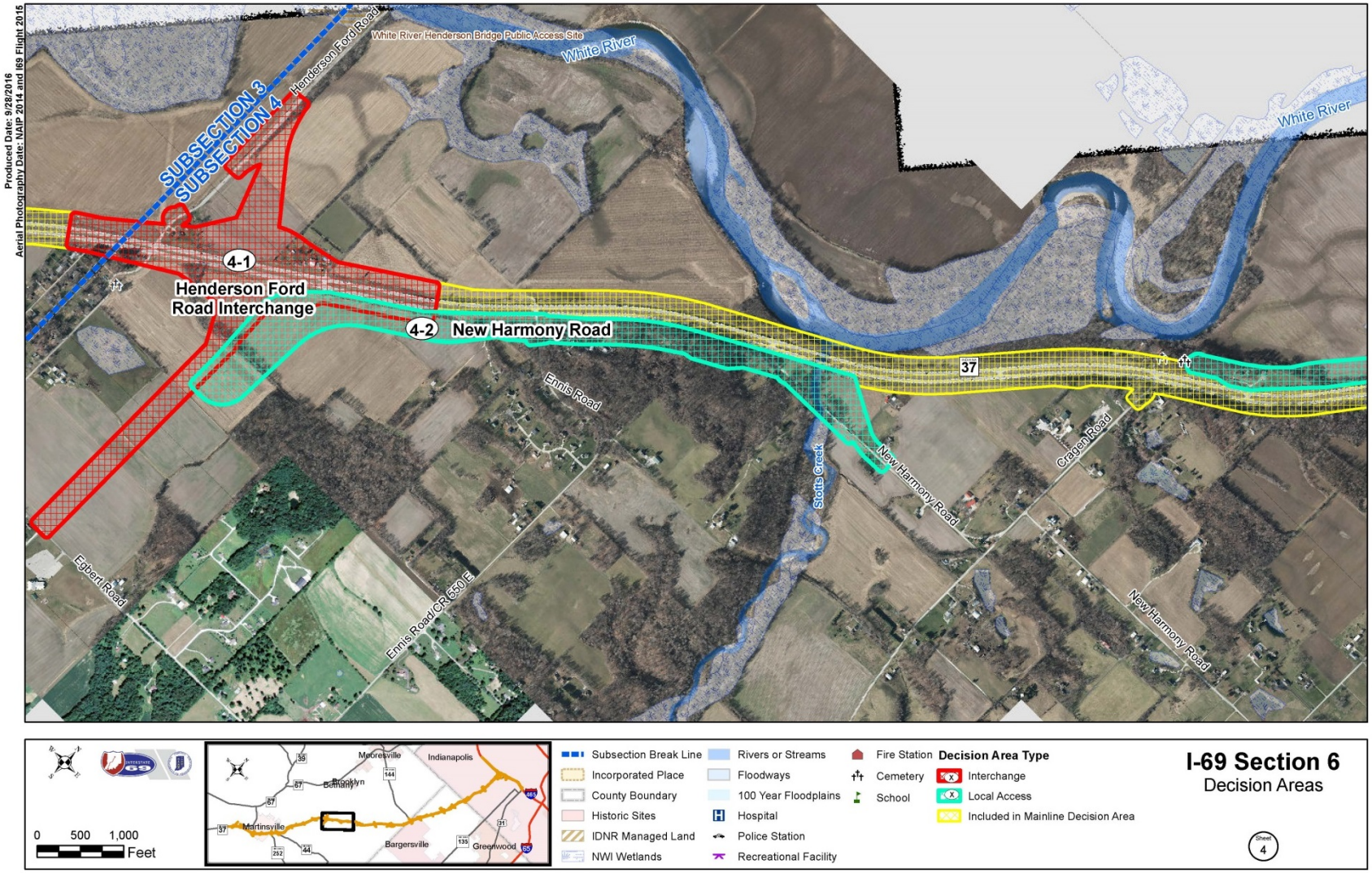


Figure 6-20: Decision Area Locations - Subsection 4 (Part 2)

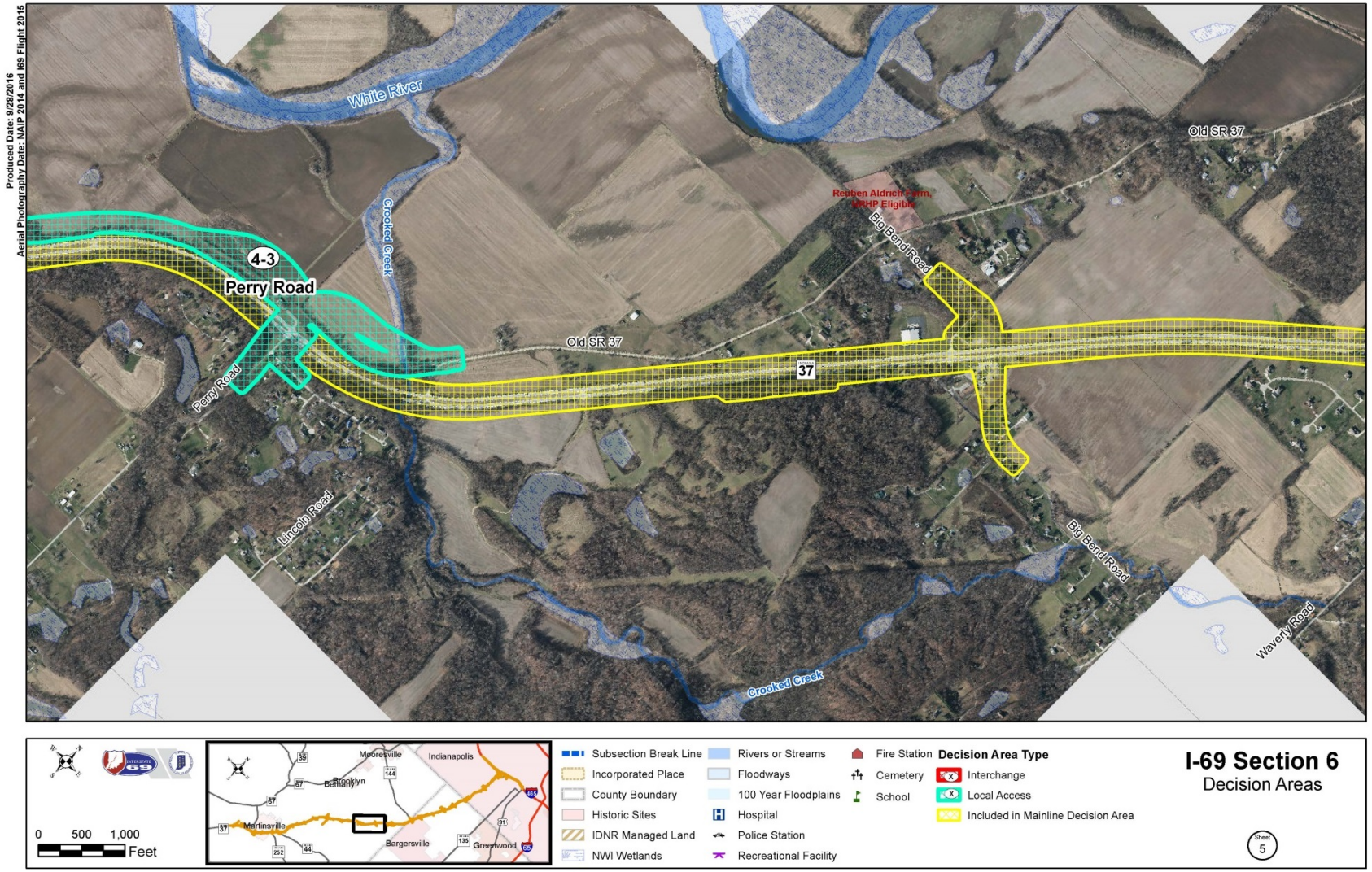
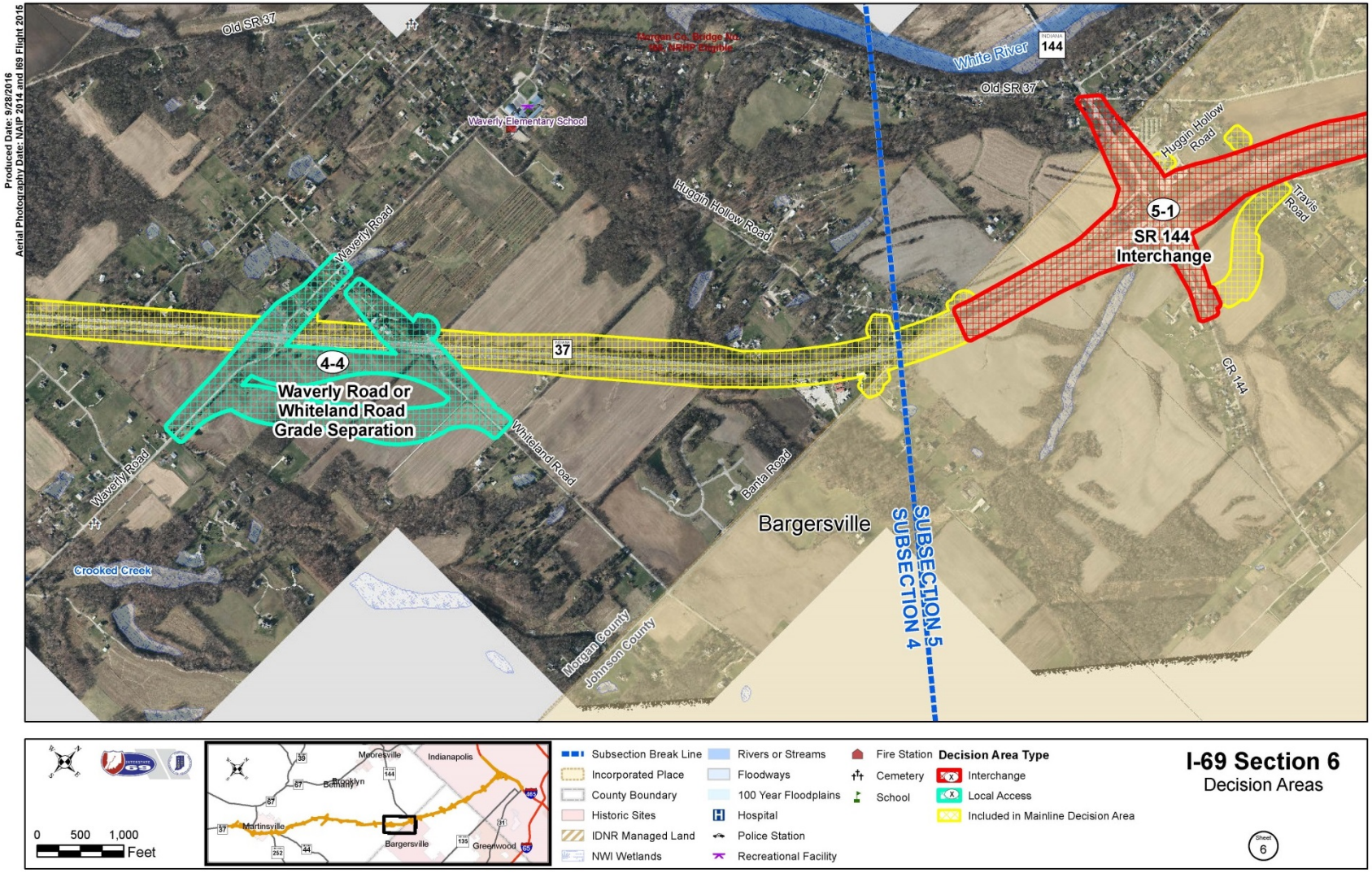


Figure 6-21: Decision Area Locations - Subsections 4 and 5



Evaluation

A standard (wide) diamond is preferred in rural areas, with sufficient distance between intersections at the end of ramps to provide good sight distance and allow space to add loop ramps if needed. This flexibility may be needed in the future to serve commercial needs of the nearby tax increment finance district. A tight diamond interchange configuration provides less long-term flexibility and is typically used in urban areas where space is at a premium. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-24**.

As shown in **Table 6-24**, new right of way, stream impact, and agricultural land impacted would be somewhat higher for Alternative C1/C2/C4. The cost would also be higher due to longer ramps, but structure costs, a major portion of total interchange cost, would be the same.

Table 6-24: Environmental Impacts, Decision Area 4-1: Henderson Ford Road Interchange

Impact Criteria	Decision Area 4-1 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	49	49	42	49
Relocations – Single Family Residential	3	3	2	3
Relocations – Business	1	1	1	1
Total Wetlands (ac)	0.16	0.16	0.16	0.16
Total Streams (lf)	1,646	1,646	1,544	1,646
Floodplain (ac)	6	6	6	6
Agricultural Land (ac)	43	43	36	43
Upland Forest (ac)	--	--	--	--
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C1/C2/C4 was recommended in this decision area in the DEIS. The standard diamond interchange would cost slightly more and have slightly more impact than the tight diamond, but it would be more flexible for responding to future development needs and increased traffic volumes.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area and Goal 5 to support growth in economic activity in the Section 6 study area. The full diamond interchange at Henderson

Ford Road would provide flexibility for development in a tax increment finance district and accommodate future traffic growth.

Decision Area 4-2: New Harmony Road

Decision

The objective in this decision area was to determine what local service road configuration should be provided in the preferred alternative on the east side of I-69 in the vicinity of New Harmony Road. Ennis Road, New Harmony Road, and Cragen Road would be closed at I-69, reducing local network mobility and eliminating access to existing development east of SR 37. The alternatives varied in the extent of local travel options provided.

Alternatives (see **Figure 6-22**)

- C1: New Harmony Road would be extended across a new bridge over Stotts Creek to access otherwise landlocked parcels, with no new local service road east of I-69.
- C2, C4: A new local service road would be constructed along the east side of I-69 from Centennial Road to New Harmony Road, including a new bridge over Stotts Creek. New Harmony Road would be realigned at Stotts Creek to reduce the impact on the waterway.
- C3: New Harmony Road would be extended across a new bridge over Stotts Creek to provide access to otherwise landlocked residences, and a new local service road would be constructed along the east side of I-69 from Centennial Road to Ennis Road.

Evaluation

Ennis Road and New Harmony Road would be closed at SR 37 with I-69 construction, requiring new access to properties currently served by these roadways. Ennis Road connects with the local roadway network via Egbert Road, approximately 1.3 miles away from SR 37. New Harmony Road is closed at Stotts Creek, with no other outlet. Reestablishing the New Harmony link with a Stotts Creek Bridge (Alternative C1) would eliminate landlocked parcels, but would not by itself shorten trips between the affected area and most destinations. The local service road connections with the other alternatives provide direct travel paths for properties that would lose access due to I-69.

Environmental impacts of the alternatives, including right of way, are shown in **Table 6-25**. As shown in **Table 6-25**, the amount of new right of way needed and environmental impacts for the alternatives would vary according to the extent of new roadway being constructed. Alternative C2/C4 would include the greatest length of new roadway and would have the greatest impact, particularly with respect to forest property located along I-69. New Harmony Road would be realigned at Stotts Creek with Alternative C2/C4 to reduce the impact on wetlands.

The cost of the alternatives would also vary in proportion to the length of new roadway. Alternative C1 would include only bridge approaches at Stotts Creek. Alternative C3 and Alternative C2/C4 would require 0.8 miles and 1.7 miles of new roadway, respectively.

Figure 6-22: Decision Area 4-2 Configurations

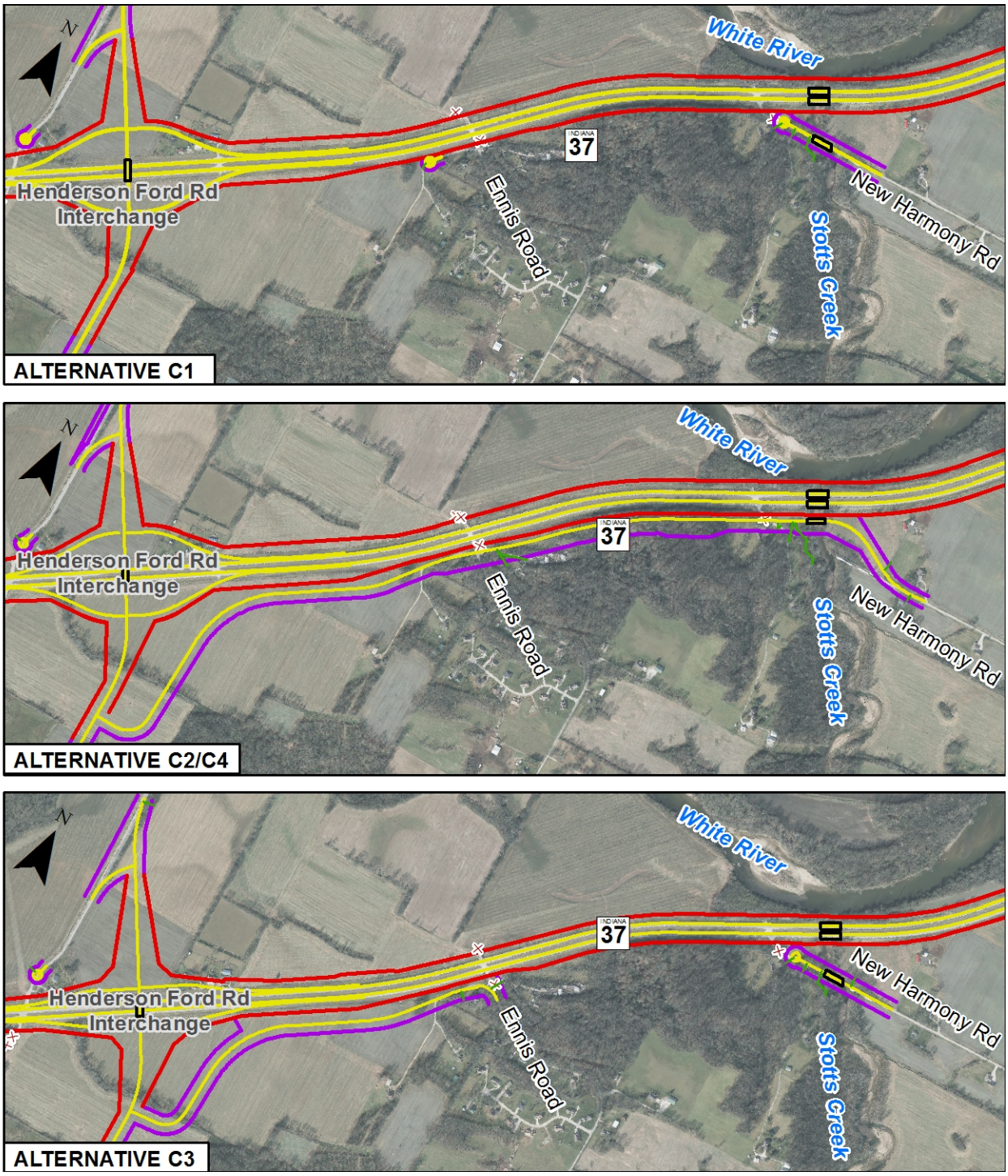


Table 6-25: Environmental Impacts, Decision Area 4-2: New Harmony Road

Impact Criteria	Decision Area 4-2 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	4	47	30	47
Relocations – Single Family Residential	--	2	--	2
Total Wetlands (ac)	0.33	0.15	0.38	0.15
Total Streams (lf)	736	1,052	1,124	1,052
Floodplain (ac)	3	5	3	5
Agricultural Land (ac)	--	26	23	26
Upland Forest (ac)	--	6.7	--	6.7
Core Forest (ac)	--	4.0	--	4.0

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C2/C4 was recommended in this decision area in the DEIS. The 1.7-mile local service road would reduce travel time to and from I-69 for a large area, including properties as far east as Lincoln Road and Cadillac Drive. This local service road was supported by Morgan County, emergency responders, the Martinsville School Corporation, and public comments to provide travel options through this area. The realignment of New Harmony Road at Stotts Creek was suggested by environmental resource agencies to reduce impacts on the waterway. It would allow for construction of a shorter and less expensive Stotts Creek bridge.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area. The New Harmony Road link with Centennial Road would reduce local travel over the county road system for motorists that currently rely on SR 37, addressing a concern expressed by residents at public meetings.

Decision Area 4-3: Perry Road

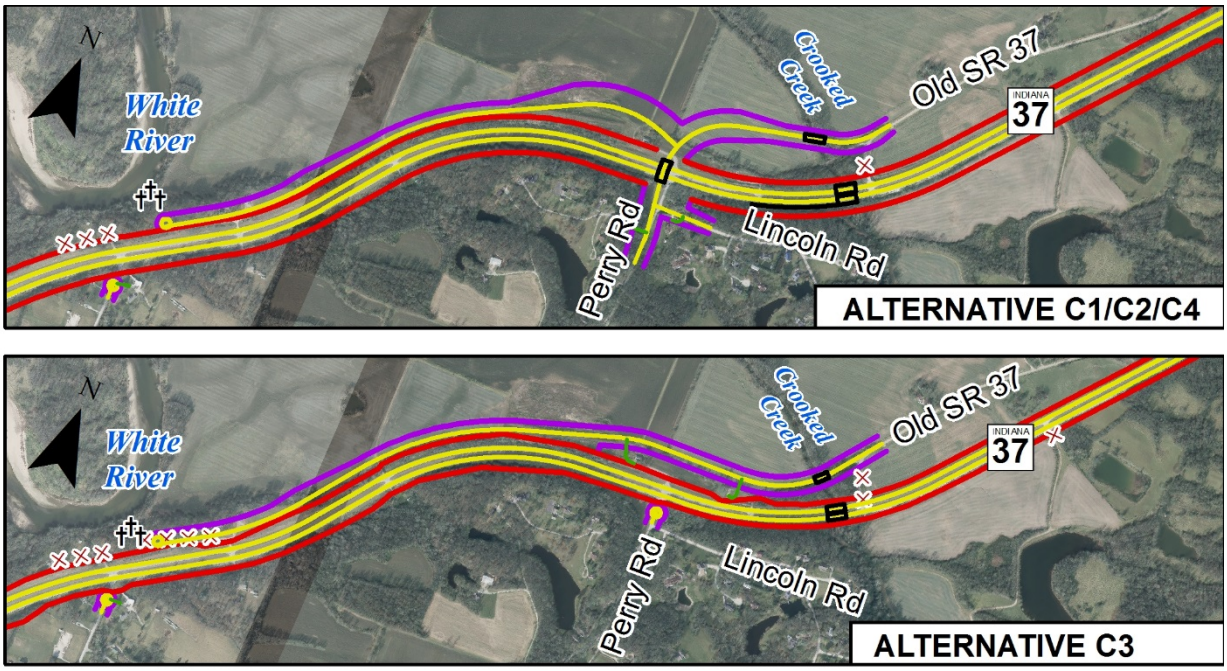
Decision

The objective in this decision area was to determine whether Perry Road should be closed at I-69 in the preferred alternative or pass over I-69 to connect with Old SR 37. All alternatives provided a local service road connection from Old SR 37 extending southward along the west side of SR 37 to access the Old Mount Olive Methodist Cemetery of the former Mount Zion Church. The alternatives differed in whether this new local service road would also connect with Perry Road on the east side of I-69, which would otherwise be closed.

Alternatives (See **Figure 6-23**)

- C1, C2, and C4 would provide a Perry Road overpass across I-69, linking with the Old SR 37 extension approximately 1,500 feet north of the crossing. A second local service road along the west side of I-69 would extend from Perry Road south to the cemetery.
- C3 would provide a local service road along the west side of I-69 extending from Old SR 37 south to the cemetery, and Perry Road would be closed on the east side of I-69.

Figure 6-23: Decision Area 4-3 Configurations



Evaluation

Without a crossing at Perry Road, approximately five miles of I-69 between Henderson Ford Road and Big Bend Road would not be crossed by a local roadway, resulting in longer trips for local residents, emergency responders and others who access the area. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-26**.

As shown in **Table 6-26**, right of way and environmental impacts would be lower if the Perry Road overpass is not constructed. Cost would also be lower, but service to the area west of I-69 would not be comparable to that provided with the overpass in place.

Recommendation

Alternative C1/C2/C4 was recommended in the DEIS. The Perry Road overpass would enhance local roadway circulation for the longest segment of I-69 without an interchange, and it would avoid a 2-1/2-mile local service road with no outlet west of I-69 to access the cemetery.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area. A Perry Road overpass would provide for east-west travel and local roadway circulation on the longest segment of I-69 without an interchange, addressing a concern expressed by residents at public meetings.

Table 6-26: Environmental Impacts, Decision Area 4-3: Perry Road

Impact Criteria	Decision Area 4-3 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	36	36	25	36
Relocations – Single Family Residential	2	2	1	2
Relocations – Business	1	1	1	1
Total Wetlands (ac)	4.33	4.33	1.51	4.33
Total Streams (lf)	1,239	1,239	1,099	1,239
Floodplain (ac)	25	25	19	25
Agricultural Land (ac)	16	16	10	16
Upland Forest (ac)	5.1	5.1	4.6	5.1
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Decision Area 4-4: Waverly Road or Whiteland Road

Decision

The objective in this decision area was to determine whether an overpass of I-69 should be provided at Waverly Road or at Whiteland Road in the preferred alternative. These roads serve north-south and east-west movements, respectively, before intersecting on the west side of SR 37 in the town of Waverly. A grade separation would be provided at one of these two locations, with a local service road connecting the two roads on the east side of I-69. The other road would be closed at I-69.

Alternatives (see **Figure 6-24**)

- C1, C3: Whiteland Road would continue across I-69. Waverly Road would be closed at I-69 and would be connected to Whiteland Road with a local service road east of I-69.
- C2: Waverly Road would continue across I-69. Whiteland Road would be closed at I-69 and would be connected to Waverly Road with a local service road east of I-69.

- C4: Waverly Road would continue across I-69. Whiteland Road would be closed at I-69 and connected to Waverly Road with a local service road on the east side of I-69. The local service road would be specially aligned to avoid an electric transmission tower.

Evaluation

Waverly Road and Whiteland Road are too close together to warrant two grade separations. Waverly Road is currently used to cross SR 37 by emergency responders and school buses due to the configuration of their service areas. A Whiteland Road crossing would be less efficient for these trips. Impacts of the alternatives, including right of way, are shown in **Table 6-27.**

Figure 6-24: Decision Area 4-4 Configurations

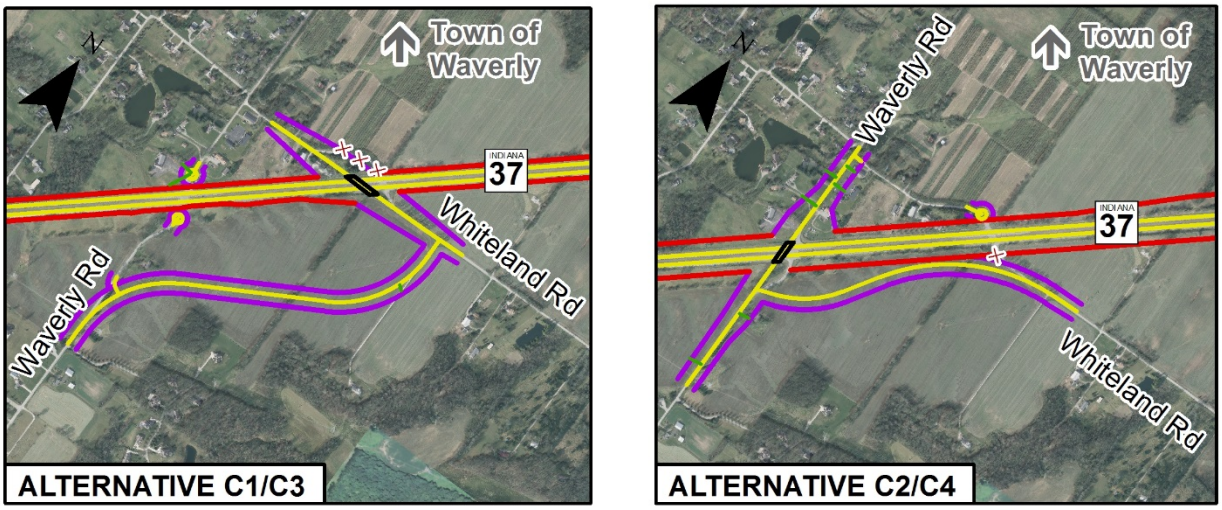


Table 6-27: Environmental Impacts, Decision Area 4-4: Waverly Road or Whiteland Road

Impact Criteria	Decision Area 4-4 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	25	28	25	26
Relocations – Single Family Residential	1	1	1	1
Relocations – Business	1	3	1	3
Total Wetlands (ac)	--	--	--	--
Total Streams (lf)	--	216	--	216
Agricultural Land (ac)	17	18	17	17
Upland Forest (ac)	--	--	--	--
Core Forest (ac)	--	--	--	--

1. *All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table*

As shown in **Table 6-27**, right of way needs and environmental impacts of the alternatives would be similar, although Alternatives C2 and C4 would be somewhat higher with respect to both. The cost would be similar for the alternatives.

Recommendation

Alternative C4 was recommended in this decision area in the DEIS. Waverly Road would be best for school transportation and emergency response, and it was preferred by the public and stakeholders at public meetings. It would also avoid the existing electric transmission tower.

Rationale

The recommended alternative would serve Goal 2 of the purpose and need to improve personal accessibility in the Section 6 study area and Goal 4 to improve traffic safety in the Section 6 study area. An overpass would at Waverly Road rather than Whiteland Road was requested by local school districts and emergency responders to support routes within their service areas.

Total Subsection 4 Impacts

Table 6-28 shows a comparison of the total Subsection 4 environmental impacts for each alternative in the DEIS. This includes the impacts of interchanges and local service roads described in the decision areas and the impacts of the preferred Mainline Option M2.

Table 6-28: Environmental Impacts, Subsection 4: Henderson Ford Road to Banta Road (DEIS)

Impact Criteria	Subsection 4 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	222	268	230	266
Relocations (units)				
Residential - Single Family	21	22	17	22
Business	9	11	5	11
Total Relocations	30	33	22	33
Total Wetlands (ac)	7.29	7.11	4.52	7.11
Total Streams (lf)	12,158	12,690	12,304	12,690
Floodplain (ac)	56	58	50	58
Agricultural Land (ac)	110	137	120	136
Upland Forest (ac)	41	48	41	48
Core Forest (ac)	5.4	9.4	5.4	9.4

1. *Impacts for subsections include all impacts in the I-69 right of way. I-69 mainline impacts are included in this table, based on the selection of Mainline Option M2 as the preferred mainline option. See* ***Section 6.3.1.6*** *for description of the preferred mainline option.*

6.3.2.5 Subsection 5: Banta Road to Fairview Road

Subsection 5, from Banta Road to Fairview Road in Johnson County, passes through an area that is primarily agricultural, although residential density increases at the north end as SR 37 approaches the Marion County line. Commercial development is located at most cross roads. Farmers and landowners in the area between SR 37 and the White River that currently rely on SR 37 will require new options for mobility. That is the major consideration in this subsection.

Two interchanges and three local service road grade separations were planned for this subsection in the DEIS. The alternatives varied in how these features were laid out and how local service roads were configured to meet the mobility needs of the surrounding area. This subsection includes the following decision areas (see **Figure 6-21**, **Figure 6-25** and **Figure 6-26**).

- Decision Area 5-1. SR 144 interchange layout
- Decision Area 5-2. West local service road/Olive Branch Road grade separation
- Decision Area 5-3/5-5. Smith Valley Road interchange/ Wakefield Road relocation
- Decision Area 5-4. West local service road/Fairview Road grade separation

Decision Area 5-1: SR 144 Interchange

Decision

The objective in this decision area was to determine what interchange layout should be used in the preferred alternative at SR 144. All alternatives would provide a tight diamond interchange configuration, but the alternatives differed at the Morgan County Public Library.

Alternatives: (See **Figure 6-27**)

- C1, C3: A tight diamond interchange would be provided at SR 144, with SR 144 passing over I-69.
- C2, C4: A tight diamond interchange would be provided at SR 144, with SR 144 passing over I-69. Steeper side slopes and guardrail would be used along SR 144 west of the interchange to avoid the Waverly Branch of the Morgan County Public Library.

Evaluation

All alternatives would close Huggin Hollow Road at SR 144 west of the interchange and close Travis Road at SR 37 north of the interchange, providing a new local service road connection from Travis Road to SR 144 on the east side of I-69. Alternative C2/C4 would avoid the library with modifications that meet minimum design requirements, with no significant cost difference.

As shown in **Table 6-29**, Alternatives C1 and C3 would require the most right of way and impact more wellhead protection area and managed lands. The Waverly Branch of the Morgan County Public Library would be relocated with Alternatives C1 and C3. Alternative C2/C4 would avoid the library with steeper slopes and guardrail. Other impacts would be similar for all alternatives.

Figure 6-25: Decision Area Locations - Subsection 5

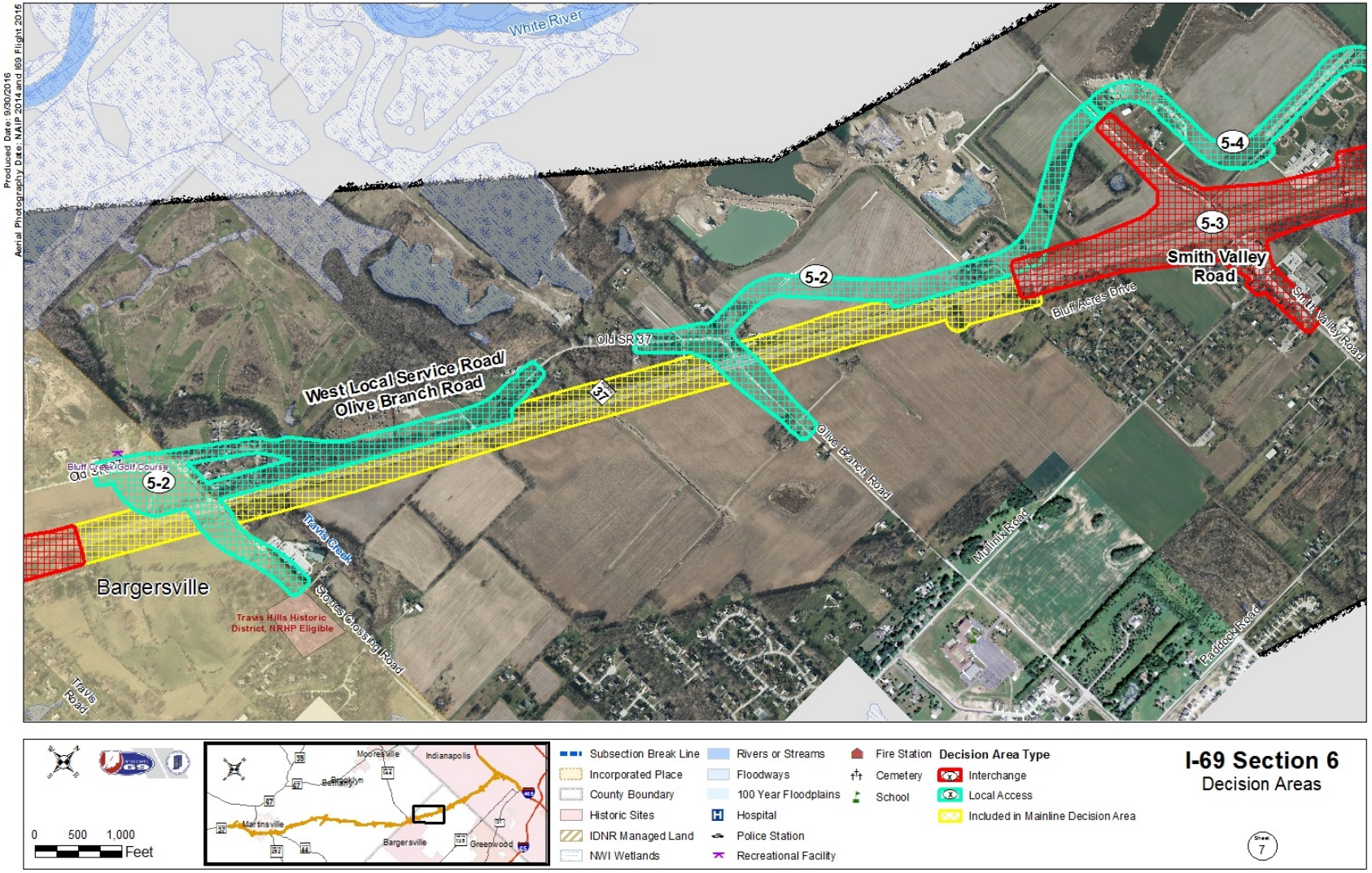


Figure 6-26: Decision Area Locations - Subsections 5 and 6

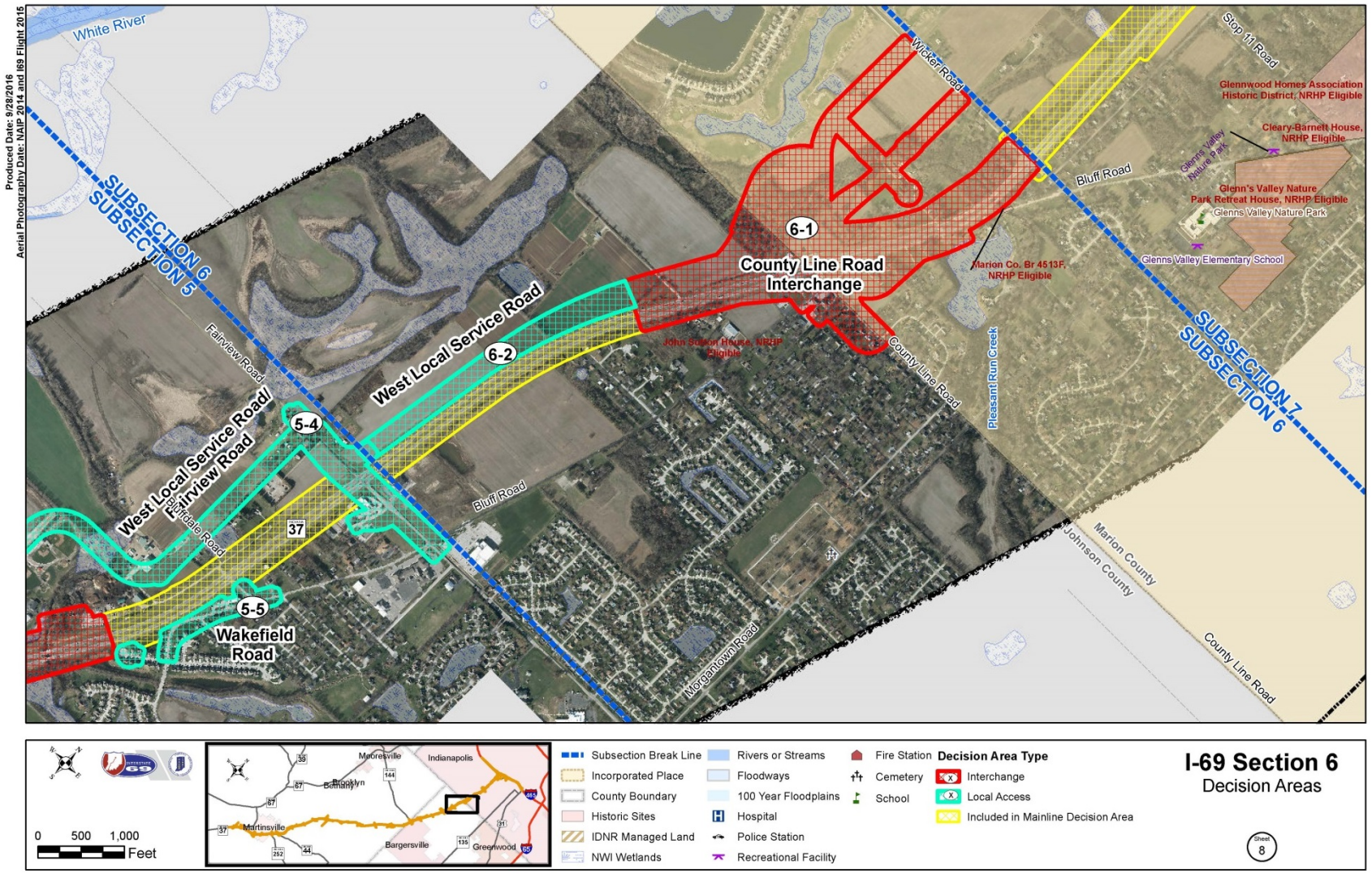


Figure 6-27: Decision Area 5-1 Configurations

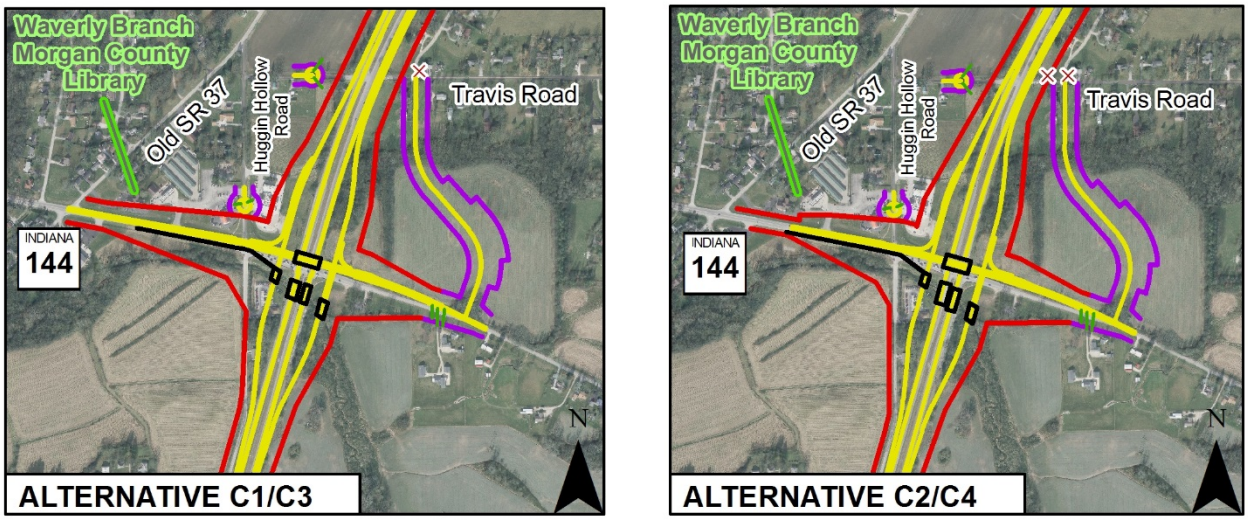


Table 6-29: Environmental Impacts, Decision Area 5-1: SR 144 Interchange

Impact Criteria	Decision Area 5-1 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	28	24	28	24
Relocations – Single Family Residential	4	4	4	4
Relocations – Business	5	5	5	5
Relocations – Public Library	1	--	1	--
Total Wetlands (ac)	--	--	--	--
Total Streams (lf)	2,069	1,949	2,069	1,949
Wellhead Protection Areas (ac)	3	1	3	1
Agricultural Land (ac)	9	8	9	8
Managed Land – Publicly Owned (ac)	1.2	0.1	1.2	0.1
Upland Forest (ac)	2.7	2.8	2.7	2.8
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C2/C4 was recommended in this decision area in the DEIS. It would avoid the public library with little or no added cost, and would have fewer impacts in all categories except for a small difference in upland forest.

Rationale

All alternatives would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area. The use of guardrail along SR 144 west of the I-69 interchange would allow the interchange to be constructed without impact to the Waverly library branch while still meeting minimum design criteria.

Decision Area 5-2: West Local Service Road/Olive Branch Road

Decision

The objective in this decision area was to determine how access should be provided in the preferred alternative to properties on the west side of I-69 between SR 144 and Smith Valley Road, and what accommodations should be made for farm equipment that currently travels along this segment of SR 37 but would not be allowed to use I-69. All alternatives included an overpass to link Stones Crossing Road with Old SR 37 west of I-69. Local service road configurations, including a potential grade crossing at Olive Branch Road, varied by alternative.

Alternatives (See **Figure 6-28** and **Figure 6-29**)

- C1: Old SR 37 would be reconstructed through the center of the Greenwood Mobile Home Park and extended north to another segment of Old SR 37 which would end in a cul-de-sac at Olive Branch Road. Olive Branch Road would be closed at I-69, and no new access would be provided north to Smith Valley Road.
- C2, C4: A new local service road would start south of the Stones Crossing Road overpass, allowing it to pass under the Stones Crossing Road bridge adjacent to I-69, eliminating the need to pass through the center of the Greenwood Mobile Home Park. The local service road would connect to Old SR 37, then would extend further to Smith Valley Road. Olive Branch Road would be closed at I-69.
- C3: No new local service roads would be constructed on the west side of I-69. No new traffic would pass through the Greenwood Mobile Home Park because there would be no roadway access provided north of the park. Overpasses would be provided at both Stones Crossing Road and Olive Branch Road to connect with existing segments of Old SR 37 west of I-69. Property owners without access to these roadways would be relocated.

Evaluation

Reconstructing Old SR 37 north of Stones Crossing Road (Alternative C1) would provide north-south mobility for farm vehicles and others, but it would split the Greenwood Mobile Home Park and create a potential safety hazard for residences (see **Figure 6-29**). A local service road truncated at Olive Branch Road (Alternative C1) would be over a mile long with access only at the south end. Alternative C3 would only provide access to properties along Old SR 37. Alternative C2/C4 is the only option that would not require some farm vehicles to cross I-69, use local roadways east of I-69, and return across I-69 to access their fields. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-30**.

Figure 6-28: Decision Area 5-2 Configurations

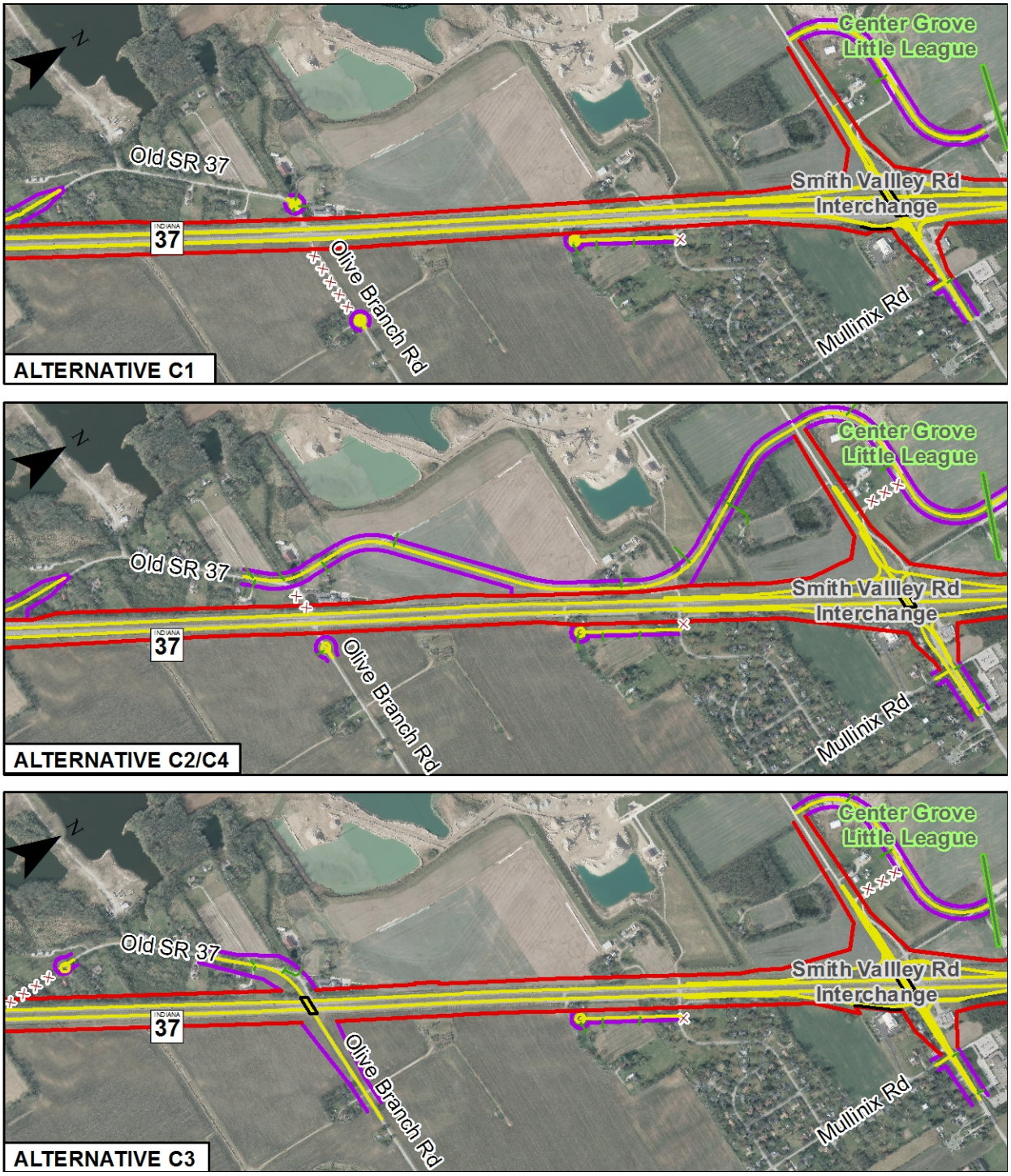


Figure 6-29: Decision Area 5-2 at Stones Crossing Road

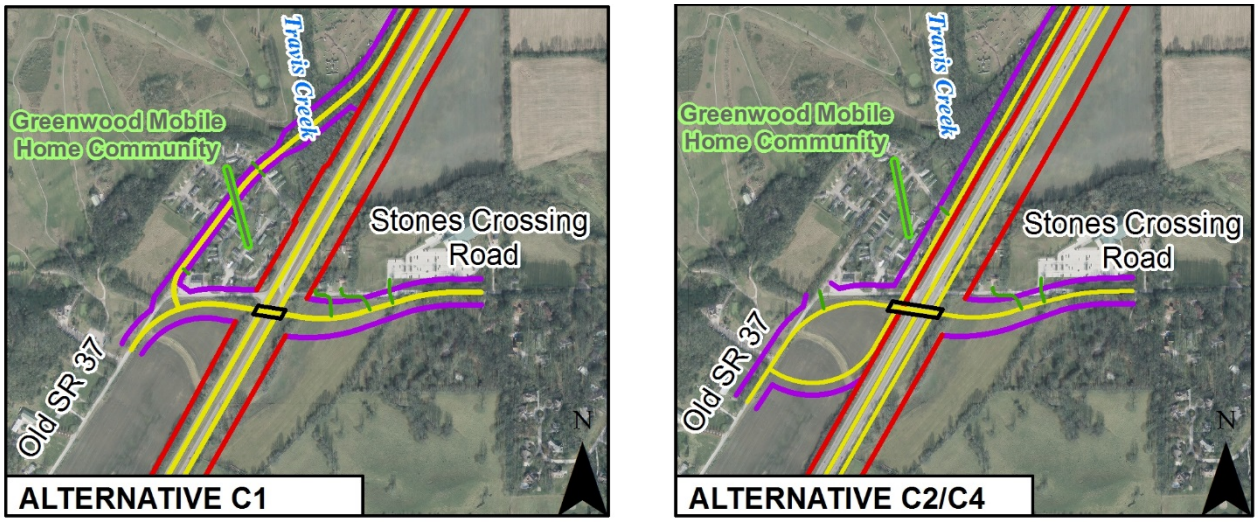


Table 6-30: Environmental Impacts, Decision Area 5-2: West Local Service Road/Olive Branch Rd

Impact Criteria	Decision Area 5-2 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	24	51	21	51
Relocations – Single Family Residential	--	1	--	1
Relocations – Mobile Home	6	10	--	10
Total Wetlands (ac)	--	--	--	--
Total Streams (lf)	385	399	138	399
Floodplain (ac)	--	6	3	6
Wellhead Protection Areas (ac)	4	15	1	15
Agricultural Land (ac)	7	28	9	28
Managed Land – Publicly Owned (ac)	2.5	9.2	2.5	9.2
Upland Forest (ac)	4.2	6.8	--	6.8
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Right of way and environmental impacts shown in **Table 6-30** are related to the extent of the area served by the alternatives. Alternative C3 would provide minimal access, require the least right of way, and cause the least impact in all but agricultural land. Alternative C1 would require the relocation of six mobile homes, and have greater impacts in most categories than Alternative

C3, but less than Alternative C2/C4. The cost of Alternative C3 and Alternative C1 would be similar. Alternative C3 includes less roadway, but adds the overpass at Olive Branch Road.

Alternative C2/C4 would require the most right of way, have the most impact in every category, and cost the most, but it is the only alternative that provides the north-south local connectivity on the west side of I-69 that would be lost with the closing of access points to SR 37. The local service road in this alternative would impact more homes in the Greenwood Mobile Home Park than in Alternative C1, but it would be located at the edge of the community and adjacent to I-69 rather than through the center of the community.

Recommendation

Alternative C2/C4 was recommended in this decision area in the DEIS. The continuous local service road along the west side of I-69 would provide the best access to and between existing residential, agricultural, recreational, and commercial uses in that area. It would also eliminate the need for farm equipment and others that currently use the portion of SR 37 between Smith Valley Road and SR 144 to divert to longer and more heavily traveled local routes east of I-69.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area, Goal 3 to reduce future traffic congestion on the highway network of the Section 6 study area, Goal 4 to improve traffic safety in the Section 6 study area, and Goal 5 to support growth in economic activity in the Section 6 study area. A continuous local service road west of I-69 between Old SR 37 at Olive Branch Road and Smith Valley Road would avoid creating landlocked parcels and provide shorter and more direct trip lengths for farm equipment and motorists accessing that area.

Decision Areas 5-3 and 5-5: Smith Valley Road/Wakefield Road

Decision

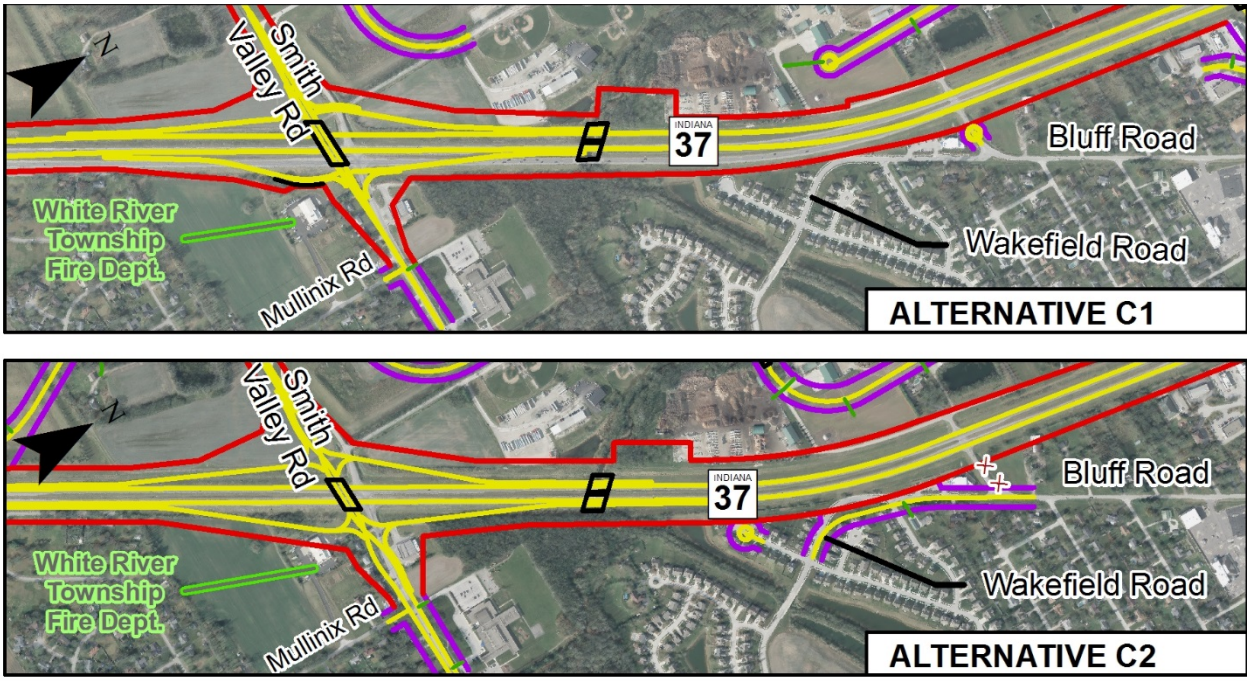
The objective in this decision area was to identify the most effective I-69 design in the preferred alternative in the vicinity of the Smith Valley Road diamond interchange. Constructing a wall along the northbound exit ramp at the interchange would allow the White River Township fire station located at the southeast corner of the intersection to remain in place. Shifting the alignment of I-69 to the west through the interchange area would also eliminate impacts to residential development along Wakefield Road, a local street in a subdivision on the east side of SR 37 approximately one-half mile north of Smith Valley Road.

Alternatives (See **Figure 6-30** and **Figure 6-31**)

- C1: I-69 would be shifted slightly west of the existing SR 37 alignment to avoid the White River Township fire station at Smith Valley Road and eliminate reconstruction of Wakefield Road. A retaining wall would be constructed along the northbound exit ramp at Smith Valley Road to avoid the fire station.

- C2: I-69 would follow the alignment of SR 37. This alignment would impact the White River Township fire station and require reconstruction of Wakefield Road.
- C3: I-69 would follow the alignment of SR 37. A retaining wall would be constructed along the northbound exit ramp at Smith Valley Road to avoid impacting the fire station. This alternative would require reconstruction of Wakefield Road.
- C4: I-69 would be shifted slightly west of the existing SR 37 alignment. No retaining wall would be used at the interchange, so this alternative would impact the White River Township fire station at Smith Valley Road. The shift would eliminate the need to reconstruct Wakefield Road.

Figure 6-30: Decision Areas 5-3 and 5-5 Configurations – C1, C2



Evaluation

Constructing a wall along the northbound exit ramp from I-69 to Smith Valley Road (Alternatives C1 and C3) would avoid direct impacts to the White River Township fire station building, but reconfiguration of on-site circulation and egress of fire equipment would still be required, and response times would be negatively impacted. The White River Township Fire Department has expressed concern with the impact of the increased interchange traffic and reconfiguration of the station on response times. Shifting the alignment of I-69 west of the existing SR 37 alignment through the interchange area (Alternatives C1 and C4) would avoid acquisition of several residential properties and reconstruction of a section of Wakefield Road. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-31.**

Figure 6-31: Decision Areas 5-3 and 5-5 Configurations – C3, C4

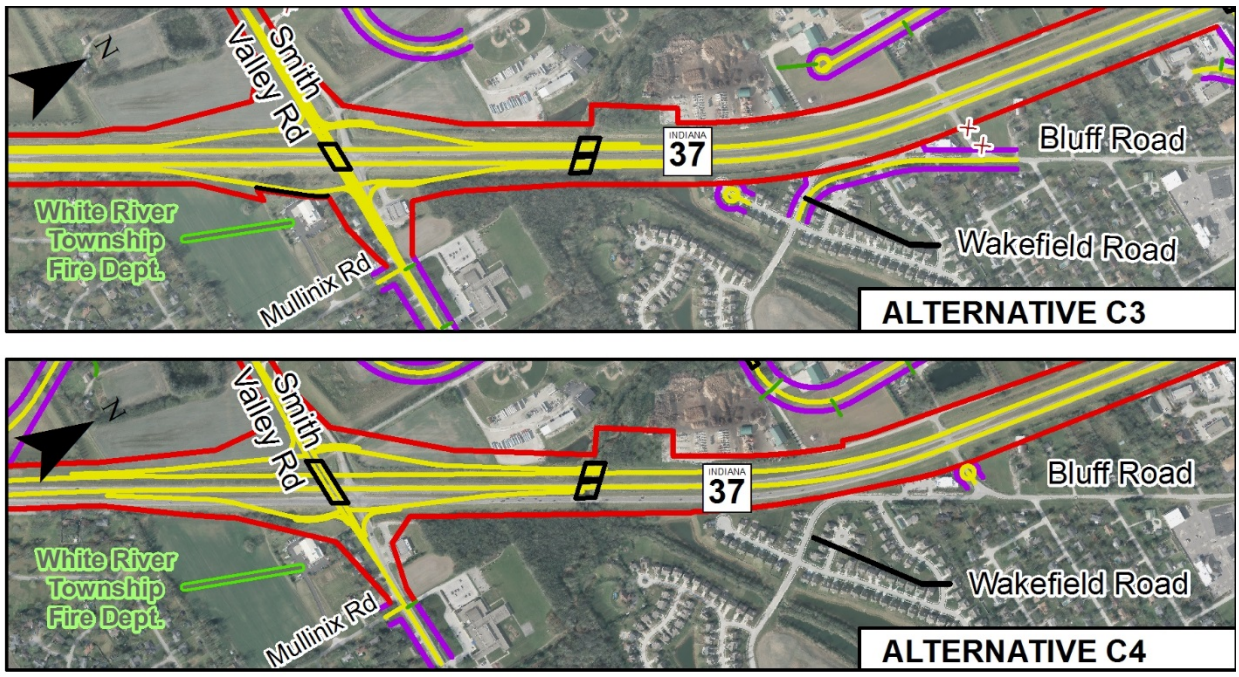


Table 6-31: Environmental Impacts, Decision Area 5-3/5-5: Smith Valley Rd + Wakefield Rd

Impact Criteria	Decision Area 5-3/5-5 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	19	27	26	21
Relocations – Single Family Residential	7	12	12	7
Relocations – Business	1	1	1	1
Relocations – Fire Station	--	1	--	1
Total Wetlands (ac)	0.04	--	0.01	0.05
Total Streams (lf)	317	100	223	338
Floodplain (ac)	12	11	10	12
Wellhead Protection Areas (ac)	25	27	27	27
Agricultural Land (ac)	10	11	11	10
Upland Forest (ac)	0.6	2.0	2.0	0.6
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 right of way. I-69 mainline impacts are not included in this table.

As shown in **Table 6-31,** shifting the I-69 alignment west, as in Alternatives C1 and C4, would require less right of way and fewer residential relocations than maintaining the existing alignment in Alternatives C2 and C3 due to the reduced impacts on the subdivision located north

of Smith Valley Road. Conversely, most impacts to natural environment would be higher with Alternatives C1 and C4 than with Alternatives C2 and C3 due to this shift. Alternatives C2 and C4 would require relocation of the fire station, while Alternatives C1 and C3 would avoid the fire station building with a wall adjacent to the interchange.

Interchange and pavement replacement cost would be similar for the alternatives. The potential savings of reusing a portion of the pavement with Alternatives C2 and C3 would be offset by the cost of realigning Wakefield Road. Alternatives C1 and C3 would include the cost of the retaining wall at the fire station, while Alternatives C2 and C4 would not.

Recommendation

Alternative C4 was recommended in this decision area in the DEIS. Shifting the alignment of I-69 would eliminate the need to reconstruct Wakefield Road, resulting in a reduction in the number of residential relocations. This could be accomplished with Alternative C1 or C4, but Alternative C1 would have higher cost due to the retaining wall. Although Alternative C4 would require relocation of the White River Township fire station, this was preferred by the fire department instead of staying at the current location. Keeping the fire station in its current location would require construction of a retaining wall and significant reconfiguration of the fire station building and site. The fire department was also concerned with the impact of increased traffic and reconfiguration of the site on emergency response times.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area. Realignment of I-69 north of Smith Valley Road would avoid impacts to five residences.

Decision Area 5-4: West Local Service Road/Fairview Road

Decision

The objective in this decision area was to determine how access should be provided in the preferred alternative to properties on the west side of I-69, between Smith Valley Road and County Line Road, and what accommodations should be made for farm equipment that currently travels along this segment of SR 37 but would not be allowed to use I-69. This discussion is closely tied to Decision Area 6-2 concerning the West Local Service Road north of Fairview Road. This decision area describes the impacts between Smith Valley Road and Fairview Road.

Alternatives (See **Figure 6-32**)

- C1, C3: Fairview Road would cross I-69 with an overpass and separate local service roads would be constructed to access properties on the west side of I-69.
- C2, C4: A continuous local service road would be provided along the west side of I-69 between SR 144 and County Line Road. Fairview Road would not cross I-69.

Evaluation

Property on the west side of SR 37 is accessed by local roadways and driveways that connect with SR 37, Smith Valley Road, Fairview Road, and County Line Road. Due to the access restrictions of I-69, many of the routes currently available will no longer exist. The alternatives in this decision area provide new local service roads that penetrate the area with overpasses at Smith Valley Road and Fairview Road, or by linking existing roadways to provide a continuous local service road west of I-69, without an overpass at Fairview Road. This local service road could be part of a continuous roadway from SR 144 to County Line Road. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-32**.

As shown in **Table 6-32**, the number of relocations would be higher due to Fairview Road overpass construction with Alternative C1/C3, but right of way needs would be similar. The environmental impact of constructing the continuous local service road with Alternative C2/C4 would be higher in all categories. Even though more local service road construction would be required for Alternative C2/C4, the cost for Alternative C1/C3 would be higher due to the expense of the Fairview Road overpass.

Table 6-32: Environmental Impacts, Decision Area 5-4: West Local Service Rd/Fairview Rd

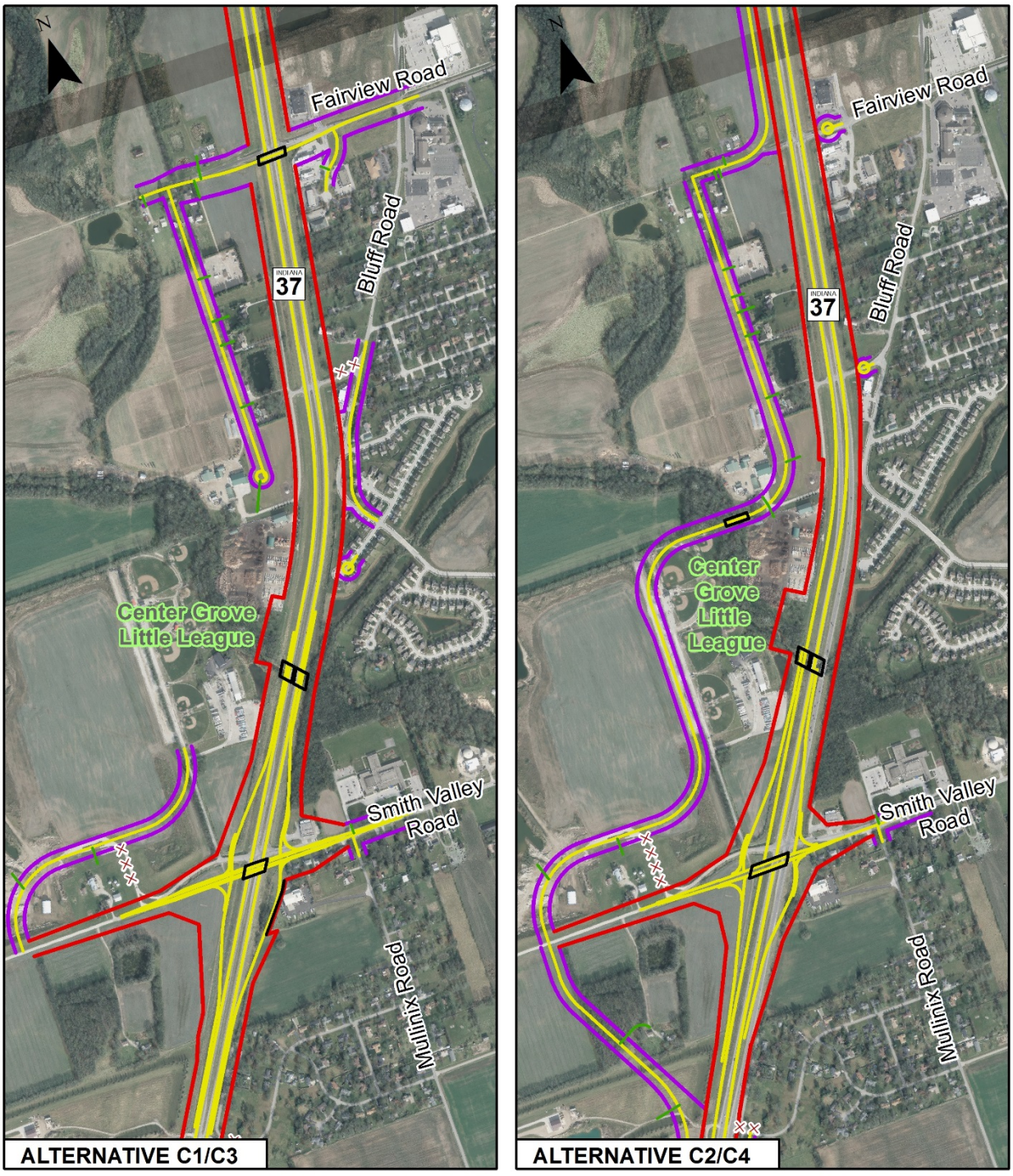
Impact Criteria	Decision Area 5-4 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	26	26	25	26
Relocations – Single Family Residential	1	1	1	1
Relocations – Business	3	--	4	--
Total Wetlands (ac)	--	0.02	--	0.02
Total Streams (lf)	--	157	--	157
Floodplain (ac)	2	10	2	10
Wellhead Protection Areas (ac)	25	26	25	26
Agricultural Land (ac)	10	11	9	11
Upland Forest (ac)	--	0.6	--	0.6
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C2/C4 was recommended in the DEIS. Constructing a continuous local service road along the west side of I-69 would provide better access and mobility for existing and future development in the area. It would also better serve local movements of farm equipment. The cost of constructing this continuous road would be less than the cost of providing alternative access via an overpass at Fairview Road, and there would be fewer relocations.

Figure 6-32: Decision Area 5-4 Configurations



Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area, Goal 3 to reduce future traffic congestion on the highway network of the Section 6 study area, and Goal 5 to support growth in economic activity in the Section 6 study area. A continuous local service road west of I-69 between Smith Valley Road and Fairview Road would avoid creating landlocked parcels and provide shorter and more direct trip lengths for farm equipment and motorists accessing that area.

Total Subsection 5 Impacts.

Table 6-33 shows a comparison of the total Subsection 5 environmental impacts for each alternative in the DEIS. This includes the impacts of interchanges and local service roads described within the decision areas combined with the impacts of the preferred mainline option within this subsection.

Table 6-33: Environmental Impacts, Subsection 5: Banta Road to Fairview Road (DEIS)

Impact Criteria	Subsection 5 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	170	206	176	195
Relocations (units)				
Residential - Single Family	18	39	34	21
Residential – Mobile Home	6	10	--	10
Business	9	8	12	8
Public Library	1	--	1	--
Fire Station	--	1	--	1
Total Relocations	34	58	47	40
Total Wetlands (ac)	0.06	0.04	0.03	0.09
Total Streams (lf)	6,097	5,931	5,729	6,169
Floodplain (ac)	45	60	48	59
Wellhead Protection Areas (ac)	154	171	156	166
Agricultural Land (ac)	70	92	72	91
Managed Land, Privately Owned (ac)	5	11	4	11
Upland Forest (ac)	11	16	9	14
Core Forest (ac)	--	--	--	--

*Impacts for subsections include all impacts in the I-69 right of way. I-69 mainline impacts are included in this table, based on the selection of Mainline Option M2 as the preferred mainline option. See **Section 6.3.1.6** for description of the preferred mainline option.*

6.3.2.6 Subsection 6: Fairview Road to Wicker Road

Subsection 6, from Fairview Road to Wicker Road continues the transition into an area with greater density of development. Just north of Fairview Road, Alternative C1 would be raised above the existing SR 37 grade and remain elevated over crossing roads north to I-465. The mainline would shift to the west to avoid impacts to businesses in the southeast quadrant of the County Line Road interchange and to homes on the east side of I-69. Alternatives C2 and C4 would also be elevated just north of Fairview Road, passing over County Line Road and Wicker Road. Alternative C3 would remain at the existing SR 37 grade through the County Line Road interchange, and would be elevated just north of the interchange to pass over Wicker Road.

One interchange, County Line Road, is included in this subsection. The alternatives varied in interchange layout, local service road configuration, and whether there is an overpass at Fairview Road. This subsection includes the following decision areas (see **Figure 6-33**).

- Decision Area 6-1. County Line Road interchange layout
- Decision Area 6-2. West local service road

Decision Area 6-1: County Line Road Interchange

Decision

The objective in this decision area was to determine what configuration should be used in the preferred alternative for the interchange of I-69 with County Line Road. County Line Road is one of the higher volume roadways in the area, extending east through Greenwood to an interchange with I-65. Connections with Bluff Road to the south and Wicker Road to the north were considerations in defining optional interchange layouts.

Alternatives (See Figure 6-34)

- C1, C4: I-69 would pass over County Line Road. A folded loop interchange would be provided, with a loop ramp for the northbound exit and standard diamond configuration for the southbound ramps. Roundabout intersections would be provided at the ramp termini. Bluff Road would tie into the east roundabout (at the northbound I-69 ramps). West of I-69, County Line Road would curve north to intersect Wicker Road. A fifth leg of the west roundabout (at the southbound I-69 ramps) would tie with a local service road for access to property west of I-69 and south of County Line Road

- C2: I-69 would pass over County Line Road. A tight diamond interchange would be provided, with signalized ramp termini intersections. Bluff Road would be realigned just south of County Line Road to relocate the existing intersection approximately 900 feet east and provide separation from the ramp terminal. West of I-69, County Line Road would curve north to intersect Wicker Road.
- C3: This alternative would have the same layout as Alternative C2, except that County Line Road would pass over the I-69 mainline.

Figure 6-33: Decision Area Locations - Subsections 5 and 6

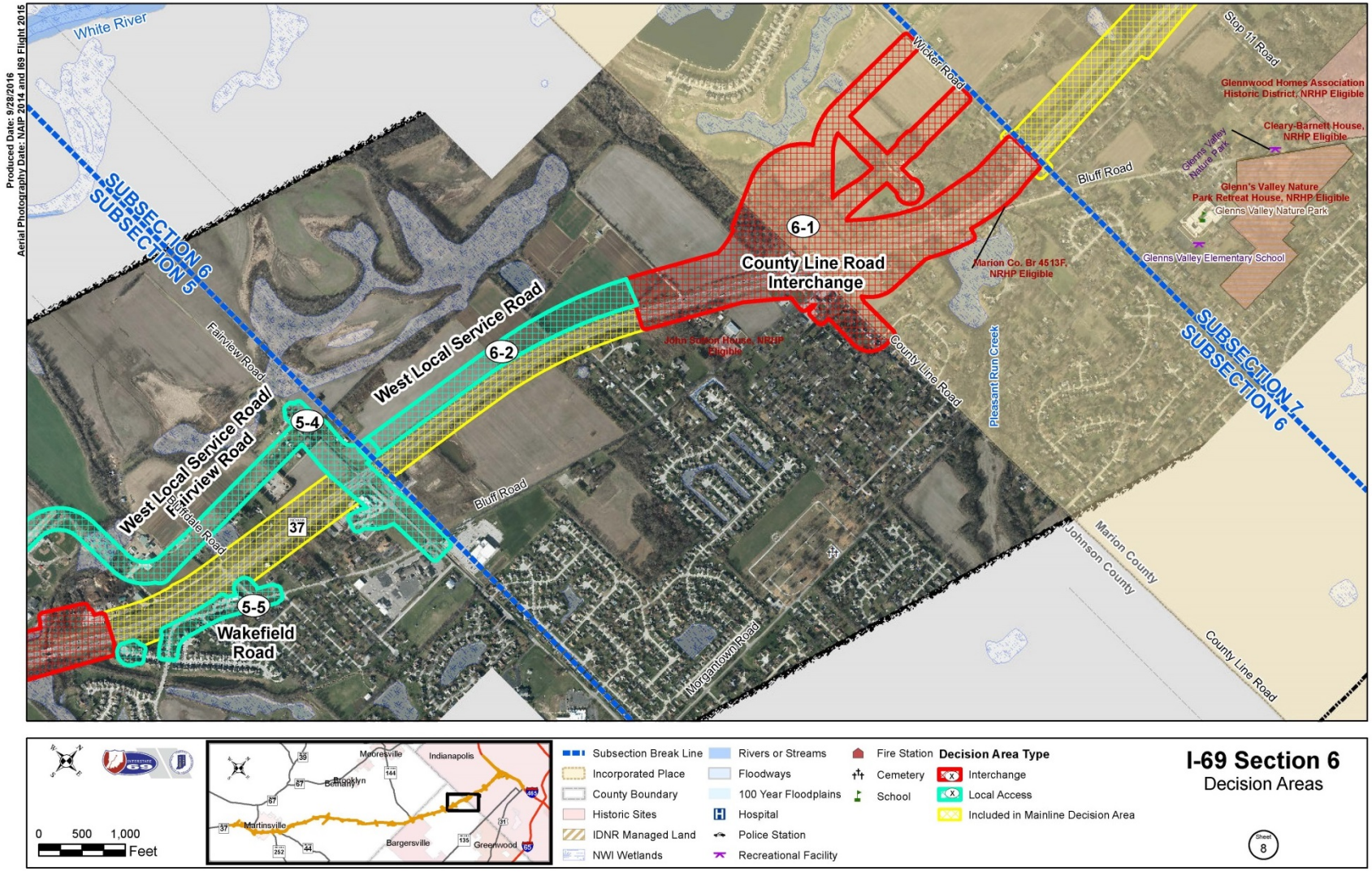
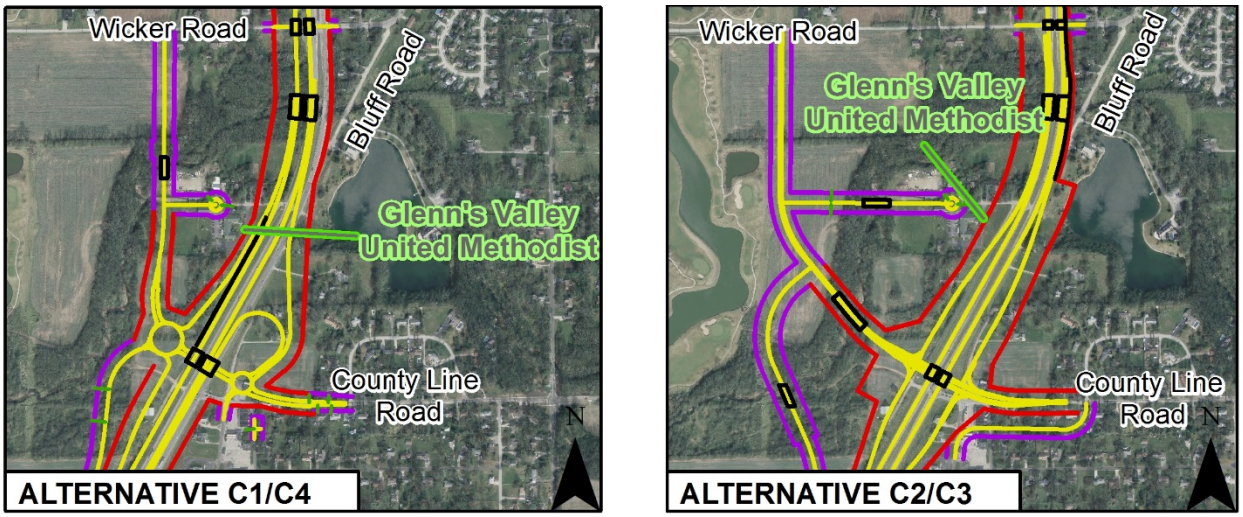


Figure 6-34: Decision Area 6-1 Configurations



Evaluation

The roundabout intersections at the ramp terminals of Alternative C1/C4 would provide a more direct path for Bluff Road traffic to access the interchange, and would avoid the need to install a sequence of closely spaced traffic signals on County Line Road. The roundabout ramp terminal intersections would be expected to provider safer traffic operation than signalized intersections.[6] The roundabout intersection at the west ramp also allows the local roads to the north (toward Wicker Road) and to the south (toward Fairview Road) to curve more sharply than would be allowed by the signalized intersection and thus reduce the length of road and number of bridges required. There is a potential with Alternative C3 to reuse more SR 37 pavement since it would remain at existing grade as County Line Road passes over. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-34**.

As shown in **Table 6-34**, Alternative C1/C4 would require the least right of way and fewest relocations since realignment of Bluff Road would be unnecessary. It would also have the lowest environmental impact in all categories except upland forest. Alternative C2 would be the most expensive due to the expense of elevating the mainline over County Line Road and the need to realign Bluff Road. The cost of the other alternatives would be similar to each other. The high cost of elevating the I-69 mainline with Alternative C1/C4 would be offset by reduced costs for constructing County Line Road and Bluff Road due to the roundabouts.

[6] *Transportation Research Board, National Cooperative Highway Research Program Report 672, 2010, Exhibit 5-9*

Table 6-34: Environmental Impacts, Decision Area 6-1: County Line Road Interchange

Impact Criteria	Decision Area 6-1 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	33	56	63	33
Relocations – Single Family Residential	8	15	15	8
Relocations – Business	1	7	7	1
Total Wetlands (ac)	--	0.04	0.04	--
Total Streams (lf)	145	1,346	1,467	145
Floodplain (ac)	6	23	25	6
Wellhead Protection Areas (ac)	36	58	65	36
Agricultural Land (ac)	15	21	23	15
Upland Forest (ac)	1.2	1.1	2.3	1.2
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

Alternative C1/C4 was recommended in the DEIS. The combination of the diamond interchange layout with a loop ramp for the northbound exit and roundabout intersections at ramp termini would provide good traffic performance, with more direct connections for local roadways. Less right of way would be required than the other alternatives, with fewer relocations. There would be fewer environmental impacts with this alternative.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the I-69 Section 6 study area. The proposed folded diamond interchange layout at County Line Road would require 13 fewer relocations and have fewer natural impacts. It would also allow shorter trip lengths for residents and businesses along Bluff Road.

Decision Area 6-2: West Local Service Road

Decision

The objective in this decision area was to determine how access should be provided in the preferred alternative to properties on the west side of I-69 between Fairview Road and County Line Road, and what accommodations should be made for farm equipment that currently travels along this segment of SR 37 but would not be allowed on I-69. This discussion is closely tied to Decision Area 5-4 concerning the West Local Service Road south of Fairview Road.

Alternatives (See **Figure 6-35**)

- C1: Fairview Road would cross I-69 with an overpass and separate local service roads would provide access to properties on the west side of I-69 at Fairview Road and County Line Road. The northern local service road would intersect with County Line Road in a roundabout.
- C2, C4: Fairview Road would not cross I-69 and a local service road would be constructed between Fairview Road and County Line Road, forming one segment of a continuous west local service road between SR 144 and County Line Road.
- C3: This alternative would be similar to Alternative C1, but the northern local service road would intersect with County Line Road at an intersection west of I-69.

Evaluation

Property west of SR 37 is currently accessed by local roadways and driveways that connect with SR 37, Smith Valley Road, Fairview Road, and County Line Road. Due to the access restrictions of I-69, many of the routes currently available will no longer exist. The alternatives in this decision area provide access by providing new local service roads that intersect with Fairview Road and County Line Road, but do not connect with each other, or by linking existing roadways to provide a continuous local service road west of I-69, without an overpass at Fairview Road. This local service road could be part of a continuous roadway from SR 144 to County Line Road. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-35.**

Figure 6-35: Decision Area 6-2 Configurations

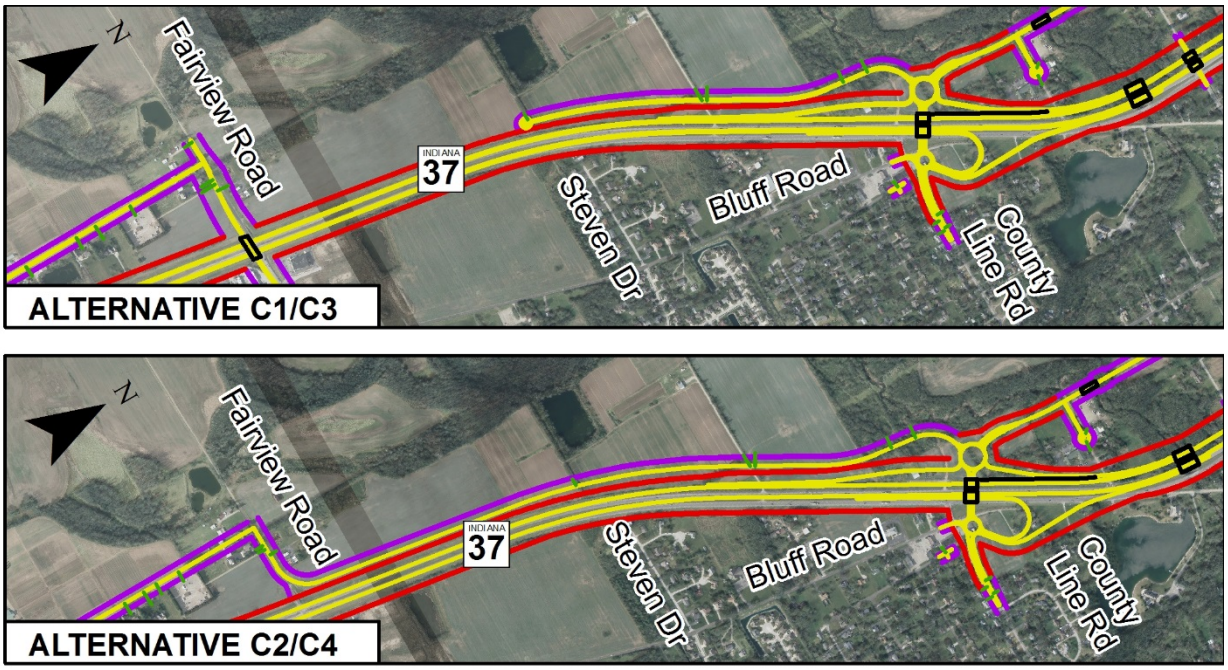


Table 6-35: Environmental Impacts, Decision Area 6-2: West Local Service Road

Impact Criteria	Decision Area 6-2 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	5	12	3	12
Total Wetlands (ac)	--	--	--	--
Wellhead Protection Areas (ac)	5	12	3	12
Agricultural Land (ac)	4	12	3	12
Upland Forest (ac)	--	--	--	--
Core Forest (ac)	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Table 6-35 shows only the impacts of the local service roads in this decision area. Impacts at Fairview Road are included in **Table 6-36**. The amount of new right of way needed, the level of impacts to wellhead protection areas and agricultural lands, and cost would be greater with Alternative C2/C4 due to the greater length of local service road construction. This would be offset by avoiding the cost and impact of constructing the Fairview Road overpass, as described in the evaluation of Decision Area 5-4.

Recommendation

Alternative C2/C4 was recommended in the DEIS. Constructing a continuous local service road along the west side of I-69 would provide better access and mobility for existing and future development in the area. It would also better serve local movements of farm equipment. The cost of constructing this continuous road would be less than the cost of providing alternative access that includes an overpass at Fairview Road, and there would be fewer overall relocations.

Rationale

The recommended alternative would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area, Goal 3 to reduce future traffic congestion on the highway network of the Section 6 study area, and Goal 5 to support growth in economic activity in the Section 6 study area. The continuous local service road provided by combining all sections along the west side of I-69 from SR 144 to County Line Road would serve as an alternate route for use by local traffic, traffic that cannot use I-69 (e.g., farm vehicles and bicycles), and traffic that may be diverted in case of I-69 closure for an extended section of I-69.

Total Subsection 6 Impacts.

Table 6-36 shows a comparison of the total Subsection 6 environmental impacts for each alternative in the DEIS. This includes the impacts of interchanges and local service roads described within the decision areas combined with the impacts of the preferred Mainline Option M2 within this subsection.

Table 6-36: Environmental Impacts, Subsection 6: Fairview Road to Wicker Road (DEIS)

Impact Criteria	Subsection 6 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	58	88	86	65
Relocations (units)				
Residential - Single Family	8	16	16	8
Business	1	8	7	2
Total Relocations	9	24	23	10
Total Wetlands (ac)	--	0.04	0.04	--
Total Streams (lf)	566	1,767	1,888	566
Floodplain (ac)	13	30	32	13
Wellhead Protection Areas (ac)	104	133	131	111
Agricultural Land (ac)	27	41	34	35
Upland Forest (ac)	5	5	6	5
Core Forest (ac)	--	--	--	--

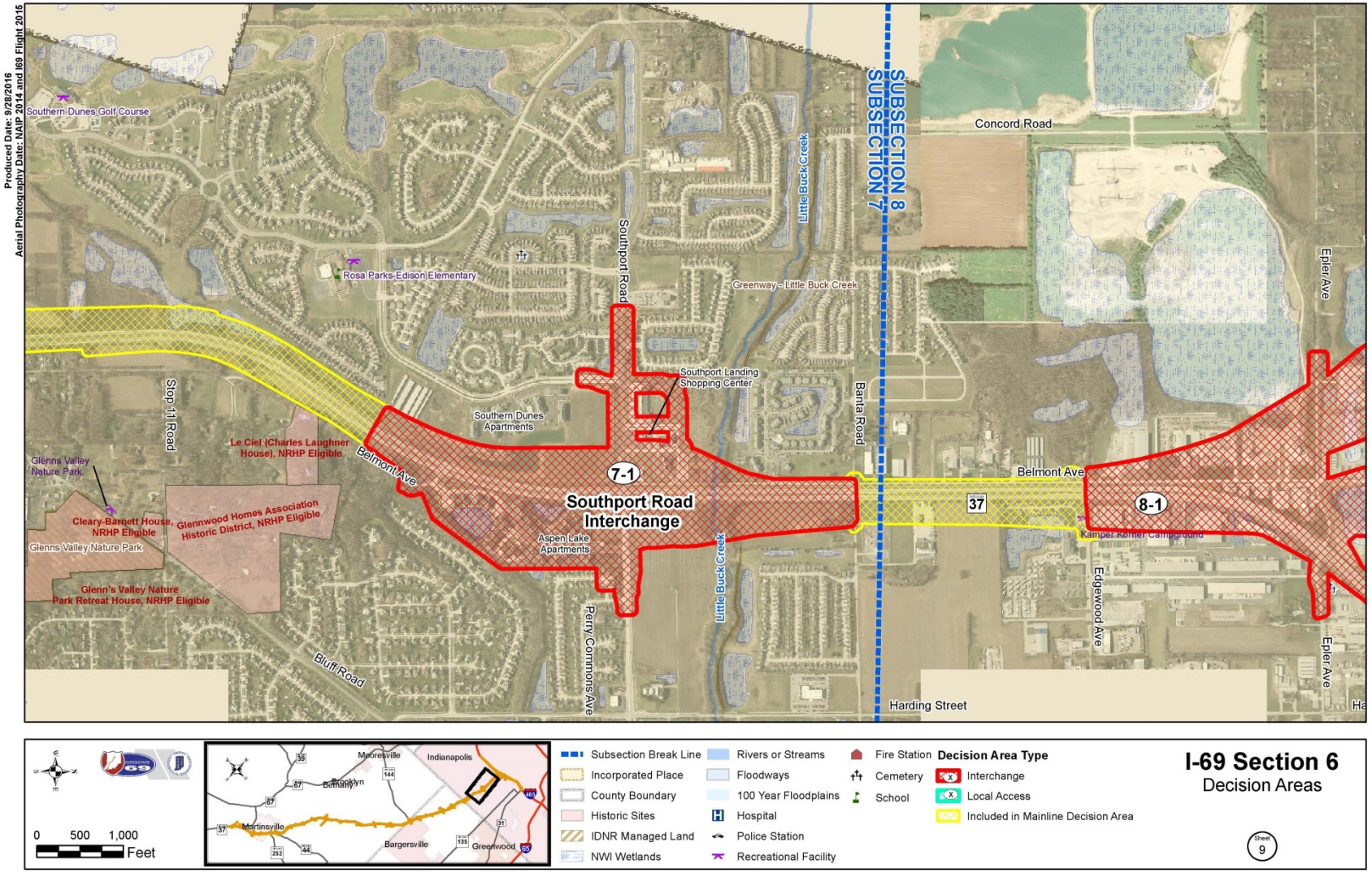
1. *Impacts for subsections include all impacts in the I-69 right of way. I-69 mainline impacts are included in this table, based on the selection of Mainline Option M2 as the preferred mainline option. See **Section 6.3.1.6** for description of the preferred mainline option.*

6.3.2.7 Subsection 7: Wicker Road to Banta Road (Marion Co)

Subsection 7, from Wicker Road to Banta Road, is surrounded by development. At Southport Road, the Southern Dunes Apartments and the Southport Landing Shopping Center are west of SR 37, and Aspen Lakes Apartments are east of SR 37. With Alternatives C1, C2, and C3, I-69 would be entirely elevated, beginning with an I-69 overpass at Wicker Road. With Alternative C4, I-69 would be elevated over Wicker Road and Banta Road, and would follow the elevation of SR 37 more closely between these locations, passing under Southport Road. The alternatives differed in the configuration of the Southport Road interchange, and how I-69 would be aligned to minimize impact and cost. This subsection includes one decision area (see **Figure 6-36**).

- Decision Area 7-1: Southport Road Interchange Layout

Figure 6-36: Decision Area Locations - Subsections 7 and 8



Decision Area 7-1: Southport Road Interchange Layout

Decision

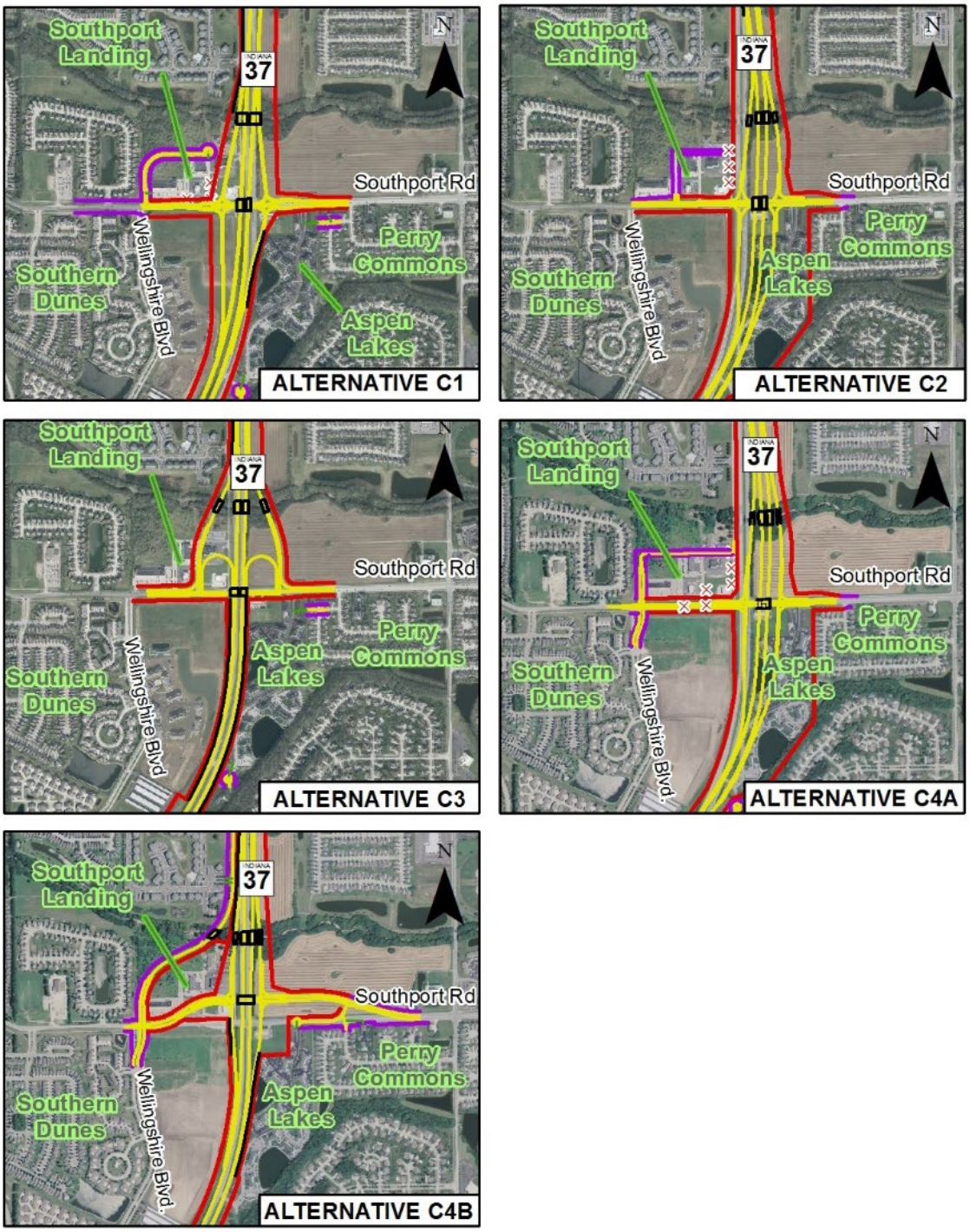
The objective in this decision area was to determine what I-69 alignment and interchange layout should be used in the preferred alternative for the interchange of I-69 with Southport Road. This interchange would serve the highest traffic volumes of any service interchange on I-69 Section 6, and dense development located nearby would be impacted with any interchange configuration. The alternatives differed in how they balanced traffic service with cost and impacts in this decision area. Two options were developed for Alternative C4 in this decision area.

Alternatives (see **Figure 6-37**)

- C1: I-69 would pass over Southport Road and a diverging diamond interchange would be provided, shifted west of the existing SR 37 alignment. Shifting the interchange west would minimize impacts to the Aspen Lakes Apartments east of SR 37, although access to the apartments would be through the Perry Commons neighborhood instead of directly from Southport Road. West of I-69, some buildings in the Southport Landing Shopping Center would be impacted and the main entrance to the center would be relocated farther from the interchange.
- C2: I-69 would pass over Southport Road and a single point interchange would be provided, shifted east of the existing SR 37 alignment to minimize impacts to properties west of I-69. West of I-69, existing access to the Southport Landing Shopping Center and Southern Dunes residential neighborhood would be maintained. East of I-69, acquisition of the Aspen Lakes apartments and relocation of all residents would be required.
- C3: I-69 would pass over Southport Road and a folded diamond interchange would be provided, with loop ramps to and from I-69 south located on the north side of the interchange. This would allow both the Aspen Lake and Southern Dunes apartment communities to remain in place, but the Southport Landing Shopping Center would be impacted. As in Alternative C1, access to the Aspen Lakes apartments would be through the Perry Commons neighborhood instead of directly from Southport Road.
- C4 Option A: With this option, I-69 would have the same alignment and interchange location as Alternative C2. However, a diamond interchange configuration would be used instead of a single point interchange configuration.
- C4 Option B: Southport Road would be realigned between Harding Street and Wellingshire Boulevard and shifted approximately 290 feet north of its existing location. The realigned Southport Road would pass over I-69 and a diamond interchange would be provided, with the interchange approximately centered on the existing SR 37 alignment. East of I-69, a local road constructed on the existing Southport Road alignment would connect the Aspen Lakes apartments and Perry Commons neighborhood to the realigned Southport Road. One building at Aspen Lakes would be impacted, as would the adjacent service station. West of I-69, the relocated Southport Road would pass through the existing Southport Landing Shopping Center. All buildings in the shopping center would be impacted, either directly by the road or due to required storm water detention. Belmont

Avenue would be realigned west from its existing location, with a new bridge over Little Buck Creek. Belmont Avenue would intersect Southport Road opposite Wellingshire Boulevard, which would be shifted approximately 80 feet east of its current location.

Figure 6-37: Decision Area 7-1 Configurations



Evaluation

The diverging diamond interchange layout proposed in Alternative C1 would provide efficient vehicular traffic operation for the forecasted level of demand and would provide reserve capacity to accommodate additional traffic growth. However, shifting the interchange west of SR 37 would reduce the distance between the southbound ramp terminal intersection and Wellingshire Boulevard to less than 1,000 feet, which would be a concern for operational performance.[7] Nor does Alternative C1 provide a through connection for Belmont Avenue between Southport Road and Banta Road. Alternative C1 would also impact an existing natural gas substation on the southwest corner of SR 37 and Southport Road.

Accommodating bicycles and pedestrians[8] on Southport Road through the diverging diamond interchange of Alternative C1 would be inefficient since it would require multiple crossings of the main traffic stream and/or traffic entering and exiting from ramps. Acute ramp angles make bicycles and pedestrians less noticeable to motorists, and controlling ramp flows with traffic signals to increase safety for non-motorized users can reduce interchange capacity significantly.

Relocating access for the Aspen Lakes Apartments through the Perry Commons neighborhood in Alternative C1 would likely cause queuing within the neighborhood unless left turns from Perry Commons Avenue onto Southport Road are prohibited or a traffic signal is installed.

The single point interchange layout proposed in Alternative C2 would provide acceptable traffic operation for the forecasted traffic levels, but it would have less reserve capacity for additional traffic demand than a diverging diamond or tight diamond interchange layout.

Accommodating bicycles and pedestrians on Southport Road through the single point interchange of Alternative C2 would be less efficient than other layouts because the large intersection requires long clearance times for non-motorized users and less safe because uncontrolled vehicle right turns increase conflicts with non-motorized users.

By shifting the interchange east of the SR 37 alignment, Alternatives C2 and C4A would provide a separation of approximately 1,300 feet between the interchange and Wellingshire Boulevard and over 2,000 feet between the interchange and Harding Street. Perry Commons Avenue could remain in place to provide access to Southport Road from the Perry Commons neighborhood, but prohibition of left turns onto Southport Road would be recommended.

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[7] *Inadequate spacing to adjacent intersections and inadequate control of traffic in the interchange vicinity could exacerbate existing congestion problems rather than relieve them. The Transportation Research Board Access Management Manual (2003, Table 9-14) provides recommendations for minimum spacing between interchanges and adjacent intersections. The manual recommends that no median openings be closer than ¼ mile from the nearest ramp terminal intersection and that no signalized intersection be closer than ½ mile. These distances are unlikely to be achieved due to existing development patterns, but separation from adjacent major streets should be maximized. The Southport Road and Harding Street intersection is currently signalized, and it is assumed that the Southport Road intersections with Perry Commons Avenue and Wellingshire Boulevard could be signalized in the future.*

[8] *Southport Road is on a designated national bicycle route, US Route 50. See* ***Section 4.2.2.5****.*

The folded diamond interchange layout proposed in Alternative C3 would provide acceptable traffic operation for the forecasted level of demand, but it would have less reserve capacity for additional traffic demand than a diverging diamond or tight diamond interchange layout.

The interchange layout of Alternative C3 would provide safe and efficient movement for bicycles and pedestrians, as compact intersections with right angle crossings provide good visibility of non-motorized users and minimize the time they require to cross the intersections.

The distance between the southbound ramp terminal intersection and Wellingshire Boulevard (less than 1,000 feet) in Alternative C3 would be a concern for operational performance. As with Alternative C1, relocating access for the Aspen Lakes Apartments through the Perry Commons neighborhood would likely cause queuing within the neighborhood unless left turns from Perry Commons Avenue onto Southport Road are prohibited. Installation of a traffic signal at this location would not be recommended due to its proximity to the interchange.

The tight diamond interchange layout proposed in Alternatives C4A and C4B would provide efficient vehicular traffic operation for the forecasted level of demand and would provide reserve capacity to accommodate additional traffic growth. This layout would also provide safe and efficient movement for bicycles and pedestrians, as compact intersections with right angle crossings provide good visibility of non-motorized users and minimize the time they require to cross the intersections.

By shifting the interchange north of the existing Southport Road alignment, Alternative C4B would allow almost all the Aspen Lake apartments to remain in place and would allow tenants to access Southport Road without passing through the Perry Commons neighborhood. This alternative would impact the existing natural gas substation on the southwest corner of SR 37 and Southport Road. The interchange ramp terminal intersections would be over 1,000 feet from both this access road and from Wellingshire Boulevard. The access road for the Aspen Lakes Apartments and Perry Commons would likely experience queuing at Southport Road unless left turns onto Southport Road are prohibited or a traffic signal is installed. Environmental impacts of the alternatives, including right of way, are shown in **Table 6-37**.

Alternative C4B would require the most right of way, and impact the most agricultural land and floodplain. The interchange area is surrounded by wellhead protection area, so impacts to these resources are in proportion to total right of way impacted by each alternative. Alternatives C3 and C4B would have higher stream impacts than the other two alternatives because they would have a wider footprint where I-69 crosses Little Buck Creek.

Alternatives C2 and C4A would have the same right of way footprint and impacts. These alternatives would have significantly more relocations than the other alternatives because they would require relocation of the entire Aspen Lakes apartment complex. Alternative C4B would impact one building at Aspen Lakes, and Alternative C1 would impact one building at the Southern Dunes apartments. Alternative C4B would impact all businesses in the Southport Landing Shopping Center, while Alternatives C1, C3, and C4A would impact many but not these businesses.

Table 6-37: Environmental Impacts, Decision Area 7-1: Southport Road Interchange Layout

Impact Criteria	Decision Area 7-1 Impacts[1]				
	Alt C1	Alt C2	Alt C3	Alt C4A	Alt C4B
New Right of Way (ac)	35	34	32	34	58
Relocations – Single Family Residential	5	1	5	1	1
Relocations – Apartment Unit	38	332	--	332	24
Relocations – Business	18	2	10	3	19
Total Wetlands (ac)	--	--	--	--	--
Total Streams (lf)	195	265	500	265	598
Floodplain (ac)	20	21	30	21	53
Wellhead Protection Areas (ac)	35	46	33	46	67
Agricultural Land (ac)	4	3	11	3	17
Upland Forest (ac)	0.9	2.7	2.6	2.7	1.8
Core Forest (ac)	--	--	--	--	--

1. All impacts shown are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

Recommendation

A final preferred alternative was not recommended for this decision area in the DEIS. Alternative C4 (either Option A or Option B) was recommended by INDOT. These options were presented for public input prior to refinement of the preferred alternative in the FEIS. Future traffic operation at this interchange were a stated concern of area residents (see **Section 11.2.2**), and both options would provide a good overall balance of performance for the forecasted vehicle traffic and for the bicyclists and pedestrians that are expected to use Southport Road. Both Alternative C4A and Alternative C4B would perform better than the other alternatives. While Alternative C1 would provide good operations for vehicles through the interchange, separation from adjacent intersections and accommodation of non-motorized traffic were concerns. Both Alternative C4 options also provide more reserve capacity than Alternatives C2 or C3 to accommodate future development in the area.

The performance of Alternative C4A was better than Alternative C4B east of I-69. Performance was improved by relocation of Aspen Lakes Apartments, which eliminated traffic demand adjacent to the interchange, but with a trade-off of significant residential impacts. The relocation of Southport Road with Alternative C4B allowed much of Aspen Lakes Apartments to remain in place, but the accommodation of Aspen Lakes traffic so close to the interchange reduced traffic performance east of I-69. Alternative C4B had better traffic performance than Alternative C4A west of I-69, but this was because of the potential relocation of all existing business in the Southport Landing Shopping Center. The residential relocations and forest impacts of Alternative C4B were lower than Alternative C4A, but all other impacts were higher.

Rationale

Alternative C4A or C4B would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area, Goal 4 to improve traffic safety in the Section 6 study area, and Goal 5 to support growth in economic activity in the Section 6 study area. Either C4A or C4B would provide the most efficient traffic operation at Southport Road, with reserve capacity to accommodate future growth while providing safe and efficient movement for bicycles and pedestrians.

Total Subsection 7 Impacts.

Table 6-38 shows a comparison of the total Subsection 7 environmental impacts for each alternative in the DEIS. This includes the impacts of interchanges and local service roads within the decision areas combined with the impacts of the preferred Mainline Option within this subsection.

Table 6-38: Environmental Impacts, Subsection 7: Wicker Road to Banta Road (DEIS)

Impact Criteria	Subsection 7 Impacts[1]				
	Alt C1	Alt C2	Alt C3	Alt C4A	Alt C4B
New Right of Way (ac)	66	65	63	65	89
Relocations (units)					
Residential - Single Family	7	2	6	3	3
Residential – Apartment Unit	38	332	--	332	24
Business	18	2	10	3	19
Total Relocations	63	336	16	338	46
Total Wetlands (ac)	0.02	0.02	0.02	0.02	0.02
Total Streams (lf)	769	839	1,074	839	1,172
Floodplain (ac)	35	36	45	36	68
Wellhead Protection Areas (ac)	110	121	108	121	142
Agricultural Land (ac)	8	7	15	7	21
Upland Forest (ac)	5	7	6	7	6
Core Forest (ac)	--	--	--	--	--

1. *Impacts for subsections include all impacts in the I-69 right of way. I-69 mainline impacts are included in this table, based on the selection of Mainline Option M2 as the preferred mainline option. See **Section 6.3.1.6** for description of the preferred mainline option.*

6.3.2.8 Subsection 8: Banta Road to and including I-465

Subsection 8, from Banta Road to I-465, passes through a densely developed area, with multiple crossing roadways, and large open water gravel pits next to I-465. The I-69/I-465 interchange is

the only decision area in this subsection. Most land use in the vicinity is commercial and industrial. Sunshine Gardens residential community fronts I-465 west of the interchange area. This subsection includes one decision area (see **Figure 6-38** through **Figure 6-40**).

- Decision Area 8-1: I-69/I-465 Interchange Layout

Decision Area 8-1: I-69/I-465 Interchange Layout

Decision

The objective in this decision area was to determine the I-69 alignment and interchange configuration to be used with I-465 in the preferred alternative and how to connect with Harding Street. Alternatives differed in the alignment of I-69, the layout of ramp systems, and the means to integrate access to Epler Avenue and SR 37/Harding Street with the freeway to freeway connection.

Alternatives (see **Figure 6-41**)

- C1: I-69 would be aligned straight north from Southport Road to I-465, through the existing gravel pits north of Epler Avenue. This alignment would avoid the businesses on the west side of SR 37 and minimize impacts to the Sunshine Gardens neighborhood further west. Access between I-69 to the south and the SR 37/Harding Street area would be provided by direct ramps south of Epler Avenue. Access between this area and I-69 north along I-465 would be via the existing SR 37/I-465 interchange.
- C2, C4: North of Epler Avenue, I-69 would be shifted slightly west. This would minimize construction through the gravel pits but would have more impact to businesses and residences west of the gravel pits. Access between I-69 to the south and the SR 37/Harding Street area would be provided by ramps to Epler Avenue, which would be realigned to become Old SR 37 north of the ramp terminal. Access between this area and I-69 north along I-465 would be via the existing SR 37/I-465 interchange.
- C3: North of Epler Avenue, I-69 would shift slightly west, following the same alignment as Alternatives C2 and C4. This would minimize construction through the gravel pits but would have more impact to businesses and residences west of the gravel pits. All access between I-69 and I-465 and the SR 37/Harding Street local street network would be via slip ramps from the system interchange to the existing I-465/Harding Street interchange.

With all alternatives, I-465 would be widened from Mann Road to US 31 to provide sufficient capacity for the additional traffic generated by I-69. Five travel lanes would be provided in each direction, including an additional auxiliary lane in each direction to allow for smooth merging and diverging of vehicles at the Mann Road, I-69, Harding Street, and US 31 interchanges.

The Southside German Market Gardeners Historic District is located on both sides of I-465 near Bluff Road. Since the district already abuts the right of way of I-465, there is no opportunity to devise an avoidance alternative that includes the additional I-465 lanes. This constitutes a use of an area eligible for listing in the National Register of Historic Places (NRHP), referred to as a Section 4(f) impact, as discussed in the next section.

Figure 6-38: Decision Area Locations - Subsection 8 (Part 1)

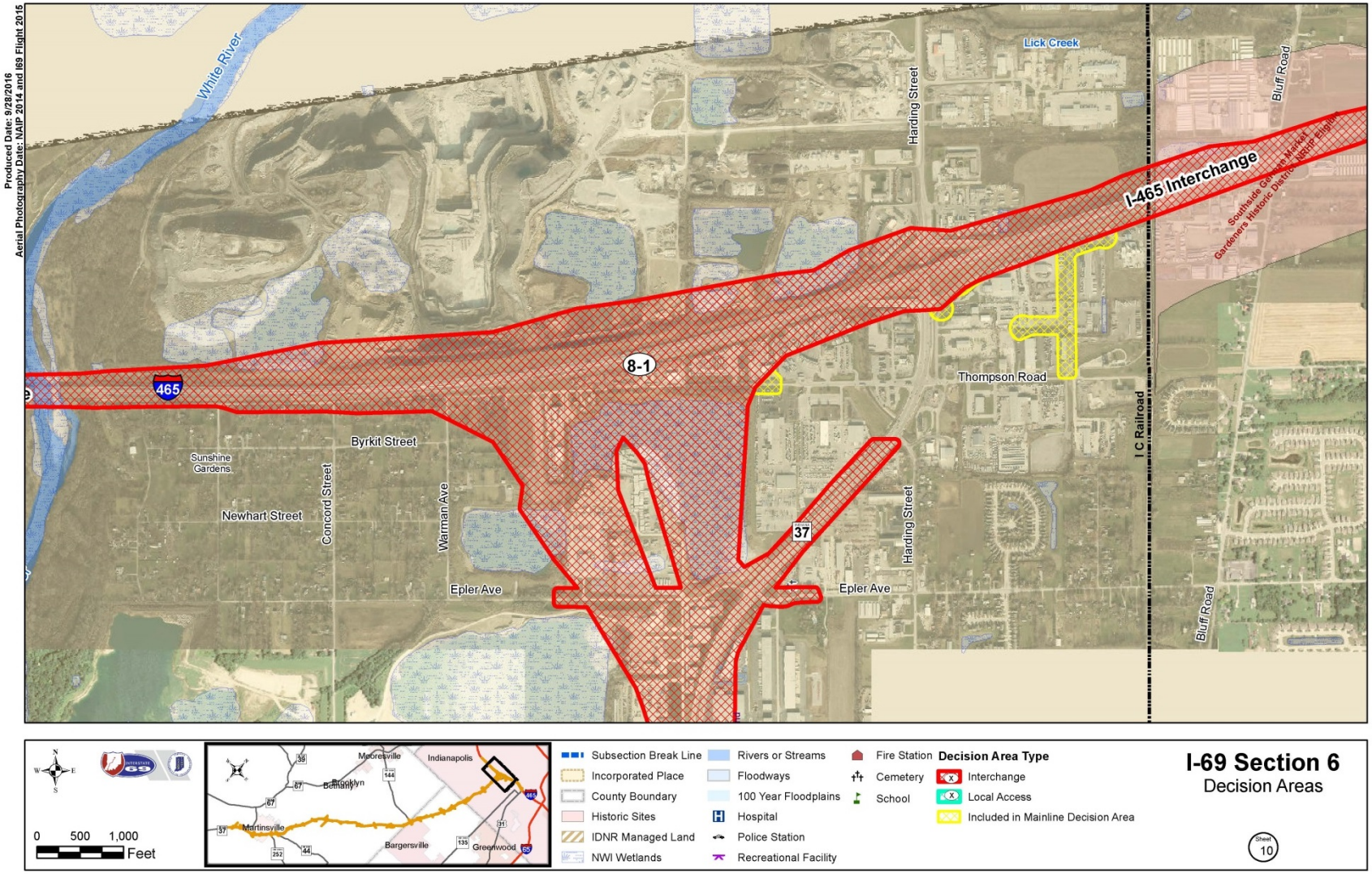


Figure 6-39: Decision Area Locations - Subsection 8 (Part 2)

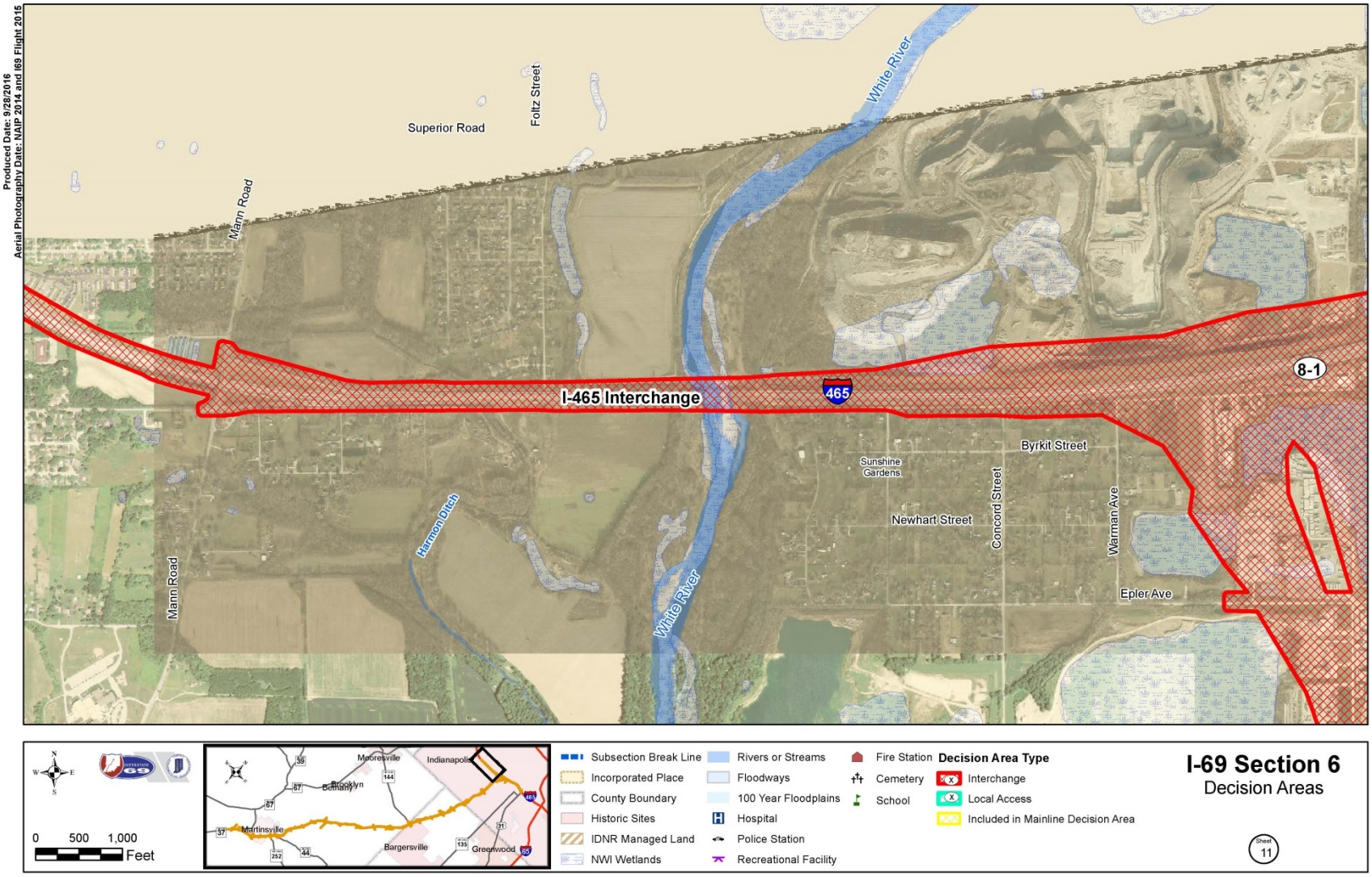


Figure 6-40: Decision Area Locations - Subsection 8 (Part 3)

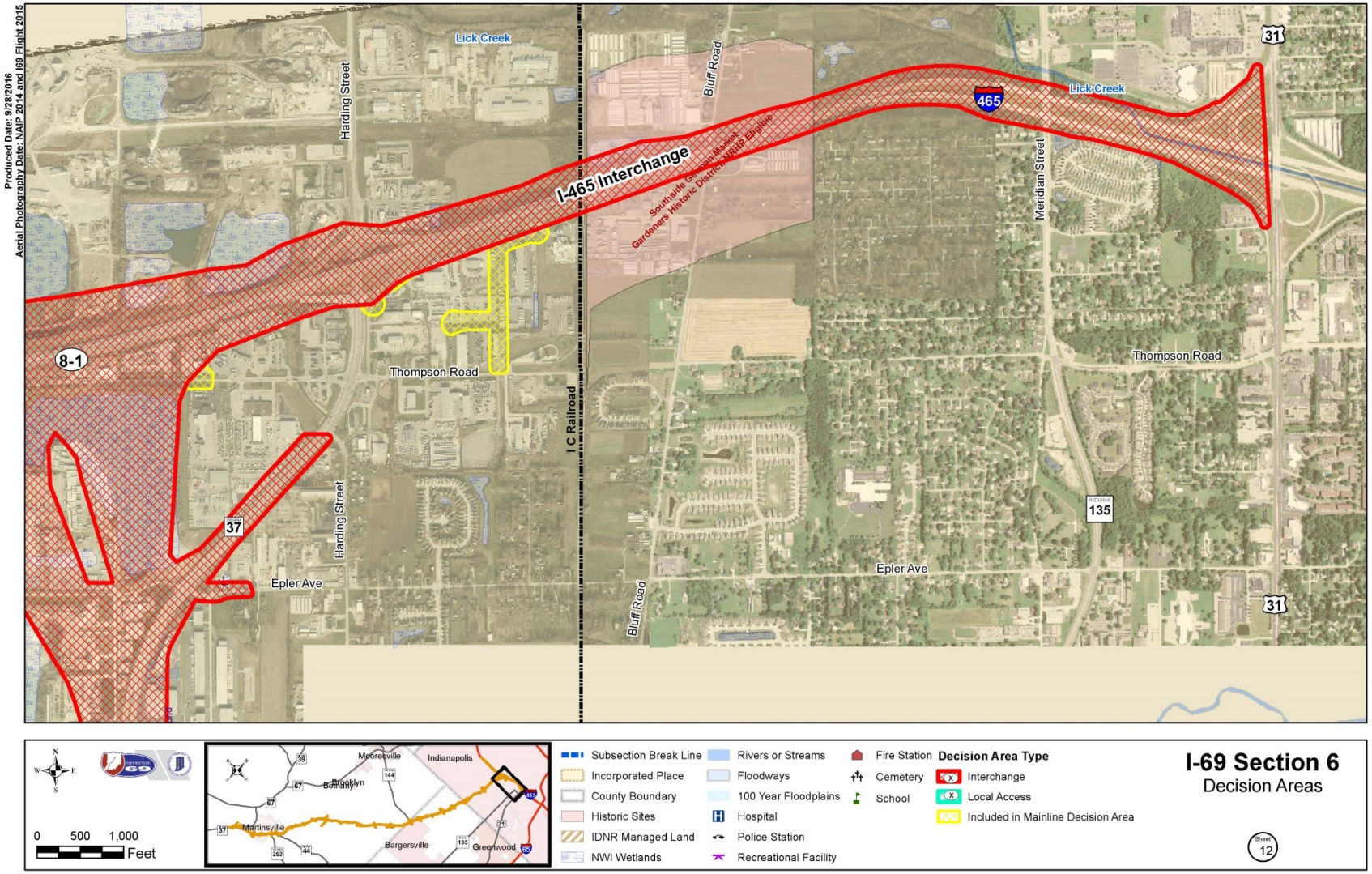
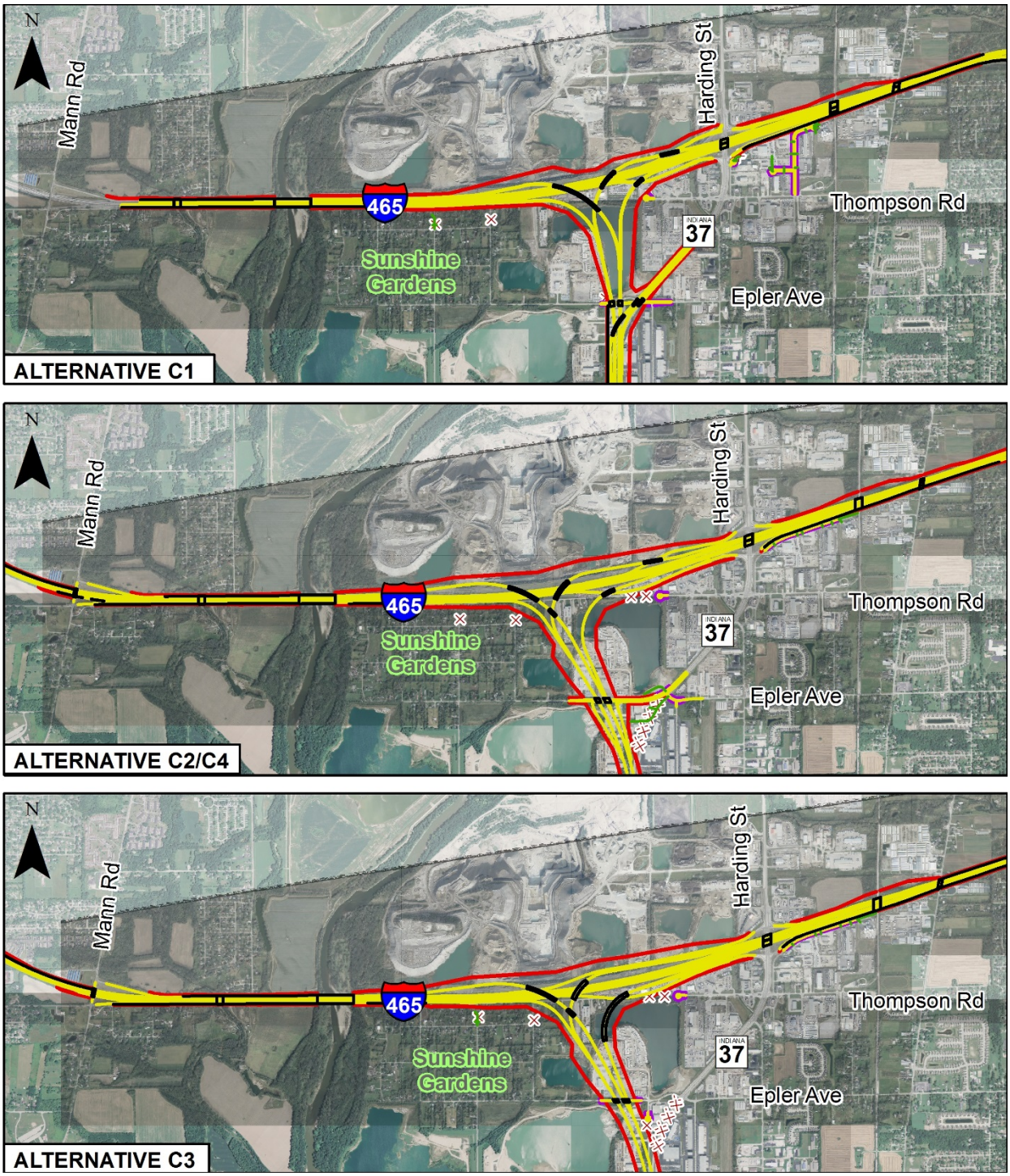


Figure 6-41: Decision Area 8-1 Configurations



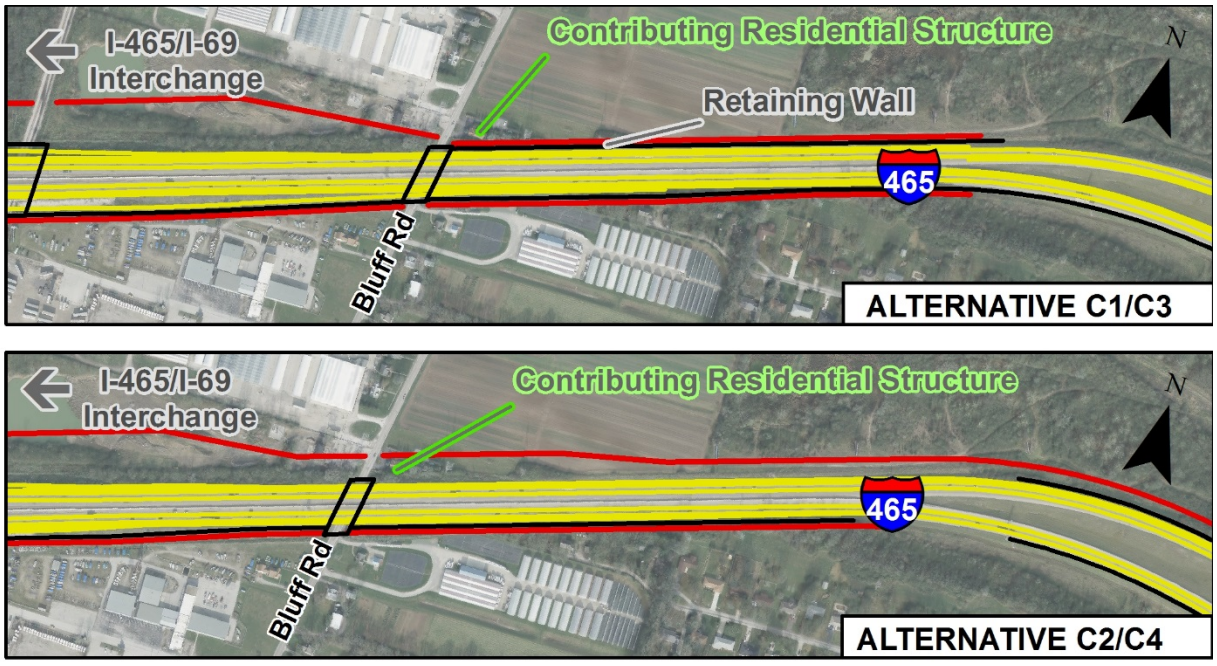
Section 4(f) Evaluation

Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. §303(c), requires that prior to the use of certain defined land types, it must be determined that there are no prudent and feasible alternatives that avoid such use and that the project includes all possible planning to minimize harm to such resources. One of the land types included in Section 4(f) legislation is land from an aboveground historic property that is listed in or eligible for inclusion in the NRHP. The Southside German Market Gardeners Historic District on Bluff Road is eligible to be listed in the NRHP.

Chapter 8, Section 4(f) provides a detailed analysis of the Section 4(f) properties in the proximity of I-69 Section 6 and I-465. It describes the actions taken to define and reduce the potential Section 4(f) use of all identified resources, including the Southside German Market Gardeners Historic District. Since this NRHP eligible historic district is located immediately adjacent to I-465, widening of I-465 would require acquisition of property in the NRHP eligible historic district, which would constitute a Section 4(f) use. Due to the necessity of widening of I-465 there was no feasible and prudent avoidance alternative to this Section 4(f) use.

Alternatives were analyzed to avoid or minimize harm to the district utilize retaining walls and side slopes. **Figure 6-42** shows the alternatives in the vicinity of the Southside German Market Gardeners Historic District.

Figure 6-42: Decision Area 8-1 Near Southside German Market Gardeners District



All alternatives would include a retaining wall on the south side of I-465 both east and west of Bluff Road to avoid direct impacts to a contributing structure located at 4425 Bluff Road and to minimize property acquisition within the NRHP eligible district. Alternatives C2 and C4 would include earthen side slopes north of I-465 both east and west of Bluff Road, using retaining walls in this vicinity only if their use would avoid relocation of electric transmission towers adjacent to the road. Both Alternatives C2 and C4 would require removal of the contributing structure at 4401 Bluff Road, immediately east of Bluff Road.

Alternatives C1 and C3 would include earthen slopes north of I-465 and west of Bluff Road, but they would use retaining walls north of I-465 and east of Bluff Road. While these alternatives avoided physical impacts to the contributing structure at 4401 Bluff Road, they would use a retaining wall, which would be an additional visual impact to the NRHP eligible district.

Although Alternatives C2 and C4 would require acquisition of more property from the Southside German Market Gardeners Historic District than Alternatives C1 and C3, as shown in **Figure 6-42**, they were considered the least overall harm alternatives because the vegetated earthen side slope would be less of a visual impact to the NRHP eligible district than a retaining wall. **Chapter 8, Section 4(f)** provides additional information on this least overall harm alternatives.

Evaluation

Environmental impacts of the alternatives, including right of way, are shown in **Table 6-39**. The differences in impacts between Alternative C1 and the other alternatives are primarily due to the alignment of Alternative C1 further east, where it impacts less of the Sunshine Gardens residential neighborhood but more of the businesses and quarry areas closer to SR 37.

Table 6-39: Environmental Impacts, Decision Area 8-1: I-69/I-465 Interchange Layout

Impact Criteria	Decision Area 8-1 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	171	206	198	206
Relocations – Single Family Residential	15	18	18	18
Relocations – Business	18	13	14	13
Section 4(f) – Historic (ac)	5	6	5	6
Total Wetlands (ac)	0.11	0.04	0.04	0.04
Total Streams (lf)	5,995	5,313	5,313	5,313
Floodplain (ac)	138	135	135	135
Wellhead Protection Areas (ac)	51	44	37	44
Agricultural Land (ac)	1	2	1	2
Upland Forest (ac)	4.3	5.8	4.8	5.8
Core Forest (ac)	--	--	--	--

1. All impacts are outside the I-69 mainline right of way. I-69 mainline impacts are not included in this table.

The I-69/I-465 system interchange would be designed to accommodate all movements at a minimum design speed of 55 mph. All alternatives would provide good operations with adequate separation between system interchange movements and local traffic accessing the SR 37/Harding Street area.

All alternatives would provide local road connectivity across I-69 at Banta Road and Epler Avenue, and all alternatives would close Thompson Road so that traffic cannot pass from one side of I-69 to the other. Alternatives C1 and C4 would provide an underpass at Edgewood Avenue to allow access from the east side of I-69 to remaining businesses along Belmont Avenue west of I-69. This was noted as an important connection by the City of Indianapolis and the Indianapolis Fire Department. Alternatives C2 and C3 would not provide an underpass at Edgewood Avenue.

Alternatives C1, C2, and C4 would provide more direct connectivity between the SR 37/Harding Street area and I-69 to the south using ramps at or near Epler Avenue. Alternative C3 would only provide access to this area at the existing I-465/Harding Street interchange, requiring additional travel for those going to or coming from the south on I-69. Providing these ramps to access the local street network south of I-465 was preferred by most who expressed an opinion at public meetings.

The cost of constructing the I-69/I-465 system interchange would be substantially higher with Alternative C1 than with the other alternatives due to the cost of bridging or filling the quarry pond between Epler Avenue and Thompson Road. Right of way costs would also be higher with Alternative C1 due to increased impacts to businesses. The cost of constructing Alternatives C2, C3 or C4 would be similar.

Recommendation

Alternative C2/C4 was recommended in the DEIS. This alternative would shift the I-69/I-465 interchange west of the existing quarry pits near SR 37, provide split access to the SR 37/Harding Street area from Epler Avenue and from I-465, and provide an underpass of I-69 at Edgewood Avenue. Shifting the I-69/I-465 interchange west would substantially lower construction and right of way costs and reduce most environmental impacts. Providing access to the SR 37/Harding Street area from both the south and the north was preferred by the public over access only from the existing I-465/Harding Street interchange. Provision of an underpass of I-69 at Edgewood Avenue was considered important for emergency response by the Indianapolis Fire Department and the City of Indianapolis.

Alternative C2/C4 was recommended in the DEIS even though it would use one more acre of the Section 4(f) resource than Alternative C1/C3, as shown in **Table 6-41**. The additional acre was required for earth slopes rather than retaining walls (except around electric transmission towers) north of I-465 and east of Bluff Road. **Chapter 8, Section 4(f)** addresses the retaining wall versus earth slope options in detail (see **Sections 8.6** and **8.7**). Fundamentally, the trade-offs were the visual impact of the wall compared with the additional acres of 4(f) use to construct the earth slope. The Division of Historic Preservation and Archaeology – State Historic Preservation

Officer (DHPA-SHPO) is the official with jurisdiction[9] over these properties since they have jurisdiction over all historic resources in Indiana. On November 28, 2016, DHPA-SHPO indicated the following:

> *We accept the recommendation that an earthen slope be constructed east of Bluff Road and north of I-465 within the Southside German Market Gardeners Historic District, with MSE (i.e., mechanically stabilized earth) retaining walls being constructed around the electric transmission towers to the east of the house at 4401 Bluff Road.*

Rationale

All alternatives would be effective in serving Goal 2 of the project purpose and need to improve personal accessibility in the Section 6 study area, Goal 3 to reduce future traffic congestion on the highway network of the Section 6 study area, and Goal 4 to improve traffic safety in the Section 6 study area. The proposed I-69/I-465 interchange location would result in the lowest construction cost and impacts due to the I-69 alignment west of existing businesses and quarry ponds. Direct connectivity would be provided between the SR 37/Harding Street area and I-69 to the south, and an underpass would be provided at Edgewood Avenue, as requested by the City of Indianapolis and the Indianapolis Fire Department.

Total Subsection 8 Impacts.

Table 6-40 shows a comparison of the total Subsection 8 environmental impacts for each alternative in the DEIS. This includes the impacts of interchanges and local service roads described within the decision areas combined with the impacts of the preferred Mainline Option M2 in this subsection.

6.3.3 Overall Impacts of Alternatives

As described in **Section 6.2**, I-69 mainline, interchange, and local service road components were assembled in various combinations in the DEIS to form complete alternatives for public review and evaluation. The first three alternatives, Alternatives C1, C2, and C3, were structured to include the full range of project components that might be included in the preferred alternative of the DEIS. Based on additional technical review and extensive public and agency input, a fourth alternative, referred to as Alternative C4, was developed as a hybrid of the other alternatives. The intent of Alternative C4 was to incorporate the best features of Alternatives C1, C2, and C3. An option was added to Alternative C4 at the Southport Road interchanges. Each of these alternatives is illustrated in the map series provided at the end of **Chapter 3, Alternatives**.

[9] Official with jurisdiction - The official empowered to represent a Section 4(f) resource on matters related to the property. Typically for historic sites the official with jurisdiction is the DHPA-SHPO and for public parks, recreation areas, and wildlife and waterfowl refuges the official with jurisdiction is the agency or agencies that own or administer the property.

Table 6-40: Environmental Impacts, Subsection 8: Banta Road to I-465 (DEIS)

Impact Criteria	Subsection 8 Impacts[1]			
	Alt C1	Alt C2	Alt C3	Alt C4
New Right of Way (ac)	184	225	225	206
Relocations (units)				
Residential - Single Family	15	19	19	18
Business	20	13	15	13
Total Relocations	35	32	34	31
Section 4(f) – Historic or NRHP Eligible (ac)	5	6	5	6
Total Wetlands (ac)	0.11	0.04	0.04	0.04
Total Streams (lf)	6,194	5,512	5,512	5,512
Floodplain (ac)	153	150	150	150
Wellhead Protection Areas (ac)	71	64	57	64
Agricultural Land (ac)	4	5	4	5
Upland Forest (ac)	4	6	5	6
Core Forest (ac)	--	--	--	--

1. *Impacts for subsections include all impacts in the I-69 right of way. I-69 mainline impacts are included in this table, based on the selection of Mainline Option M2 as the preferred mainline option. See **Section 6.3.1.6** for description of the preferred mainline option.*

Impacts of Alternatives C1 through C4, assuming the use of the preferred Mainline Option M2 for the I-69 mainline, are presented within eight subsections of the corridor in **Section 6.3.2**. **Table 6-41** includes the overall end-to-end impacts of Alternatives C1 through C4, from Indian Creek to and including I-465, for each of the alternatives as presented in **Chapter 3, Alternatives**. This table reflects the original assumed mainline option for each alternative rather than Mainline Option M2 as used in the preferred alternative. Alternative C4 is broken into two columns in **Table 6-41** to show the impacts of Options A and B for the Southport Road interchange, as described in **Section 6.3.2.7**.

Interchanges and local service roads in the preferred alternative of the DEIS were identified based on a review of cost, impact, and effectiveness in serving purpose and need within individual decision areas assuming mainline option M2 rather than using the end-to-end values in **Table 6-41.** There are cases where environmental impacts or costs are not the lowest with the preferred alternative, but these factors are offset by the effectiveness of the option in serving the project purpose and need. Each decision area is reviewed in **Section 6.3.2** to clearly describe the basis of decision making.

Table 6-41: Total End-to-End Impacts by Alternative (DEIS)[1]

Impact Criteria	Alt C1	Alt C2	Alt C3	Alt C4A	Alt C4B
Right of Way (acres)					
Existing Right of Way	924	941	921	942	943
New Right of Way	999	1,171	945	1,129	1,126
Total Right of Way	1,923	2,112	1,866	2,071	2,069
Number of Relocations					
Residential - Single Family Home	135	172	167	142	143
Residential - Duplex Unit	6	6	6	6	6
Residential - Mobile Home	6	39	13	39	39
Residential - Apartment Unit	42	344	12	336	28
Business	83	77	89	78	94
Religious Facility/School	--	1	--	1	1
Fire Station	--	1	--	1	1
Library	1	--	1	--	--
Non-Profit	--	1	1	--	--
Total Relocations	273	641	289	603	312
Section 4(f)					
Park (acres)	--	--	--	--	--
Historic or NRHP Eligible (acres)	5	6	5	6	6
Total Wetland (acres)					
Emergent Wetland	8.25	9.48	6.78	7.34	7.34
Forested Wetland	3.53	3.24	2.67	3.27	3.27
Scrub/Shrub Wetland	0.29	0.13	0.23	0.22	0.22
Total Wetland Impacts	12.07	12.85	9.68	10.83	10.83
Total Streams (linear feet)					
Ephemeral	21,034	21,176	20,541	21,125	21,143
Intermittent	5,987	6,101	5,184	6,479	6,479
Perennial	15,759	17,322	16,650	15,932	15,940
Total Stream Impacts	42,780	44,599	42,375	43,536	43,562

Impact Criteria	Alt C1	Alt C2	Alt C3	Alt C4A	Alt C4B
Total Natural Stream Impacts	11,199	13,034	10,710	11,567	11,582
Stream Relocations (linear feet)	25,685	25,976	25,507	27,160	27,171
Floodplain (acres)	475	537	479	499	500
Wellhead Protection Areas (acres)	467	513	456	485	483
Agricultural Land (acres)	252	344	242	317	322
Managed Land (acres)					
Publicly Owned	2.9	3.2	1.5	3.2	3.2
Privately Owned	7.1	10.7	7.1	10.7	10.7
Upland Forest (acres)	136	146	102	145	145
Core Forest (acres)	7.7	11.7	2.5	11.8	11.8

1. *The alternatives in **Table 6-41** were developed prior to the designation of a preferred mainline option (See **Section 6.3.1.6**). Rather than assuming a preferred mainline option as in the subsection impact tables in **Section 6.3.2.1** through **6.3.2.8**, the alternatives in **Table 6-41** assume different mainline options (Mainline Option M1 with Alternative C1, Mainline Option M2 with Alternatives C2 and C4, Mainline Option M3 with Alternative C3).*

Alternative C3 would require the least amount of new right of way, and the second lowest number of relocations of the alternatives. Alternative C1 would require fewer relocations in Martinsville due to the retaining walls along each side of I-69 with Mainline Option M1. Comparing the overall number of relocations for the complete alternatives in **Table 6-41** with those caused by the mainline options (**Figure 6-9**) indicates that most relocations are associated with interchange and local service road construction.

The overall impacts shown in **Table 6-41** show a pattern similar to right of way and relocations. Alternative C3 would have the lowest impacts in most categories. Comparing the values for complete alternatives in **Table 6-41** with those for the mainline options in **Table 6-10** indicates that most of these impacts are associated with interchanges and local service roads. These components provide greater benefit to the community, as discussed for each of 23 decision areas in **Section 6.3.2**.

6.3.4 Overall Cost of Alternatives

Table 6-42 provides a summary of the major cost items and estimated overall cost for each alternative presented in the DEIS, from Indian Creek to and including I-465. These end-to-end alternatives are described in **Chapter 3, Alternatives**. **Table 6-43** provides a breakdown of the estimated cost of each of these alternatives by subsection. Alternative C4 is broken into two columns in these tables to reflect the estimated cost of Options A and B for the Southport Road interchange, as described in **Section 6.3.2.7**. See **Section 6.4.3** for an updated cost estimate for alternative C4B prepared after the DEIS was published.

Table 6-42: Estimated Cost by Cost Item ($ Millions)* for Alternatives C1 through C4 (DEIS)

Cost Item	Alt C1	Alt C2	Alt C3	Alt C4A	Alt C4B
Preliminary Engineering	$79.7	$63.9	$61.4	$65.8	$65.9
Right of Way	$173.5	$200.9	$187.1	$220.1	$201.2
Environmental Mitigation	$39.5	$37.6	$35.1	$40.8	$40.8
I-69 Construction	$984.8	$771.1	$729.0	$800.5	$801.6
I-465 Construction	$145.7	$134.8	$140.1	$134.8	$134.8
Utilities	$148.9	$157.3	$143.2	$157.6	$158.5
Construction Administration	$102.1	$81.8	$78.6	$84.7	$84.8
Total All Cost Items	**$1,674.2**	**$1,447.4**	**$1,374.5**	**$1,504.3**	**$1,487.6**

* Costs are year of expenditure dollars, assuming design-bid-build construction begins in 2020 and ends in 2026

Table 6-43: Estimated Cost by Subsection ($ Millions)* for Alternatives C1 through C4 (DEIS)

Subsection	Alt C1	Alt C2	Alt C3	Alt C4A	Alt C4B
Subsection 1	$67.0	$61.0	$46.7	$53.2	$53.2
Subsection 2	$226.5	$207.4	$197.3	$239.7	$239.7
Subsection 3	$86.5	$73.6	$67.4	$74.2	$74.2
Subsection 4	$160.4	$144.3	$111.8	$148.6	$148.6
Subsection 5	$206.5	$206.4	$201.0	$203.5	$203.5
Subsection 6	$106.1	$111.9	$102.7	$108.5	$108.5
Subsection 7	$149.3	$139.9	$137.3	$168.2	$151.5
Subsection 8	$671.9	$502.9	$510.3	$508.4	$508.4
Total All Subsections	**$1,674.2**	**$1,447.4**	**$1,374.5**	**$1,504.3**	**$1,487.6**

* Costs are in year of expenditure dollars, assuming design-bid-build construction begins in 2020 and ends in 2026

Alternative C3 would be the least expensive alternative overall. This is partly because it would use Mainline Option M3, which would reuse the existing 10-foot wide outside shoulders south of SR 144. In addition to allowing the reuse of a substantial amount of existing SR 37 pavement, this option would leave existing side slopes and ditches in place, which would reduce construction cost and right of way needs. The cost difference also results from reduced local service road construction with Alternative C3, which would reduce the effectiveness of this alternative in serving the project purpose and need. (See review of decision areas in **Section 6.3.2**).

Alternatives C2 and C4 would have similar estimated costs, which are higher than Alternative C3. This is due partly to additional shoulder, side slope, and drainage construction, but it also results from interchange and local service road components that are more effective in meeting project purpose and need, as discussed in the review of decision areas in **Section 6.3.2**. Alternatives C2 and C4 would both use Mainline Option M2, which would reuse a substantial

amount of existing SR 37 pavement. Both alternatives would use the same configuration of the I-69/I-465 interchange.

Alternative C1 would be the most expensive alternative. It incorporates Mainline Option M1, which allows the least reuse of existing SR 37 pavement since widening the median would require at least one side (two lanes) of SR 37 to be reconstructed throughout. Side slopes and ditches would require reconstruction on the side that remains in order to provide a 12-foot outside shoulder. In addition, the I-69/I-465 interchange configuration included in Alternative C1 is more expensive than the configuration included in the other alternatives because its alignment impacts more businesses and requires filling or bridging a quarry. Alternative C1 also includes an elevated roadway section through Martinsville, which would increase the cost further.

6.3.5 DEIS Preferred Alternative (Alternative C4)

The preferred alternative in the DEIS was Alternative C4, as described in **Section 3.7** of **Chapter 3, Alternatives**, with the layout of the Southport Road interchange still to be determined. A cross section view of the mainline of Alternative C4 is provided in **Figure 3-8** and **Figure 3-9**, and a summary of design elements is presented in **Table 3-8**. Detailed illustrations of Alternative C4 are provided in the map series that follows **Chapter 3, Alternatives**. The Southport Road interchange layout was to be determined based on public input following publication of the DEIS. The Southport Road interchange options are portrayed in **Section 6.3.2.7**.

The approach for defining the preferred alternative for I-69 Section 6 in the DEIS was structured to address the issues and options that are most effective in meeting the purpose and need for this project. The I-69 Evansville to Indianapolis Tier 1 EIS concluded that an interstate highway is to be constructed between Martinsville and Indianapolis. The screening process for I-69 Section 6 concluded that the highway would follow SR 37 until it approaches and connects with I-465. The remaining questions relate to the design of the mainline (I-69 highway cross section) and the location and configuration of interchanges and local service roads.

The two-stage evaluation process applied in **Section 6.3** focused first on the mainline options, then on the interchanges and local service road configurations. In this way, decisions regarding median and shoulder widths of the interstate highway were separated from the more localized decisions regarding interchanges and local service roads.

As described in **Section 6.2.1**, Mainline Option M2 (used by Alternative C4) would allow extensive reuse of SR 37 pavement, and the 12-foot outside shoulders would meet the acceptable design criteria typically used by INDOT and FHWA for freeway construction in Indiana. Reasons for recommending the interchange and local service road components of Alternative C4 are detailed for 23 local decision areas in **Section 6.3.2**, which links the recommendations to the project goals provided in **Table 2-2** of **Chapter 2, Purpose and Need**.

Section 6.3.3 notes that Alternative C4 would not have the lowest right of way requirement, fewest relocations, or least environmental impact of the end-to-end alternatives. **Section 6.3.4** shows that Alternative C4 would not have the lowest cost. Alternative C3 would appear to be the more attractive alternative based on impacts and costs, but these factors alone do not fully reflect value to the community. All alternatives would meet Goal 1 of the project purpose and need to provide an interstate highway between Martinsville and Indianapolis, but they are not equal in terms of how well they meet the other goals of the project purpose and need.

The effectiveness of the preferred alternative in meeting the project purpose and need was identified in the review of each of the 23 decision areas in **Section 6.3.2**. Alternative C4 was the most effective alternative in meeting the project purpose and need. This high level of performance warranted the identification of Alternative C4 as the preferred alternative for I-69 Section 6 in the DEIS. Alternative C4 was the only alternative that accomplished all the items listed below.

- The existing SR 39 interchange layout would be reused, providing economic and constructability benefits that would not be provided by reconstructing it as a diamond interchange.

- Stream, floodplain, and forest impacts would be reduced near Indian Creek by using existing Burton Lane for access to the Liberty Church Road area instead of constructing a new local service road connection.

- Right of way needs would be minimized by using a roundabout in state-owned right of way at Rogers Road rather than relocating Rogers Road.

- A Burton Lane overpass would maintain the existing access to economic development areas east of Martinsville and would avoid the need to construct a new local service road between SR 39 and the Liberty Church Road area. An overpass would comply with the preference of the City of Martinsville and most other stakeholders and public commenters that I-69 remain at the existing SR 37 elevation through Martinsville.

- An Ohio street interchange would provide direct access from I-69 to the Martinsville downtown area, as requested by the City of Martinsville and as shown in city and county transportation plans. An Ohio Street overpass rather than underpass at the interchange would comply with the local preference that I-69 remain at the existing SR 37 elevation through Martinsville.

- The extension of Grand Valley Boulevard to Cramertown Loop would replace lost access to the Grand Valley Shopping Center from SR 37 with a short, direct path to I-69 at the SR 252 interchange. A Grand Valley overpass of I-69 comply with the local preference that I-69 remain at the existing SR 37 elevation through Martinsville.

- A modified split diamond interchange would allow direct access between I-69 and SR 252 in both directions, without requiring travel through the SR 44 ramp terminal

intersections. It would provide direct access from I-69 northbound to Reuben Drive and would allow westbound emergency responders to use Kristi Road to serve areas west of I-69 (e.g., Foxcliff subdivisions).

- The proposed alignment of Twin Branch Road along the east side of I-69 would provide the most direct access to the local service road at Cikana Fish Hatchery and nearby residences at the least cost and with the lowest level of natural impacts.

- The Morgan Street extension would avoid the Prince of Peace Lutheran Church parking area, and the Myra Lane underpass would be safer and more direct than an overpass, requiring less right of way, with lower wetland, stream, and floodplain impact.

- The Egbert Road/Old SR 37 overpass would be more direct than other alternatives, and would require less right of way, with lower wetland, stream, and floodplain impact.

- The full diamond interchange at Henderson Ford Road would provide flexibility for development in a tax increment finance district and accommodate future traffic growth.

- The New Harmony Road link with Centennial Road would reduce local travel over the county road system for motorists that currently rely on SR 37, addressing a concern expressed by residents at public meetings.

- A Perry Road overpass would provide for east-west travel and local roadway circulation on the longest segment of I-69 without an interchange, addressing a concern expressed by residents at public meetings.

- An overpass would be provided at Waverly Road rather than Whiteland Road, as requested by local school districts and emergency responders to best support routes within their service areas.

- The use of guardrail along SR 144 west of the I-69 interchange would allow the interchange to be constructed without impact the Waverly library branch while still meeting minimum design criteria.

- A continuous local service road west of I-69 between Old SR 37 at Olive Branch Road and Smith Valley Road would avoid creating landlocked parcels and provide shorter and more direct trip lengths for farm equipment and motorists accessing that area.

- Realignment of I-69 north of Smith Valley Road would avoid impacts to 5 residences.

- A continuous local service road west of I-69 between Smith Valley Road and Fairview Road would avoid creating landlocked parcels and provide shorter and more direct trip lengths for farm equipment and motorists accessing that area.

- The proposed folded diamond interchange layout at County Line Road would require 13 fewer relocations and have fewer natural impacts. It would also allow shorter trip lengths for residents and businesses along Bluff Road.

- A continuous local service road west of I-69 between Fairview Road and County Line Road would provide safer, shorter, and more direct trip lengths for farm equipment and motorists accessing that area.

- The continuous local service road provided by combining all sections along the west side of I-69 from SR 144 to County Line Road would serve as an alternate route for use by local traffic, traffic that cannot use I-69 (e.g., farm vehicles and bicycles), and traffic that may be diverted in case of I-69 closure for an extended section of I-69.

- Either C4A or C4B would provide the most efficient traffic operation at Southport Road, with reserve capacity to accommodate future growth while providing safe and efficient movement for bicycles and pedestrians.

- The proposed I-69/I-465 interchange location would result in the lowest construction cost and impacts due to the I-69 alignment west of existing businesses and quarry ponds. Direct connectivity would be provided between the SR 37/Harding Street area and I-69 to the south, and an underpass would be provided at Edgewood Avenue, as requested by the City of Indianapolis and the Indianapolis Fire Department.

6.4 Refined Preferred Alternative (RPA) Evaluation

To define the RPA, technical refinements were made to design details of the DEIS preferred alternative, Alternative C4, to better define anticipated project elements and construction limits. In some cases, these technical refinements were made in response to comments. In other cases, they were based on more detailed information developed after the DEIS was published. The RPA retains most of the features of Alternative C4, with refinements based on public and agency input, more detailed technical evaluation, and value engineering studies. **Section 3.8** identifies the refinements made to Alternative C4 to define the RPA. Details of the RPA are illustrated in a series of maps at a scale of 1 inch = 500 feet at the end of **Chapter 3, Alternatives**.

6.4.1 RPA Impact Changes by Subsection

Consistent with the definition of the RPA in **Chapter 3, Alternatives**, the review of RPA impacts is conducted by subsection. These geographic subsections are listed in **Section 6.1.2**. They are also shown on **Figure 3-11** through **Figure 3-23** and in the detailed map series showing each of the alternatives at the end of **Chapter 3, Alternatives**. This section reviews the refinements made to Alternative C4 in each subsection and identifies the change in impacts resulting from the refinements by comparing the RPA with Alternative C4 in a series of tables.

6.4.1.1 RPA Evaluation, Subsection 1 - Indian Creek to SR 39

As described in **Section 3.8.1**, changes to Alternative C4 in the RPA are minimal in this subsection. Mainline bridges at Indian Creek will be higher, but the configuration of the SR 39 interchange and nearby local service roads is unchanged in the RPA. New ramps in the interchange are realigned slightly to provide for more desirable design speed for the northbound exit ramp.

Table 6-44 compares estimated environmental impacts in Subsection 1 for Alternative C4 and the RPA. All mainline, interchanges, and local service roads are included in each alternative. RPA impacts reflect changes to the DEIS preferred alternative (C4) described in **Section 3.8.1**.

Table 6-44: Environmental Impacts, Subsection 1: Indian Creek to SR 39

Impact Criteria	Subsection 1 Impacts	
	Alt C4	RPA
New Right of Way (ac)	25	25
Relocations (units)		
Non-Profit[1]	1	1
Total Relocations	1	1
Total Wetlands (ac)[2]	0.42	0.44
Total Streams (lf)	1,887	2,181
Floodplain (ac)	56	63
Agricultural Land (ac)	14	14
Upland Forest (ac)	2	3
Core Forest (ac)	--	--

1. *Centerstone was counted as a business relocation in the DEIS but has been redesignated as a non-profit in the FEIS. It is correctly shown in this table for Alternative C4 and the RPA.*
2. *Wetland calculations for Alternative C4 and the RPA have been updated based on more precise data available from wetland delineation performed after the DEIS was published.*

As shown in **Table 6-44**, the refinements to Alternative C4 in defining the RPA did not affect the amount of new right of way needed or the number of relocations. There are small increases in estimated impacts to wetlands, streams, floodplain, and forests. These increases are due to better definition of drainage features, refinements of construction limits, and property line adjustments rather than to changes in the project components.

There are no substantive changes in cost or function of the RPA in Subsection 1, compared with Alternative C4.

6.4.1.2 RPA Evaluation, Subsection 2 - SR 39 to Morgan Street

As described in **Section 3.8.2**, refinements to Alternative C4 in the RPA include the elimination of the Burton Lane overpass, reconfiguration of the Ohio Street interchange, adjustments to the alignment of Grand Valley Boulevard, and a new roadway identified as Artesian Avenue that extends east from Mahalasville Road and curves north to align with the existing Walmart entrance at Grand Valley Boulevard. The addition of Artesian Avenue allows a portion of the local service road near Industrial Boulevard to be eliminated in the RPA. In addition, the mainline is shifted slightly and retaining walls are provided near the Spring Valley and Sun Valley Mobile Home Parks. See **Figure 6-43**.

Figure 6-43: The RPA in Martinsville

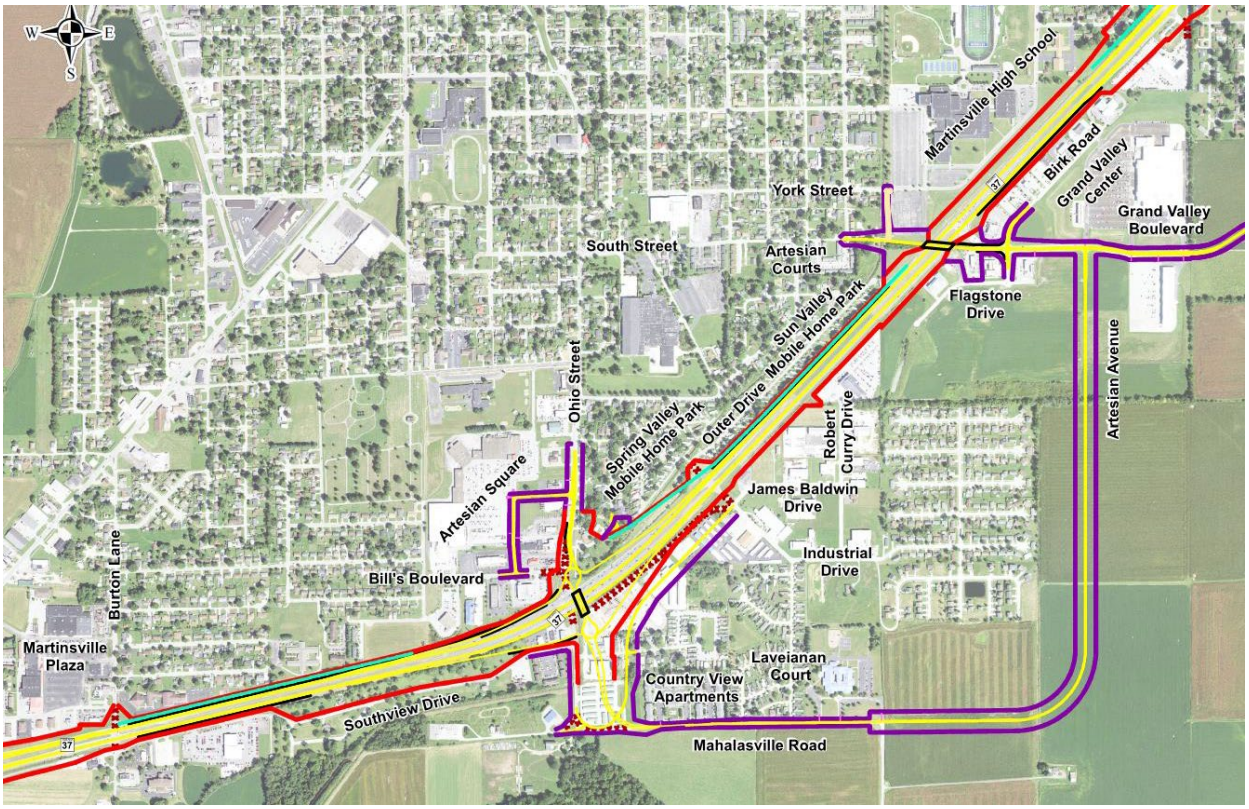


Table 6-45 compares estimated environmental impacts in Subsection 2 for Alternative C4 and the RPA. All mainline, interchanges, and local service roads are included in each alternative. RPA impacts reflect changes to the DEIS preferred alternative (C4) described in **Section 3.8.2**.

As shown in **Table 6-45**, the refinements to Alternative C4 in defining the RPA resulted in less new right of way and fewer relocations. New right of way required is 141 acres with the RPA, compared with 159 acres with Alternative C4. Relocations are substantially lower with the RPA. By eliminating the Burton Lane overpass, the relocation of the Martinsville Baptist Tabernacle

Church and Tabernacle Christian School is avoided in the RPA. The shift in the mainline, coupled with retaining walls north of the Ohio Street interchange reduces the relocation of mobile homes in Sun Valley and Spring Valley Mobile Home Parks from 29 to 1. As described in **Section 5.8.4.6**, these relocations would be in communities identified as potentially having low-income populations. Overall, removal of the Burton Lane overpass, changes in local service roads and reconfiguration of the Ohio Street interchange would reduce business relocations from 37 to 23, and single family residential relocations from 54 to 51 in the RPA.

Table 6-45: Environmental Impacts, Subsection 2: SR 39 to Morgan Street

Impact Criteria	Subsection 2 Impacts	
	Alt C4	RPA
New Right of Way (ac)	159	141
Relocations (units)		
Residential - Single Family	53	51
Residential – Duplex Units	6	6
Residential - Mobile Homes[1]	30	2
Residential – Apartment Units	4	4
Business[2]	38	23
Religious Facility/School	1	--
Non-Profit[3]	1	1
Total Relocations	133	87
Total Wetlands (ac)[4]	0.20	0.16
Total Streams (lf)	11,350	11,576
Floodplain (ac)	47	36
Agricultural Land (ac)	8	26
Upland Forest (ac)	29	27
Core Forest (ac)	0.3	--

1. *One mobile home unit included in the DEIS as a single-family home was misclassified. It is correctly shown in this table for Alternative C4 and the RPA. The mobile home unit is not located within a mobile home park.*
2. *Business relocations for Alternative C4 and the RPA were updated based on additional information regarding the use of properties. This additional information became available after the DEIS was published*
3. *The Evening Lions Club counted as a business relocation in the DEIS has been redesignated as a non-profit in the FEIS. It is correctly shown in this table for Alternative C4 and the RPA.*
4. *Wetland calculations for Alternative C4 and the RPA have been updated based on more precise data available from wetland delineation performed after the DEIS was published.*

Wetland and forest impacts are slightly lower in the RPA compared to Alternative C4, because of the elimination of the Burton Lane overpass. Stream impacts are slightly higher, due mainly to right of way adjustments for I-69. Floodplain impacts are reduced by about 25 percent in the

RPA, due primarily to the elimination of the Burton Lane overpass. Agricultural impacts increase from 8 acres to 26 acres due to the addition of Artesian Avenue.

Eliminating the Burton Lane overpass and adjusting the local service road plans in the vicinity of Commercial Boulevard were recommended in the value engineering study. Estimated savings in project cost are approximately $9.6 million.

Longer travel will be required for some trips in the RPA due to the elimination of the Burton Lane overpass. Access to Burton Lane on the north side of I-69 will be available from the SR 39 interchange and on the south side by the Ohio Street interchange. Access from the Ohio Street interchange to Grand Valley Boulevard will be improved with the addition of Artesian Avenue in the RPA, since it will be unnecessary to pass through the commercial area north of the interchange.

6.4.1.3 RPA Evaluation, Subsection 3 - Morgan Street to Henderson Ford Road

As described in **Section 3.8.3**, changes to Alternative C4 in the RPA are limited to an adjustment in the mainline elevation due to floodway elevations, a slight realignment of Egbert Road east of I-69, and modification of access to Willowbrook Drive south of Egbert Road. **Table 6-46** compares estimated environmental impacts in Subsection 3 for Alternative C4 and the RPA.

Table 6-46: Environmental Impacts, Subsection 3: Morgan St to Henderson Ford Rd

Impact Criteria	Subsection 3 Impacts	
	Alt C4	RPA
New Right of Way (ac)	108	108
Relocations (units)		
Residential - Single Family[1]	18	19
Business[1]	4	5
Total Relocations	22	24
Total Wetlands (ac)[2]	1.86	1.87
Total Streams (lf)	4,129	4,597
Floodplain (ac)	49	57
Agricultural Land (ac)	12	17
Managed Land – Publicly Owned (ac)	3.2	3.6
Upland Forest (ac)	36	37
Core Forest (ac)	2.1	2.1

1. *Residential and business relocations for Alternative C4 and the RPA were updated based on additional information regarding the use of properties. This additional information became available after the DEIS was published.*
2. *Wetland calculations for Alternative C4 and the RPA were updated based on more precise data available from wetland delineation performed after the DEIS was published.*

All mainline, interchanges, and local service roads in Subsection 3 are included in these alternatives. RPA impacts reflect changes to the preferred alternative (C4) described in **Section 3.8.3**. As shown in **Table 6-46**, the refinements to Alternative C4 in defining the RPA did not change estimated new right of way needs or estimated relocations. The realignment of Egbert Road east of I-69 and modification of access to Willowbrook Drive south of Egbert Road was made to provide options regarding properties acquired through the federal Hazard Mitigation Grant Program (see **Section 5.2.8.3**). The increases in impacts to wetlands, streams, floodplains, and agricultural land are attributable to refined drainage design, better definition of construction limits, and property line refinements rather than to changes in the project components.

There are no substantive changes in cost or function of the RPA in Subsection 3 compared with Alternative C4.

6.4.1.4 RPA Evaluation, Subsection 4 - Henderson Ford Road to Banta Road

As described in **Section 3.8.4**, changes to DEIS preferred alternative C4 in the RPA were minimal in this subsection. The primary change was the elimination of the Big Bend Road overpass, which was included in all four alternatives in the DEIS. The other change in the RPA is a slight shifting of the Henderson Ford Road interchange to the south to avoid wetland impacts.

Table 6-47 compares estimated environmental impacts in Subsection 4 for Alternative C4 and the RPA. All mainline, interchanges, and local service roads are included in these alternatives. RPA impacts reflect changes to the DEIS preferred alternative (C4) described in **Section 3.8.4**.

As shown in **Table 6-47**, the adjustments to Alternative C4 in defining the RPA resulted less new right of way and fewer relocations. New right of way required is 259 acres with the RPA, compared with 266 with Alternative C4. By eliminating the Big Bend Road overpass, the RPA requires six fewer residential relocations than Alternative C4.

The area of wetlands impacted is lower in the RPA, but the length of streams impacted and area of floodplain, agricultural, and forest impacted are all higher in the RPA. As refinements were made to Alternative C4 in the RPA, it was found that the roadway would have to be extended north along Henderson Ford Road approximately 150 feet to connect with the existing roadway, impacting a stream on the west side of the roadway and a wetland on the east side of the roadway. The interchange was shifted to the south to minimize these impacts. These wetland and stream impacts would have occurred with alternative C4, but they were not identified as part of the original Alternative C4 alignment.

Increased impacts to agricultural land, floodplain, and forests are due primarily to more detailed drainage design, refinements to construction limits, and property line refinements rather than to major changes in the project components. In Subsection 4, the value engineering study identified potential project cost savings of approximately $4 million in the RPA due to the elimination of the Big Bend Road overpass that had been included in Alternative C4.

Table 6-47: Environmental Impacts, Subsection 4: Henderson Ford Rd to Banta Rd

Impact Criteria	Subsection 4 Impacts	
	Alt C4	RPA
New Right of Way (ac)	266	259
Relocations (units)		
Residential - Single Family	21	15
Mobile Home[1]	1	1
Business[2]	14	14
Total Relocations	36	30
Total Wetlands (ac)[3]	1.04	0.99
Total Streams (lf)	12,670	14,774
Floodplain (ac)	58	62
Agricultural Land (ac)	136	141
Upland Forest (ac)	48	53
Core Forest (ac)	9.4	9.4

1. *One mobile home unit included in the DEIS as a single-family home was misclassified. It is correctly shown in this table for Alternative C4 and the RPA. The mobile home unit is not located within a mobile home community.*
2. *Business relocations for Alternative C4 and the RPA were updated based on additional information regarding the use of properties. This additional information became available after the DEIS was published.*
3. *Wetland calculations for Alternative C4 and the RPA were updated based on more precise data available from wetland delineation performed after the DEIS was published.*

Elimination of the Big Bend Road overpass in the RPA will result in longer travel for some trips compared to Alternative C4, but connectivity across I-69 will be available at nearby overpasses at Perry Road and Waverly Road. The Big Bend Road overpass was opposed by nearby residents in written comments on the DEIS. See **Volume III, Comments and Responses**, Part A, Public Comments - Individuals (PI) Section of this FEIS.

6.4.1.5 RPA Evaluation, Subsection 5 - Banta Road to Fairview Road

As described in **Section 3.8.5**, changes to Alternative C4 in Subsection 5 include the reconfiguration of the SR 144 interchange, extension of Huggin Hollow Road to intersect with old SR 37, elimination of the Stones Crossing Road overpass, extension of the eastern local service road from Travis Road to Stones Crossing Road, reconfiguration of the Smith Valley Road interchange, and realignment of the western local service road north of Smith Valley Road. Mainline lanes are reduced from 6 to 4 in the RPA from SR 144 to 2,000 feet south of Smith Valley Road. See **Figure 6-44**.

Figure 6-44: The RPA from SR 144 to Stones Crossing Road

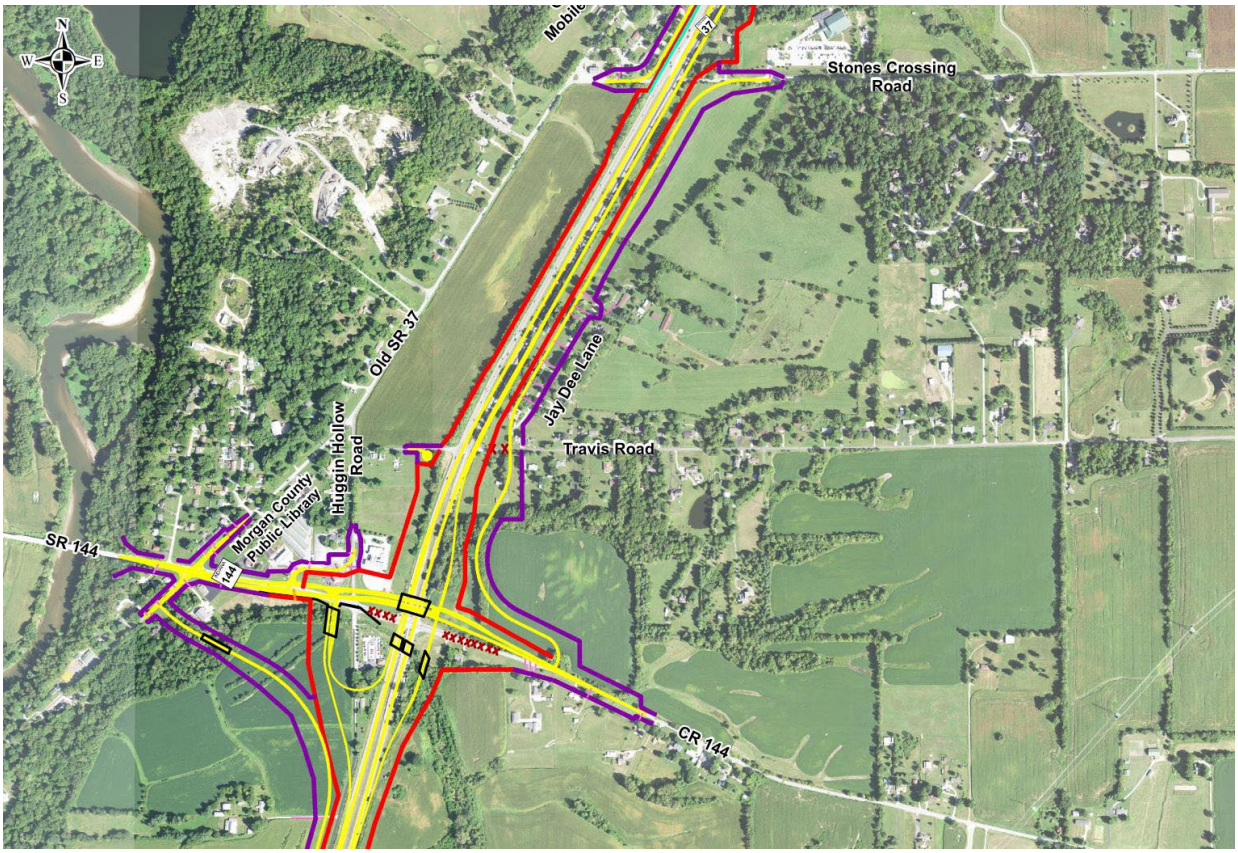


Table 6-48 compares estimated environmental impacts in Subsection 5 for Alternative C4 and the RPA. All mainline, interchanges, and local service roads are included in each alternative. RPA impacts reflect changes to the DEIS preferred alternative (C4) described in **Section 3.8.5**.

As shown in **Table 6-48**, the RPA will require approximately 8 more acres of right of way than Alternative C4. This change is relatively small considering the extension of Huggin Hollow Road near SR 144 and the extension of the east local service road north of Travis Road in the RPA. Increases in right of way for these local service road changes are offset to some degree by reduced right of way for the mainline between SR 144 and Smith Valley Road, due to the reduction of I-69 lanes from 6 to 4 in the RPA.

The RPA will require fewer relocations in Subsection 5, from 40 properties with Alternative C4 to 36 properties with the RPA. Relocations of mobile homes and businesses are reduced in the RPA due to the elimination of the Stones Crossing Road overpass and the reconfiguration of the Smith Valley Road interchange. As described in **Section 5.8.4.6**, some of these relocations would be in communities identified as potentially having low-income populations. Residential relocations are higher due to the shift in I-69 alignment shift near the Wakefield subdivision and

Table 6-48: Environmental Impacts, Subsection 5: Banta Rd to Fairview Rd

Impact Criteria	Subsection 5 Impacts	
	Alt C4	RPA
New Right of Way (ac)	195	203
Relocations (units)		
Residential - Single Family[1]	22	23
Duplex Units	--	2
Residential – Mobile Home	10	6
Business	8	4
Fire Station	1	1
Total Relocations	41	36
Total Wetlands (ac)[2]	0.02	--
Total Streams (lf)	6,147	6,531
Floodplain (ac)	59	70
Wellhead Protection Areas (ac)	166	183
Agricultural Land (ac)	91	114
Privately Owned - Managed Lands	10.7	2.6
Upland Forest (ac)	14	17
Core Forest (ac)	--	--

1. *Residential relocations for Alternative C4 and the RPA were updated based on additional information regarding the use of properties. This additional information became available after the DEIS was published.*
2. *Wetland calculations for Alternative C4 and the RPA were updated based on more precise data available from wetland delineation performed after the DEIS was published.*

the extension of the east local service road. Local service road changes in the RPA near Smith Valley Road cause the relocation of one additional business, but avoid impacts to the Center Grove Little League baseball fields.

Stream, floodplain, wellhead protection, agricultural, and forest impacts are all higher in the RPA due to the additional local service road mileage through undeveloped property. Stream impacts are higher in the RPA due to the new Huggin Hollow stream crossing at Bluff Creek, although this impact is offset to some degree by a smaller Honey Creek bridge on the west local service road north of Smith Valley Road.

Table 6-48 shows a substantial reduction in impact to privately owned managed lands, from 10.7 acres to 2.6 acres. These are Conservation Reserve Program (CRP) lands. The CRP is administered through the Farm Service Agency with support from Natural Resources Conservation Service, Cooperative State Research and Education Extension Service, state forestry agencies, and local Soil and Water Conservation Districts. This is a voluntary program for agricultural landowners, whereby property owners can receive cost-share assistance to

establish long-term, resource-conserving covers on eligible farmland. The RPA minimizes these impacts by eliminating the Stones Crossing Road overpass proposed in Alternative C4. The value engineering study identified potential project cost savings of approximately $3.5 million due to the elimination of the Stones Crossing Road overpass in in the RPA. The reduced lanes north of SR 144 could save another $5 million.

The RPA offers several performance advantages over Alternative C4. The extension of Huggin Hollow Road to Old SR 37 will improve mobility options west of I-69 and avoid the creation of a mile-long dead-end road, affecting more than 50 residences. The extension of the east local service road north of Travis Road will provide additional mobility options in that area. The roundabout intersections at Mullinix Road and the Smith Valley Road interchange will maintain local circulation patterns and improve traffic operations. Concerns regarding congestion at this location were expressed in numerous comments on the DEIS. See **Volume III, Comments and Responses**, Part A, Public Comments - Individuals (PI) Section of this FEIS.

Elimination of the Stones Crossing Road overpass in the RPA will result in longer travel for some trips compared to Alternative C4. However, there is no median opening in SR 37 now, so there is no loss of east-west connectivity across the corridor compared to existing conditions.

6.4.1.6 RPA Evaluation, Subsection 6 - Fairview Road to Wicker Road

As described in **Section 3.8.6**, the RPA is essentially the same as Alternative C4 in this subsection. The design of the County Line Road interchange was refined to better define the details of ramps, but the function and layout is the same.

Table 6-49 compares estimated environmental impacts in Subsection 6 for Alternative C4 and the RPA. All mainline, interchanges, and local service roads are included in these alternatives. RPA impacts reflect changes to the DEIS preferred alternative (C4) described in **Section 3.8.6**.

As shown in **Table 6-49**, the refinements to Alternative C4 in defining the RPA resulted in 11 acres of additional right of way and nine more relocations than alternative C4. Most of these increases are in the vicinity of the County Line Road interchange. They result from refinements in the engineering definition of the embankments and the layout of the Bluff Road and Wicker Road intersections. One small commercial building that did not appear to be impacted in Alternative C4 contains five businesses.

There are increases in estimated impacts to streams, floodplain, wellhead protection areas, agricultural land, and forests. These differences are due to design refinements, better defined construction limits, and property line refinements rather than to changes in the project components.

Table 6-49: Environmental Impacts, Subsection 6: Fairview Road to Wicker Road

Impact Criteria	Subsection 6 Impacts	
	Alt C4	RPA
New Right of Way (ac)	65	76
Relocations (units)		
Residential - Single Family	8	12
Business[1]	3	7
Total Relocations	11	19
Total Wetlands (ac)[2]	--	--
Total Streams (lf)	566	738
Floodplain (ac)	13	18
Wellhead Protection Areas (ac)	111	125
Agricultural Land (ac)	35	39
Upland Forest (ac)	5	6
Core Forest (ac)	--	--

1. *Business relocations for Alternative C4 and the RPA were updated based on additional information regarding the use of properties. This additional information became available after the DEIS was published.*
2. *Wetland calculations for Alternative C4 and the RPA were updated based on more precise data available from wetland delineation performed after the DEIS was published.*

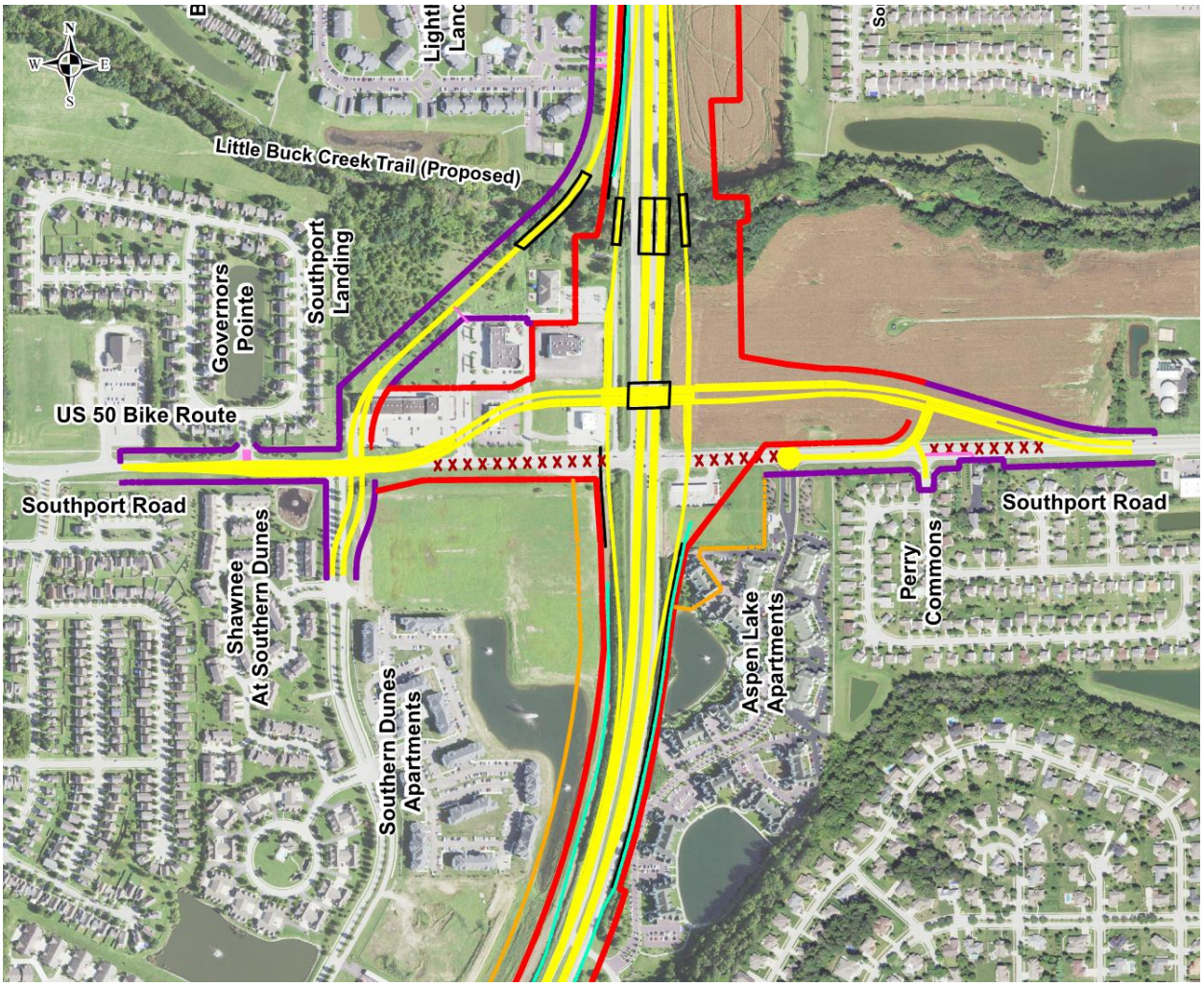
6.4.1.7 RPA Evaluation, Subsection 7 - Wicker Road to Banta Road (Marion Co)

As described in **Section 3.8.7**, changes to Alternative C4 in the RPA in Subsection 7 are the selection of an interchange option at Southport Road, Alternative C4B, and refinement of the ramp systems and local service roads to minimize right of way, relocation, and environmental impacts. See **Figure 6-45**. Factors considered in this selection are described in **Section 3.8.7**.

Table 6-50 compares estimated environmental impacts in Subsection 7 for Alternatives C4A and C4B, and the RPA. All mainline, interchanges, and local service roads are included in each alternative. RPA impacts reflect changes to the Alternative C4B described in **Section 3.8.7**.

As shown in **Table 6-50**, the RPA will require approximately 7 acres less new right of way than Alternative C4B. Residential relocations in the RPA are the same as Alternative C4B, but there are three fewer business relocations. Refinements in ramps and local service road layouts allow three businesses in the Southport Landing Shopping Center to remain in place. Both the RPA and Alternative C4B avoid the total acquisition of Aspen Lakes Apartments, which reduces residential apartment unit relocations from 332 to 24. This was a major factor in selecting Option C4B for refinement in the RPA, as discussed in **Section 3.8.7**.

Figure 6-45: The RPA at Southport Road



The RPA would impact about the same area of floodplain, and impacts to streams, wellhead protection areas, agricultural land, and forest would be higher. These differences are due to more detailed drainage designs, refinements of construction limits, and property line refinements in the RPA.

In addition to reducing the total number of relocations, the selection of Alternative C4B over Alternative C4A at Southport Road resulted in an estimated project cost savings of nearly $17 million, as shown in **Table 3-10** of **Chapter 3, Alternatives**. This savings is also achieved in the RPA. The function of the RPA at Southport Road is the same as Alternative C4B.

Table 6-50: Environmental Impacts, Subsection 7: Wicker Road to Banta Road

Impact Criteria	Sub 7 Impacts		
	Alt C4A	Alt C4B	RPA
New Right of Way (ac)	65	89	82
Relocations (units)			
Residential - Single Family	3	3	2
Residential – Apartment Unit	332	24	24
Business	3	19	16
Total Relocations	338	46	42
Total Wetlands (ac)[1]	0.02	0.05	0.05
Total Streams (lf)	839	1,172	1,422
Floodplain (ac)	36	68	67
Wellhead Protection Areas (ac)	121	142	148
Agricultural Land (ac)	7	21	24
Upland Forest (ac)	7	6	7
Core Forest (ac)	--	--	--

1. *Wetland calculations for Alternative C4B and the RPA were updated based on more precise data available from wetland delineation performed after the DEIS was published.*

6.4.1.8 RPA Evaluation, Subsection 8 - Banta Road to and including I-465

As described in **Section 3.8.8**, the RPA is essentially the same as Alternative C4 in Subsection 8, which includes the I-69/I-465 interchange, and added lanes on I-465 between Mann Road and U.S. 31. Changes to DEIS preferred alternative C4 in the RPA include use of a closed median with concrete median barrier on the mainline and refinements in the alignment and construction limits of the ramps in the interchange. **Table 6-51** compares estimated environmental impacts in Subsection 8 for Alternative C4 and the RPA. RPA impacts reflect changes to the DEIS preferred alternative (C4) described in **Section 3.8.8**.

As shown in **Table 6-51**, the refinements to Alternative C4 in defining the RPA reduced estimated new right of way required from 206 acres to 131 acres. Most of this reduction is a result of ramp refinements at the Hanson Aggregates quarry north of I-465. Residential relocations are unchanged, but the relocation of one business at the northern end of Belmont Avenue is avoided due to retaining wall and ramp modifications in the RPA.

Agricultural land impacts are slightly higher in the RPA, but impacts to streams and floodplains are slightly lower. Impacts to historic properties, wetlands, wellhead protection areas, and forest are the same for Alternative C4 and the RPA.

Table 6-51: Environmental Impacts, Subsection 8: Banta Road to I-465

Impact Criteria	Subsection 8 Impacts	
	Alt C4	RPA
New Right of Way (ac)	206	131
Relocations (units)		
Residential - Single Family[1]	20	20
Business	13	12
Total Relocations	33	32
Section 4(f) – Historic or NRHP Eligible (ac)	6	6
Total Wetlands (ac)[2]	0.48	0.48
Total Streams (lf)	5,512	5,434
Floodplain (ac)	150	86
Wellhead Protection Areas (ac)	64	64
Agricultural Land (ac)	5	7
Upland Forest (ac)	6	6
Core Forest (ac)	--	--

1. *Residential relocations for Alternative C4 and the RPA were updated based on additional information regarding the use of properties. This additional information became available after the DEIS was published.*
2. *Wetland calculations for Alternative C4 and the RPA were updated based on more precise data available from wetland delineation performed after the DEIS was published.*

The value engineering study identified a cost savings of approximately $18 million from the realignment of the ramps at the Hanson Aggregates quarry and the median changes on the mainline. These changes will not affect the function of the I-69/I-465 interchange.

6.4.2 Overall Impacts of the RPA compared with Alternative C4

Table 6-52 includes the overall end-to-end impacts of Alternative C4 and the RPA, from Indian Creek to and including I-465. Option C4B is assumed at Southport Road in Alternative C4, consistent with the option selected for the RPA at that location.

As shown in **Table 6-52**, the total right of way of the RPA is reduced as a result of the refinements to Alternative C4, at 2,075 acres versus 2,106 acres, respectively. New right of way needed is 1,025 acres for the RPA versus 1,113 acres for Alternative C4. The reduction in right of way is due to refinements at interchanges, grade separations, and along the I-69 and I-465 mainline. Of particular note is the reduction of almost 50 acres of the Hanson Aggregates quarry along I-465 in the RPA.

Table 6-52: Total End-to-End Impacts of Alternative C4 and the RPA

Impact Criteria	Alt C4	RPA
Right of Way (acres)		
Existing Right of Way[1]	993	1,050
New Right of Way	1,113	1,025
Total Right of Way	2,106	2,075
Number of Relocations		
Residential - Single Family Home[2]	145	142
Residential - Duplex Unit	6	8
Residential - Mobile Home[3]	41	9
Residential - Apartment Unit	28	28
Business[2]	99	81
Non-Profit[4]	2	2
Religious Facility/School	1	--
Fire Station	1	1
Total Relocations	323	271
Section 4(f)		
Historic or NRHP Eligible (acres)	6	6
Total Wetland (acres)[5]		
Emergent Wetland	1.79	1.90
Forested Wetland	1.82	1.70
Scrub/Shrub Wetland	0.46	0.39
Total Wetland Impacts[5]	4.07	3.99
Total Streams (linear feet)		
Ephemeral	17,242	18,512
Intermittent	11,031	11,797
Perennial	15,160	16,994
Total Stream Impacts	43,433	47,253
Total Natural Stream Impacts	11,464	14,069
Stream Relocations (linear feet)	27,066	27,641
Floodplain (acres)	499	458
Wellhead Protection Areas (acres)	483	520
Agricultural Land (acres)	322	382
Managed Land (acres)		

Impact Criteria	Alt C4	RPA
Publicly Owned	3.2	3.6
Privately Owned	10.7	2.6
Upland Forest (acres)	145	156
Core Forest (acres)	11.8	11.5

1. *All non-INDOT right of way was included as new right of way in the DEIS. This table includes local right of way in the value for existing right of way for Alternative C4 and the RPA.*
2. *Residential and business relocations for Alternative C4 and the RPA have been updated based on additional information regarding the use of properties. This additional information became available after the DEIS was published.*
3. *Two mobile home units included in the DEIS as single-family homes were misclassified. They are correctly shown in this table for Alternative C4 and the RPA. The mobile home units are not located within a mobile home community.*
4. *Centerstone Behavioral Health Clinic and the Evening Lions Club counted as business relocations in the DEIS have been redesignated as non-profit in the FEIS. They are correctly shown in this table for Alternative C4 and the RPA*
5. *Wetland calculations for Alternative C4 and the RPA have been updated based on more precise data available from wetland delineation performed after the DEIS was published.*

The design refinements in the RPA resulted in a substantial decrease in relocations, from 323 with Alternative C4 to 271 in the RPA. Residential and business relocations are both about 15 percent lower with the RPA. Relocations or other property impacts are avoided for several properties of high interest, as indicated by public comment on the DEIS. These include the Martinsville Baptist Tabernacle Church and Tabernacle Christian School, the Waverly Branch of the Morgan County Public Library, and the Center Grove Little League baseball fields.

Wetland impacts are lower in the RPA, at 3.99 acres compared with 4.07 acres in Alternative C4. The largest wetland reduction in the RPA was forested wetlands, from 1.82 acres to 1.70 acres, followed by emergent scrub/shrub wetlands, from 0,46 acres to 0.39 acres. Emergent wetlands are somewhat higher in the RPA, at 1.90 acres compared with 1.79 acres in Alternative C4.

All categories of stream impacts are higher in the RPA. Total stream impacts are 47,253 linear feet in the RPA compared with 43,433 linear feet in Alternative C4. Some of this difference is due to increased local roadway lengths for Artesian Avenue, Huggin Hollow, and Jay Dee Lane. The apparent increase in stream impacts is also due to refinements in drainage design in the RPA. Drainage channels become deeper and wider as they approach streams, which increases the project footprint and increases stream impact. The effect of refined drainage design on stream impacts would occur with any of the alternatives if design was advanced to the same stage.

Floodplain impacts are less in the RPA, at 458 acres compared with 499 acres in Alternative C4. Wellhead protection area impacted is 520 acres in the RPA, compared with 483 acres in Alternative C4. Agricultural land and upland forest impacts are higher for the RPA due to the added local service roads on new alignments compared with Alternative C4. Agricultural impacts are 382 acres in the RPA compared with 322 acres in Alternative C4. Forest impacts are estimated to be 156 acres in the RPA and 145 acres in Alternative C4. Core forest impacts, however, are lower in the RPA, at 11.5 acres compared with 11.8 acres in Alternative C4.

Overall, the impacts of the RPA and Alternative C4 are similar in most categories. The values in **Table 6-52** illustrate the trade-offs between refinements to reduce relocations and provide improved service and impacts to property as a result of providing an improved network of local service roads. Design refinements were also successful in reducing impacts in the key impact categories of total wetlands, forested wetlands, and core forest.

6.4.3 Overall Cost of the RPA compared with Alternative C4

Table 6-53 provides a summary of the major cost items and estimated overall cost for Alternative C4 and the RPA, from Indian Creek to and including I-465. Option C4B is assumed at Southport Road in Alternative C4, consistent with the option selected for the RPA. **Table 6-54** provides a summary of the estimated overall cost for the DEIS preferred alternative, Alternative C4 and the RPA, by subsection from Indian Creek to and including I-465. Option C4B is assumed at Southport Road in Alternative C4, consistent with the option selected for the RPA at that location.

Because of the additional engineering development and the adjustments made during an FHWA cost estimating review (CER) process, some of the cost estimating assumptions and methodologies used for the RPA differ from those used for Alternative C4. INDOT and FHWA conducted the CER on August 15-17, 2017. The process involved a detailed examination of the cost estimating assumptions used for the I-69 Section 6 project, as well as an examination of project risks and contingency amounts. During the CER, adjustments were made to several project assumptions. In addition, overall unallocated project contingencies were reduced in lieu of estimating the costs and probabilities of occurrence for identified risks. The probable cost identified during the CER was $1.569 Billion, which is within one percent of the total cost shown in **Table 6-53** and **Table 6-54**. The RPA cost estimate developed by the project team is retained in these tables because it provides a more detailed breakdown by cost item and subsection than the CER probable cost.

Table 6-53: Estimated Cost by Cost Item ($ Millions) for Alternative C4 and the RPA

Cost Item	Alt C4[1]	RPA[2]
Preliminary Engineering	$65.9	$54.2
Right of Way	$201.2	$255.0
Environmental Mitigation	$40.8	$39.8
I-69 Construction	$801.6	$1,069.6
I-465 Construction	$134.8	(Included in I-69 construction cost)
Utilities	$158.5	$156.4
Construction Administration[3]	$84.8	(Included in I-69 construction cost)
Total All Cost Items	**$1,487.6**	**$1,575.0**

1. *Costs are year of expenditure dollars, assuming design-bid-build construction begins in 2020 and ends in 2026*
2. *Costs are year of expenditure dollars, assuming design begins in 2018 and construction ends in 2025.*

Table 6-54: Estimated Cost by Subsection ($ Millions) for Alternative C4 and the RPA

Subsection	Alt C4[1]	RPA[2]
1: Indian Creek to SR 39	$53.2	$57.0
2: SR 39 to Morgan Street/Twin Branch Road	$239.7	$228.0
3: Morgan Street to Henderson Ford Road	$74.2	$115.5
4: Henderson Ford Road to Banta Road	$148.6	$147.1
5: Banta Road to Fairview Road	$203.5	$217.8
6: Fairview Road to Wicker Road	$108.5	$123.6
7: Wicker Road to Banta Road (Marion Co.)	$151.5	$173.8
8: Banta Road to and including I-465	$508.4	$512.2
Total All Subsections	**$1,487.6**	**$1,575.0**

1. *Costs are in year of expenditure dollars, assuming design-bid-build construction begins in 2020 and ends in 2026*
2. *Costs are year of expenditure dollars, assuming design begins in 2018 and construction ends in 2025.*

Despite the challenges in making direct comparisons between cost estimates for Alternative C4 and the RPA, there are several observations that can be made about the cost differences in the RPA. These are reviewed below.

- Subsection 8, which includes the I-69/I-465 interchange and added lanes on I-465, is the most expensive portion of the project. Differences in estimated cost are small between Alternative C4 and the RPA. There are several offsetting factors that result in this similarity. The RPA would have higher cost on I-465 due to replacement rather than rehabilitation of I-465 pavement, but this is offset by avoiding nearly 50 acres of right of way and deep fill in the Hanson Aggregates quarry. Other offsetting factors include replacement of White River bridges in the RPA versus rehabilitation of other bridges assumed to be replaced in Alternative C4.

- Subsection 2 in Martinsville is the next most expensive portion of the project. The estimated cost for the RPA is lower than Alternative C4 in this area. The lower cost results from the elimination of the Burton Road overpass, lower cost local service roads through open areas compared with roadways in more congested areas in Alternative C4, and reduced right of way and relocation cost for multiple properties in the area.

- As shown in **Table 6-53**, the estimated cost for the RPA is higher than Alternative C4 in most other subsections. This is due to design refinements and additional contingencies applied to right of way and relocation estimates. Design refinements in the RPA include elevation changes related to new flood mapping, better estimates of earthwork and grading, and more defined drainage plans. The higher contingencies for right of way costs are reflected in **Table 6-54**.

6.4.4 FEIS Preferred Alternative (The RPA)

The preferred alternative of this FEIS is the RPA, as described in **Section 3.8** of **Chapter 3, Alternatives**. The location, alignment, right of way, and features of the RPA are illustrated in a series of aerial maps at a scale of 1 inch = 500 feet at the end of **Chapter 3, Alternatives**.

The RPA retains most of the features of Alternative C4, the preferred alternative in the DEIS (see **Section 6.3**). Alternative C4 was refined based on public and agency comment on the DEIS, more detailed definition and engineering refinements, and value engineering studies. **Section 6.4.1** describes the refinements and associated impact changes in eight subsections. Overall results are summarized in **Section 6.4.2**, including a reduction in relocations, wetland impacts, and floodplain impacts; and an increase in stream, agricultural, wellhead protection, and forest impacts. As indicated in **Section 6.4.3**, the overall cost of the RPA is estimated to be about five percent higher than Alternative C4.

As described in **Section 6.3.5**, Alternative C4 was identified as the preferred alternative in the DEIS even though it did not have the lowest right of way requirement, fewest relocations, or least environmental impact of the alternatives. Alternative C4 was shown to be the most effective in meeting the project purpose and need in 23 small decision areas where local conditions and options were evaluated for performance, impact, and cost (see **Section 6.3.2**).

The RPA retains the performance benefits of Alternative C4 with enhancements at some locations. It reduces impacts in some environmental impacts categories and eliminates many of the relocations required for implementation. Relocations are reduced from 321 with Alternative C4 to 271 with the RPA. Both residential and business relocations were reduced by about 15 percent by the refinements in the RPA, as described in **Section 6.4.2**.

The RPA was presented at a set of three public meetings in September 2017, where the benefits of the changes were recognized by many who commented. Because it best meets the project purpose and need, with an acceptable balance of cost and impact, the RPA is the preferred alternative of this FEIS.

6.5 RPA Costs and Impacts Compared with Tier 1 Estimates

The Tier 1 FEIS presented tables with estimated cost and major impacts for each Tier 2 section of the I-69 Preferred Alternative. Table 6-31 of that document (page 6-64) presented estimates for I-69 Section 6. As shown in **Table 6-55**, estimates of project cost, right of way needs, relocations, wetlands, floodplains, and farmland impacts for the RPA are higher than the Tier 1 FEIS estimates. Estimated farmland impacts of the RPA are lower than the estimate in the Tier 1 FEIS. All costs are presented in 2016 dollars. An explanation of these differences is provided below.

6.5.1 Project Cost

A comparison of I-69 Section 6 Tier 1 and RPA costs and impacts is provided in **Table 6-55**. The cost estimates for the RPA were calculated in year of expenditure dollars, assuming a design-bid-build method of procurement, with construction beginning in 2020 and finishing in 2026. These costs were estimated assuming an annual inflation rate of 3.5 percent of construction costs. The costs here are shown in Year 2016 dollars. A comparison of The Tier 1 estimates was prepared in 2003, based on Year 2000 dollars, and were escalated to Year 2016 dollars. The Engineering News-Record construction cost index was used to escalate the I-69 Section 6 costs shown in the Tier 1 FEIS to Year 2015 costs. These 2015 costs were then escalated by 3.5 percent to arrive at Year 2016 costs.

As noted in the footer of **Table 6-55**, the RPA cost estimate includes three additional items, utility relocation, mitigation, and construction administration, which were excluded from the Tier 1 cost estimates. The estimated costs for these items in year of expenditure dollars totals $285 million for the RPA (assuming the same percent of construction cost for construction administration used for Alternative C4). Subtracting these costs from the cost estimates for the RPA leaves a total cost of $1.290 billion in year of expenditure costs for comparison with Tier 1 costs.

Table 6-55: Comparison of I-69 Section 6 Tier 1 and RPA Impacts

Data and Resources	Tier 1	RPA
Length (miles)	25.9	26.9
Project Cost ($millions)[1]	$776 - $856	$1,575
New Right of Way (acres)	605	1,025
Farmland (acres)	465	382
Upland Forest (acres)	30	156
Wetlands (acres)	5	3.99
Floodplain (acres)	85	459
Residential Relocations	127	187
Business Relocations	50	81

1. *Cost estimates are for the year 2016 for Tier 1 estimates adjusted to account for inflation so that an accurate comparison can be made between estimated Tier 1 and Tier 2 costs. Tier 1 estimate does not include the cost for construction administration, utility relocation, or mitigation. Tier 2 cost estimates include construction administration, utility relocation and mitigation and are for year of expenditure.*

Thus, the Tier 1 cost estimate of $776 to $856 million is $434 to $514 million less than the Tier 2 RPA costs using comparable assumptions. The following factors account for portions of the remaining cost differences.

- The Tier 2 project is 1 mile (3.9 percent) longer. Assuming comparable per-mile costs, this accounts for $30 to $34 million of the difference in project costs.

- In Tier 1, the typical sections assumed that all local service roads were constructed immediately adjacent to the I-69 mainline as frontage roads. To address local needs and maintain access to adjacent properties, the RPA includes an extensive local service road network which connects with and uses the existing local roadway system. This network of local service roads adds costs.
- Tier 1 cost estimates used a unit cost approach for interchanges (cost per interchange). Tier 2 costs are estimated based on the specific design of each interchange. I-69 Section 6 includes several urban interchanges, which are more complex and more costly than the "average" interchange on I-69 between Evansville and Indianapolis.
- This comparison should be understood within its time context and the approach used to account for construction time. The Tier 1 cost estimates were published in 2003, and were in Year 2000 dollars. They represented the estimated cost of construction at a single point in time. The I-69 Section 6 Tier 2 cost estimates adjust expenses to the year that funds are assumed to be spent. For example, right of way acquisition costs are expended early in the process, and materials testing is conducted several years later. Reconciling these costs to equivalent dollars in a single year (2016) introduces additional uncertainty into the comparison of costs.
- Tier 2 project costs include reconstruction of I-465 between Mann Road and US 31 that is not included in the Tier 1 estimates.

6.5.2 Right of Way and Relocations

As shown in **Table 6-55**, the area of required right of way for the Tier 2 RPA is 420 acres more than the estimate of the Tier 1 FEIS. The Tier 2 estimate is based on estimated right of way limits for I-69 mainline, interchanges, and local service roads. The Tier 1 right of way calculations included local service roads only if they were within the typical section of the mainline. The Tier 1 FEIS stated, "The typical cross sections will be refined during subsequent phases of project development (Tier 2 environmental studies and design)" (Appendix E, Development of Typical Cross Sections, p. 1).

Following are comparisons of the range of mainline widths for the RPA with the typical section right of way considered in Tier 1 for the preferred alternative.

- SR 39 to SR 252: The Tier 1 typical section was 290 feet wide. RPA mainline widths generally range from 250 feet (north of Industrial Drive) to 435 feet (near Glenn Street).
- SR 252 to County Line Road: The Tier 1 typical section was 420 feet wide. RPA mainline widths generally range from 300 feet (north of Big Bend Road) to 380 feet (south of Morgan Street/Twin Branch Road).
- County Line Road to I-465: The Tier 1 typical section was 390 feet wide. RPA mainline widths generally range from 245 feet (north of Banta Road) to 450 feet (north of Edgewood Avenue).

Overall, the widths of the typical sections for I-69 Section 6 in Tier 1 were similar to the RPA, even though the Tier 1 typical sections did not provide for any local service roads at other locations. As described in the review of decision areas in **Section 6.3.2** and **Section 6.4.1**, the network of local service roads in I-69 Section 6 is extensive. The increase in new right of way compared with Tier 1 is attributable to the number and length of local service roads provided outside the typical section of I-69.

6.5.2.1 Residential Relocations

The potential 187 residential relocations estimated for the Tier 2 RPA are greater than the Tier 1 FEIS estimate of 127 residential relocations. This difference is due to significant new development since 2003 when the Tier 1 estimates were prepared. The Tier 1 ROD was approved in March 2004. It also results from the additional right of way required for local service roads.

6.5.2.2 Business Relocations

The Tier 1 FEIS estimated 50 business relocations. The Tier 2 RPA is estimated to require 81 business relocations. As with residential relocations, the increase in business relocations is attributable to continuing development along SR 37 since the Tier 1 FEIS was prepared. Notable locations where this has occurred are in Martinsville on the east side of SR 37 and along SR 37 in northern Johnson County and southern Marion County.

6.5.3 Environmental Impacts

The Tier 1 FEIS provided estimates of various categories of impacts for the full I-69 corridor and for each of the six segments advanced to Tier 2 studies. This section provides a comparison of estimated impacts in I-69 Section 6 provided in the Tier 1 FEIS and for the RPA presented in this Tier 2 FEIS in the key areas of farmland, forest, wetlands, and floodplains. The reasons for differences in these estimates are described for each impact category. Streams are not reviewed since they were measured differently in Tier 1 (number of crossings rather than length, classified as perennial or intermittent), and the estimates were not broken down by section.

6.5.3.1 Farmland

The Tier 1 FEIS estimated 465 acres of farmland impact. The Tier 2 RPA would have a smaller area of direct farmland impact, at 382 acres. Some of the reduction in farmland impact between Tier 1 and Tier 2 is due to the reclassification of farmland in the Tier 1 data sets to forest in the Tier 2 datasets. These differences also reflect conversions of farmland to other land uses over approximately 25 years.

6.5.3.2 Forest

The Tier 1 forest data used for comparing corridors were the best available for showing forest cover within the 26-county Tier 1 study area. This level of information was suitable for comparing forest impacts for alternative corridors. It was provided by the United States Geological Survey (a subset of its National Land Cover Data set) and was derived by remote sensing photo interpretation techniques using satellite photography with a nominal 30-meter (approximately 100-foot) resolution. The nominal date for this data was 1992. The estimates for forest impacts in this Tier 2 study are based on field surveys, which identified many smaller forested areas, such as fencerow and streamside forests, many of which were likely not identified in the dataset used in Tier 1.

The forest impacts estimated for the Tier 2 RPA are higher than the 30 acres estimated in the Tier 1 FEIS. The Tier 2 impact for the RPA is 156 acres. The Tier 1 FEIS estimate included parallel frontage roads while Tier 2 includes local service roads outside of the mainline typical sections. These are primarily located within the rural (i.e. forested) areas of the I-69 Section 6 right of way where they connect with existing local roads. The Tier 1 FEIS typical section assumed that any local service roads would be immediately adjacent to I-69 and they were included in the mainline typical section. These differences in the footprints are consistent with the acreage differences between the Tier 1 FEIS Preferred Alternative and the Tier 2 RPA.

6.5.3.3 Wetlands

The difference between Tier 1 and Tier 2 estimated wetland impact is partially the result of the procedure used to identify the impacts. Tier 1 estimates were based primarily on available published data while the Tier 2 evaluation for the RPA is based on field wetland delineations. This resulted in a decrease in the number and total acres of wetlands within the Section 6 field study area. The Tier 2 RPA is estimated to have 3.99 acres of wetland impact, which is 1.01 fewer acres of wetland impact than the 5 acres of impact shown in the Tier 1 FEIS.

6.5.3.4 Floodplains

Floodplain impacts for the Tier 2 RPA Alternative C4 is larger than the Tier 1 estimate of 80 acres for the Tier 1 preferred alternative. The impact of the Tier 2 RPA is estimated to be 459 acres. The updated IDNR and FEMA floodplain mapping used in the Tier 2 studies, combined with the more precise determination of right of way requirements, provides a more reliable estimate of floodplain impact than in Tier 1. The greater right of way for local service roads, as described above, is also a factor in the higher floodplain estimate for the RPA in Tier 2.

6.6 Summary

This chapter documents the evaluation of Alternatives C1 through C4 conducted in the DEIS to identify a preferred alternative, using 23 small decision areas where options exist with respect to

access configurations and local service roads. It then describes the RPA, which was developed as a refinement of Alternative C4 after the DEIS was published. To identify the change in impacts resulting from these refinements, Alternative C4 and the RPA are compared with respect to right of way and relocations, cost, and impacts on the natural and manmade environment within eight subsections of the corridor and for the project as a whole.

The alternatives are reviewed based on local conditions and effectiveness in serving the project purpose and need, as described in **Chapter 2, Purpose and Need**, and on input from local agencies, advisory committees, and the public following numerous public meetings. Impacts are measured by the information quantified for the alternatives in **Chapter 5, Environmental Consequences**. Estimated costs are identified for each alternative in **Section 5.5** with additional detail provided in **Appendix D**.

Chapter 7, Mitigation and Commitments, discusses the mitigation proposed for the RPA. The **Summary** at the beginning of this FEIS contains an executive summary of the project background, purpose and need, alternatives considered, impacts, and mitigation and permitting.