



2.0 ALTERNATIVES CONSIDERED

For the US 31 Improvement Project from Plymouth to South Bend, the Selected Alternative is Alternative G-Es (see Exhibit 1). This ROD is based on analyses contained in the DEIS and FEIS, the comments of federal and state agencies, members of the public, local elected and appointed officials and other information in the project record. In the event of any differences in wording, the ROD takes precedence over the FEIS.

2.1 IDENTIFICATION AND INITIAL SCREENING OF PRELIMINARY ALTERNATIVES

It should be noted that the focus of this project is to address transportation problems related to the US 31 corridor between US 30 and US 20 and not to address all transportation problems in the South Bend-Elkhart Metropolitan Area. Therefore, the evaluation of alternatives focuses on the effectiveness of alternatives in addressing the transportation needs along the US 31 corridor. Addressing the transportation problems in the entire metropolitan area is a very important issue and is the purpose of the MACOG Long Range Transportation Plan, which identifies the need to improve the US 31 corridor from South Bend to Plymouth. That Long Range Transportation Plan identifies many other transportation improvement projects aimed at addressing other transportation needs in the metropolitan area, and considers the most effective combination of transportation improvement projects (including the US 31 improvement) to address the transportation needs of the metropolitan area.

The identification and evaluation of alternatives was one of the most significant steps of the project. The development of the alternatives for the US 31 Improvement Project began with a broad examination of potential solutions to the transportation needs in the US 31 Corridor. This identification and screening of preliminary alternatives is discussed in detail in Chapter 3.1 of the FEIS. The current transportation system, existing and projected traffic conditions, and the mobility needs for the State of Indiana and the South Bend metropolitan area were examined in determining the purpose and need for the project. The major concerns were increasing traffic congestion, deteriorating safety conditions, and poor statewide mobility.

The potential solutions to the transportation needs in the US 31 Corridor that were initially developed included:

- **No-Build Alternative** – represented by the existing roadway network plus programmed major roadway improvements in the South Bend Metropolitan Area. This alternative is the baseline for comparing “build” alternatives; its inclusion as an alternative is required by the National Environmental Policy Act of 1969 (NEPA)
- **Travel Demand Management (TDM)** – actions to spread the peak-hours of travel or to encourage the shift to alternative modes of travel to the single-occupancy vehicle (i.e. flexible workdays and road pricing (toll collection))
- **Transportation System Management (TSM)** – low-cost capital investments to reduce congestion, improve traffic flow, and measures to optimize performance of the existing transportation infrastructure (i.e. intersection improvements, signal coordination and timing, lane control (reversible lanes) and high-occupancy vehicle (HOV) lanes)



- **Intelligent Transportation System (ITS) Applications** – technology-based programs to actively manage the roadway system (i.e. providing travel information on roadway conditions to daily commuters via message boards, etc.)
- **Mass Transit** – rail or bus service along the US 31 Corridor
- **Highway Build Alternatives**
 - **Non-Freeway Alternatives** – geometric design options for upgrading existing US 31 and options involving upgrading portions of US 31 on existing and new alignments
 - **Freeway Alternatives** – geometric design options for replacing existing US 31 with a full access control facility

In addition to the potential non-freeway solutions that were developed for this project, nine preliminary freeway alternatives, Alternatives A through I, were initially investigated. During the purpose and need development and identification of alternatives phase of the project, an Interagency Review meeting and project tour were held on May 15, 2003, with various federal and state environmental resource agencies. This Interagency Review meeting and project tour generated two additional preliminary freeway alternatives (Alternatives J and K). It also resulted in a slight shift of Alternative H to follow a segment of an existing high transmission powerline corridor. Exhibit 2 shows the eleven preliminary freeway alternatives consisting of five western alternatives (Alternatives A, B, C, D and E); four eastern alternatives (Alternatives G, H, I and K) and two central alternatives (Alternatives F and J) that utilized large portions of the existing US 31 alignment.

In order to narrow the wide range of preliminary alternatives under consideration for further analysis, more detailed information was collected and analyzed for each alternative. Initial screening measures were developed for use in evaluating the overall performance and impacts associated with each of the preliminary alternative. During this initial screening process, each of the preliminary alternatives developed for the US 31 Improvement Project, from Plymouth to South Bend, was evaluated to determine if it would be carried forward for further evaluation. A two-phase process was used to screen each of the preliminary alternatives. Phase 1 screened alternatives with respect to purpose and need, while Phase 2 screened alternatives with respect to potential social and environmental impacts. Only those alternatives that met the purpose and need of the project in the Phase 1 analysis were advanced to Phase 2 of the screening process.

During Phase 1 of the initial screening process, TDM, TSM, ITS, Mass Transit, Non-Freeway Alternatives, and Freeway Alternatives A, B, H, I and K did not meeting the purpose and need of the project and were not advanced to Phase 2 of the screening process. Even though the No-Build Alternative would not address the purpose and need for this project, it was carried forward for evaluation throughout the development of the EIS and served as a baseline when comparing the effectiveness and potential impacts of other alternatives. Freeway Alternatives C, D, E, F, G, and J met the project purpose and need and were advanced to Phase 2 of the initial screening process. It should be noted that a Non-Freeway Alternative that includes interchanges at some major intersections, but achieves only partial access control along the balance of the corridor was also evaluated. It was found that this alternative performs no better than the Non-Freeway Alternative that bypasses LaPaz and Lakeville and achieve partial access control. Preliminary Freeway Alternative F best reflects this upgrade of existing US 31 with the addition of interchanges to achieve full access control. It should also be noted that a Non-Freeway Alternative that includes combinations of various transportation management (TM) alternatives



(TDM, TSM, ITS, mass transit, etc.) performs only slightly better than the Non-Freeway Alternative that bypasses LaPaz and Lakeville. Due to the low-density rural character of the corridor, the Non-Freeway Alternative in combination with TM alternatives considered for this project are expected to only minimally reduce traffic volumes on US 31 and would not result in improvements to levels of service on US 31 and were not advanced to Phase 2 of the initial screening process.

Phase 2 of the initial screening process analyzed the socio-economic and environmental impacts of the alternatives that were advanced from the purpose and need evaluation in Phase 1 of the initial screening process. Environmental information used in this phase of the screening process was collected from existing sources and preliminary windshield and field surveys. A 300-foot wide “working alignment” (using the approximate centerline of each 2000-foot wide “corridor”) was used to determine potential impacts to social, economic, and environmental resources for each alternative. Depending on the expected type of interchange, a 500-foot or 1000-foot radius circle was incorporated into the working alignment at the potential interchange location. This circle represents an approximation of an interchange footprint to be included in the area studied for potential impacts.

The majority of the initial environmental screening was done using Geographic Information System (GIS) data. Preliminary windshield and field surveys were also used to collect information. Examples of socio-economic and environmental impacts that were analyzed during Phase 2 of the screening process included but were not limited to: preliminary cost estimates, engineering feasibility, estimated new right-of-way, impacts to forests, wetlands, floodplains, streams, potential Section 4(f) properties, managed lands, unique geological/ecological areas (e.g., the area formally known as the Maxinkukee Moraine), farmland, notable wildlife habitats, cemeteries, well-head protection areas, potential historic properties, potential archaeological sites, potential residential noise impacts, hazardous materials, residential and business relocations, and environmental justice issues.

Section 106 of the National Historic Preservation Act (“Section 106”) requires consultation with the State Historic Preservation Officer (SHPO) and other consulting parties to develop and evaluate alternatives or modifications that could avoid, minimize, or mitigate historic and archaeological effects. Section 4(f) of the Department of Transportation Act requires that prior to the use of publicly owned parks, publicly owned recreation areas, publicly owned wildlife or waterfowl refuge, land from a historic property that is on or eligible for the National Register of Historic Places (NR), or archaeological sites that will be preserved in place, it must be determined that there are no prudent and feasible alternatives which avoid such use and that the project include all possible planning to minimize harm to such resources. In addition, the Indiana Cemetery law (IC 14-21-1-26.5) states that ground within 100 feet of a cemetery or burial ground may not be disturbed for the purpose of erecting, altering, or repairing any structure without having a development plan approved by the Indiana Department of Natural Resources (IDNR) Division of Historic Preservation and Archaeology (DHPA).

In Phase 2 of the initial screening process, Alternative D was eliminated from further consideration due to insufficient geometrics in the vicinity between the Kern Road interchange and the US 20/US 31 interchange, as well as high relocations and neighborhood impacts.

In Phase 2 of the initial screening process, Alternative J was also eliminated from further consideration. Alternative J utilized more of the existing US 31 alignment than any other alternative, making it one of the best traffic performers and it also generally had the lowest impacts to the natural environment, as less new right-of-way would be required. However, this alternative would require 2 to 6 times more residential relocations than any of the other freeway alternatives, as well as more business relocations. In addition, it would significantly impact two closely situated Local Historical Landmarks along existing US 31, the Italianate-style Ullery/Farneman House (c. 1860), which has been deemed eligible for listing



in the National Register (NR), and the Southlawn Cemetery (including the small caretaker's building). Alternative J is also adjacent to both Newton Park in Lakeville and LaVille Jr.-Sr. High School.

Based on the findings of the initial screening process, the No-Build Alternative, Alternative C, Alternative E, Alternative F, and Alternative G were advanced for further analysis in the DEIS.

2.2 MODIFICATIONS TO ALTERNATIVES RECOMMENDED FOR FURTHER ANALYSIS

As the study progressed, additional information was collected and analyzed, more specific design parameters and details were developed, and the associated impacts were revised and updated. As the project continued to progress, the study team continually investigated potential modifications to the alternatives that would avoid and/or minimize impacts to both the natural and human environment. Often these modifications were initiated by comments received from the public, local elected and appointed officials and/or resource agencies. The modifications ranged from slight shifts in the alignment to the development of "hybrid" alternatives. The goal of all alternative modifications was to avoid and/or minimize environmental and socio-economic impacts.

As the field data and public and resource agency comments were analyzed and preliminary engineering further developed, a more accurate measure of socio-economic and environmental impacts of each of the alternatives was determined. A review of these impacts raised concerns within the study team, which included resource agencies and consulting parties involved with the project. While all socio-economic and environmental impacts analyzed and evaluated in an EIS such as this are very important issues, for this project, concerns focused on impacts related to wetland impacts, residential and business relocations, and historic property impacts.

Along with these socio-economic and environmental concerns, there were also engineering concerns, particularly related to two historically significant sites that would be impacted by three of the four recommended preliminary freeway alternatives. These sites are located along existing US 31, in an area just south of the US 31 and Kern Road intersection. The first historically significant site is known as the Ullery/Farneman House. This site is an Italianate-style house, c. 1860, a Local Historic Landmark that is Potentially Eligible (PE) for the National Register of Historic Places (NR) and a likely Section 4(f) issue. The Ullery/Farneman House is located on the west side of US 31. The second historically significant site is situated directly east of and across US 31 from the Ullery/Farneman House. This site is the Southlawn Cemetery and also a potential Section 4(f) issue. The engineering concerns related to these two potential Section 4(f) properties arose due to the close proximity of these two historically significant properties. It would be difficult to construct a freeway facility in this area without significant impacts to one or both properties. Alternatives E, F, and G all pass between these historic sites, along existing US 31, and would have major impacts to both properties.

Due to these major concerns related to wetland impacts, residential and business relocations, and historic property impacts raised by the study team, public, elected and appointed officials, resource agencies and Section 106 consulting parties, Alternatives C, E, F, and G were modified. The goal of the modifications was to minimize the impacts to these resources. Details of the modifications made to the alternatives are further described in Section 3.2 of the FEIS.

2.2.1 MODIFICATIONS TO PRELIMINARY ALTERNATIVE F

Modifications to Alternative F were investigated just south of the Ullery/Farneman House and the Southlawn Cemetery, and came about in an attempt to minimize impacts to the sites and to eliminate the



likely Section 4(f) impacts. Modified Alternative F in this area involved a shift to the west in order to go to the west side of (behind) the Ullery/Farneman House. Westward modifications to Alternative F would significantly impact two residential subdivisions; one just north of Madison Road and west of US 31 and the other at Roosevelt Road and west of US 31. Further modifications to Alternative F that involved the relocation of the alternative further west to avoid these two subdivisions would essentially place the modified Alternative F on top of Alternative E. Due to the potential Section 4(f) issues associated with Alternative F and the two historically significant structures discussed above, and the presence of prudent and feasible alternatives without potential Section 4(f) issues, Alternative F was eliminated from further consideration.

2.2.2 MODIFICATIONS TO PRELIMINARY ALTERNATIVES C AND E

Alternatives C and E follow the same alignment from the US 30 and US 31 interchange to just north of Madison Road. Any modification made to either of these alternatives in this area, aimed at minimizing impacts, would be made to both of the alternatives. Just north of Madison Road, Alternatives C and E diverge and follow separate alignments northward to US 20. Thus, modifications made to one alternative or the other north of Madison Road would be independent. Each of the alternatives contains three separate areas in which modifications were made in an attempt to minimize impacts.

- The southern segment of the modifications to Alternatives C and E extends from West 4A Road to the south edge of Lakeville. This alignment modification involved the shift of Alternative C, to be called Alternative Cs, and Alternative E, to be called Alternative Es, to the east. The modified Alternatives Cs and Es were shifted to follow Alternative G from West 4A Road to just south of Tyler Road. These modifications reduced wetland impacts in this segment by 50% (from 26 acres to 13 acres) while having a modest impact on relocations (one additional residential relocation) and no impact to historic properties. In this segment, these alignment modifications were included in the modified alternatives, Alternative Cs and Alternative Es.
- The central segment of the modifications to Alternatives C and E extends from SR 4 (Pierce Road) to just north of Osborne Road. This modification involved the shift of the two alternatives to the east. Alternatives Cs and Es continue northward and connect with Alternatives C and E just north of Osborne Road. These modifications reduced the wetland impacts in this segment by one acre (from three acres to two acres) and had no impact on residential relocations or to historic properties. The one-acre of wetland reduction in this segment is a particularly high quality wetland. In this segment, these alignment modifications were included in the modified alternatives, Alternative Cs and Alternative Es.
- The northern segment of the modifications to Alternative C, called Alternative Cs, extends from just north of Madison Road to US 20. This modification involved the shift of the alternative to the east. This modification increased the wetland impacts by seven acres (from 31 acres to 38 acres) and had no impact on residential relocations or to historic properties. In this segment, this alignment modification was not included in the modified alternative, Alternative Cs.
- The northern segment of the modifications to Alternative E, called Alternative Es, extends from just north of Madison Road to US 20. This modification involved the shift of the alternative to the west. This modification, relocating it to the west and behind the Ullery/Farneman House, reduced the wetland impacts by 12 acres (from 26 acres to 14 acres), decreased residential relocations by 23 (from 73 to 50) and business relocations by 20 (from



46 to 26), and eliminated the Section 4(f) issue related to historic properties. In this segment, this alignment modification was included in the modified alternative, Alternative Es.

2.2.3 MODIFICATIONS TO PRELIMINARY ALTERNATIVE G

Two separate modifications to Alternative G were investigated, Alternatives Gs and G-C. Both of the modified alternatives follow Alternative G from the existing US 30 and US 31 interchange to Lake Trail, just east of Riddles Lake. At that point, the alternatives diverge as Alternative G goes northeast while Alternatives Gs and G-C continue northward on a common alignment, just east of and parallel to Kenilworth Road. Just north of Miller Road and south of Turkey Trail, Alternatives Gs and G-C turn to the northwest and parallel Turkey Trail. As these two alternatives approach existing US 31 they diverge. Alternative Gs turns northward and ties into existing US 31 at Roosevelt Road. It continues northward along existing US 31 connects to Alternative G south of Kern Road and terminates at the existing US 31 and US 20 interchange. Alternative G-C continues northwest, crosses existing US 31 near Roosevelt Road and ties into Alternative C near Kern Road. From that point, Alternative G-C continues northward, following the same alignment as Alternative C, and terminates at US 20, approximately 1-mile west of the existing US 31 and US 20 interchange location.

The socio-economic and environmental impacts of modified Alternatives Gs and G-C were compared to those of Alternative G.

- Alternative Gs reduced the wetland impacts by four acres (from 34 acres to 30 acres), increased residential relocations by 33 (from 97 to 130) and business relocations by two (from 52 to 54), and reduced the historic impacts to those structures located within the area of potential impact (APE) by three (from 8 to 5 properties). It did not eliminate the Section 4(f) issue related to the Ullery/Farneman House and the Southlawn Cemetery. Due to increases in both residential and business relocations and the failure to eliminate the potential Section 4(f) issue related to historic properties, Alternative Gs was eliminated from further consideration.

Additionally, due to the potential Section 4(f) issues associated with Alternative G and the two historically significant structures discussed above, and the presence of prudent and feasible alternatives without potential Section 4(f) issues, Alternative G was also eliminated from further consideration.

- Alternative G-C increased wetland impacts by nine acres (from 34 acres to 43 acres), a 26% increase. However, it reduced residential relocations by 31 (from 97 to 66), a 32% reduction and business relocations by 43, (from 52 to 9), an 83% reduction. Alternative G-C reduced the historic impacts to those structures located within the APE by two (from 8 to 6) and it eliminated the Section 4(f) issue related to the Ullery/Farneman House and Southlawn Cemetery. Due to reductions in both residential and business relocations and the elimination of the potential Section 4(f) issue related to historic properties, Alternative G-C was added to the range of reasonable alternatives in the decision-making process, that now included the No-Build Alternative and modified Alternatives Cs, Es and G-C.

2.2.4 EVALUATION OF HYBRID ALTERNATIVES

Following publication of the DEIS, comments were received from resource agencies and the public that requested a review of modifications to alternatives that would maximize the use of the existing US 31 corridor and would also avoid impacts to natural resources. Public comments also requested the



investigation of the combination of Alternatives Es and G-C north of Roosevelt Road. In response to these comments, a “hybrid” alternative, Alternative G-E was developed.

Alternative G-E is a hybrid alternative consisting of a combination of the southern portion of Preliminary Alternative G-C and the northern portion of Preliminary Alternative Es. Additional analysis indicated that the hybrid alternative resulted in a reduction of wetland impacts, and avoidance of many wetland complexes west of existing US 31, a reduction in forest impacts, was a good traffic performer, was an alternative that utilized more of the existing US 31 corridor, and had relocation impacts and cost estimates that were consistent with the other alternatives under consideration. Therefore, the range of reasonable alternatives in the decision-making process was expanded to include Alternative G-E, along with the No-Build Alternative and modified Alternatives Cs, Es and G-C.

2.2.5 MODIFICATIONS TO PRELIMINARY ALTERNATIVES G-C and G-E

During one of many field investigations aimed at collecting additional data for Alternatives Cs, Es, G-C and G-E, a team of environmental scientists identified a high quality wetland complex that was being impacted by Alternatives G-C and G-E. This wetland complex was located between the eastward extension of SR 4 (Pierce Road) and Miller Road, just south of New Road. The team of environmental scientists coordinated with a team of engineers to investigate potential modifications in the form of shifts in the alignment of Alternatives G-C and G-E to the east, called G-Cs and G-Es. Again, the goal of these modifications was avoidance and/or minimization of impacts to the natural and human environment.

The modifications or shifts to Alternatives G-C and G-E, called G-Cs and G-Es, provided positive results as impacts to both the human and natural environments were further reduced. This included a slight reduction in residential relocations and further reductions to wetlands and forests. This particular avoidance/minimization measure also provided an opportunity to avoid the high quality wetland complex associated with both of the alternatives. Due to the positive results related to impact reductions seen by this shift in the alignments, Alternatives G-C and G-E were eliminated from further consideration and Alternatives G-Cs and G-Es were added to the range of reasonable alternatives in the decision-making process, that includes the No-Build Alternative and Alternatives Cs, Es, G-Cs and G-Es.

2.2.6 CONSIDERATION OF ALTERNATIVE G – IRONWOOD ROAD CONNECTION

During resource agency meetings and in comments received during the DEIS Public Comment Period, it was requested that a review of options in the DEIS be completed. Identified, in particular, were modifications to Alternative G that would terminate at the existing US 20 and Ironwood Road interchange, as was the case for the previously eliminated Preliminary Alternative K. In response to those comments, INDOT and FHWA considered Alternative G - Ironwood Road Connection. Alternative G – Ironwood Road Connection follows the same alignment as Alternative G-Cs from the existing US 30 and US 31 interchange to New Road. At that point, the alternatives diverge. Alternative G-Cs continues northward just east of and parallel to Kenilworth Road. The Modified Alternative G – Ironwood Road Connection turns northeast and ties into Ironwood Road, near Kern Road. From that point, it continues northward, following Ironwood Road, and terminates at the existing US 20 and Ironwood Road interchange. The US 20 and Ironwood Road interchange was the north terminus of Preliminary Alternative K that was previously eliminated from further consideration due to its failure to meet the purpose and need of the project.



The additional analysis included an investigation of the alternative, including additional major roadway improvements to existing roadway facilities that would be required to make the alternative meet the purpose and need of the project. It was found that in addition to construction of the new freeway Alternative G – Ironwood Road Connection, two additional major roadway improvement projects would be required to meet the minimum LOS D for the alternative and satisfy the purpose and need of the project. The first major additional roadway improvement project would consist of the improvement of Ironwood Road from US 20 northward to SR 933 (Lincolnway), a distance of approximately 2-miles, from an existing four-lane facility to a seven-lane facility. The second major additional roadway improvement project would consist of the improvement of existing US 31 from Roosevelt Road northward to US 20 (approximately 2-miles) from an existing four-lane facility to a seven-lane facility. For Alternative G – Ironwood Road Connection, data related to socio-economic and environmental impacts was also examined. In regards to potential historic impacts to properties eligible or potentially eligible for the National Register of Historic Places (NR), local historic landmarks and adverse impacts requiring mitigation, it was found that the required improvement of existing US 31 from Roosevelt Road to US 20 for the alternative would have a direct impact on one historic property that is eligible for the NR (a Section 4(f) issue), the Ullery/Farneman House, which is located on the west side of existing US 31 just south of Kern Road. The alternative would also have direct impacts on two properties along the alternative both north and south of the US 20 interchange that are potentially eligible for the NR as well as adverse effects on several properties that would require mitigation. In regards to socio-economic impacts, it was found that the alternative would directly impact the St. Joseph County Fairgrounds, would require from 1.75 to 4 times more residential relocations than any other alternative and would have a total cost that was from 15% to 50% higher than any of the other alternatives. In regards to potential environmental impacts, it was found that the alternative slightly reduced forest and wetland impacts but it slightly increased farmland impacts. While there was some decrease in potential environmental impacts, they were still higher than the wetland and forest impacts associated with other alternatives currently under consideration. Based on these considerations, it was concluded that Alternative G – Ironwood Road Connection was not a reasonable alternative and was not added to the range of reasonable alternatives to be considered in the decision-making process that includes the No-Build Alternative and Alternatives Cs, Es, G-Cs and G-Es.

2.3 DESCRIPTION OF ALTERNATIVES SELECTED FOR DETAILED STUDY

Following the modifications made to the preliminary alternatives throughout the study process, as discussed above and in more detail in Chapter 3.2 of the FEIS, the range of reasonable alternatives in the decision-making process was expanded to include the No-Build Alternative and four Freeway Alternatives Cs, Es, G-Cs and G-Es (Exhibit 3). These alternatives are described in greater detail in Chapter 3.3 of the FEIS.

For the Freeway Alternatives, access to US 31 will be at various interchange locations. In addition to these interchange locations, there will be grade separations (overpass/underpass) and local service (frontage) roads for many public roads intersecting with US 31 and not listed as a likely interchange location. Additionally, there will be public roads that are not listed as a likely interchange or grade separation (overpass/underpass) locations. When two public roads are close to one another, a grade separation (overpass/underpass) may be provided at one road and the other road relocated to use the same grade separation. Frontage or local service roads are provided where land may be landlocked by full access control of the alternative. There will also be public roads that are not listed as a likely interchange or grade separation (overpass/underpass) locations or listed as a road likely to be relocated to an alternate access point. Access across the new freeway for these roads will be eliminated and a cul-de-sac constructed on either side of the new freeway. In addition to the likely locations of interchanges, grade separations, and road closures, there would also be two grade separations for railroad crossings.



The details of access for each alternative will be refined as the project advances through the development phases.

2.3.1 NO-BUILD ALTERNATIVE

The No-Build Alternative includes “capacity expansion” projects in the South Bend Metropolitan Area (St. Joseph, Marshall and Elkhart counties) as reported in the MACOG Transportation Improvement Program (2003-2005 TIP) and the balance of Indiana as reported in the Indiana Statewide Transportation Improvement Program (INSTIP). Capacity expansion projects include major roadway investments, such as a major widening that add through traffic lanes, the extension of existing roadways or construction of new roadways, new interchanges, and major roadway realignments or reconstructions that add through traffic carrying capacity.

When capacity expansion projects that are programmed for construction or that have been completed since the year 2000 are added to the existing roadway network, the resulting roadway network constitutes the No-Build Alternative (or Existing-Plus-Committed Network). It is assumed that these committed improvements will be completed independent of any decision regarding the improvement of US 31 from Plymouth to South Bend.

Even though the No-Build Alternative does not address the purpose and need for this project, it was carried forward and served as a baseline when comparing the effectiveness and potential impacts of other alternatives. Its’ inclusion as an alternative is required by the National Environmental Policy Act of 1969 (NEPA)

2.3.2 ALTERNATIVE Cs (FREEWAY ALTERNATIVE)

Alternative Cs begins at the existing US 31 and US 30 interchange, utilizing the existing cloverleaf configuration, and proceeds northward along the existing US 31 alignment to just south of West 4A Road in Marshall County, just south of LaPaz. It then continues northward on new alignment east of LaPaz and parallels existing US 31. Just south of Lakeville, in St. Joseph County, it crosses existing US 31 and continues northward, west of Lakeville, paralleling existing US 31. It terminates at US 20, approximately one mile west of the existing US 31 and US 20 interchange.

The proposed facility would require existing intersections and access points to be converted to interchanges, overpasses (grade-separations) or access closures. It is anticipated that there will be five new interchanges along Alternative Cs, not including the use of the existing interchange at US 30 and US 31 or the modifications required at the existing US 31 and US 20 interchange. All anticipated interchange locations and types are conceptual and will be refined in later phases of the project development. Anticipated interchange types and locations are:

- Utilize existing interchange at US 30
- Diamond Interchange at the Marshall County proposed extension of 7th Road
- Diamond interchange at US 6 (with provisions for a potential future partial cloverleaf)
- Diamond interchange at SR 4 (Pierce Road)
- Diamond interchange at Kern Road



- Trumpet Interchange at US 20 (approximately 1-mile west of existing US 31 and US 20 interchange location)
- Modify existing interchange at existing US 31 and US 20

2.3.3 ALTERNATIVE Es (FREEWAY ALTERNATIVE)

Alternative Es begins at the existing US 31 and US 30 interchange, utilizing the existing cloverleaf configuration, and proceeds northward along the existing US 31 alignment to just south of West 4A Road in Marshall County, just south of LaPaz. It then continues northward on new alignment east of LaPaz and parallels existing US 31. Just south of Lakeville, in St. Joseph County, it crosses existing US 31 and continues northward, west of Lakeville, paralleling existing US 31. Just north of Madison Road the alternative assumes a northeasterly direction and ties into existing US 31 just north of Kern Road. It then terminates at the existing US 31 and US 20 interchange. It should be noted that Alternative Es between Kern Road and the US 31/US 20 interchange was modified to be an “at grade” facility and not an elevated roadway, constructed on retaining walls as presented in the DEIS.

The proposed facility would require existing intersections and access points to be converted to interchanges, overpasses (grade-separations) or access closures. It is anticipated that there will be four new interchanges along Alternative Es, not including the use of the existing interchange at US 30 and US 31 and the reconstruction of the existing interchange at US 31 and US 20. All anticipated interchange locations and types are conceptual and will be refined in later phases of the project development. Anticipated interchange types and locations are:

- Utilize existing interchange at US 30
- Diamond Interchange at the Marshall County proposed extension of 7th Road
- Diamond interchange at US 6 (with provisions for a potential future partial cloverleaf)
- Diamond interchange at SR 4 (Pierce Road)
- Diamond interchange at Kern Road
- Reconstruction of existing interchange at US 20

2.3.4 ALTERNATIVE G-Cs (FREEWAY ALTERNATIVE)

Alternative G-Cs begins at the existing US 31 and US 30 interchange, utilizing the existing cloverleaf configuration, and proceeds northward along the existing US 31 alignment to just south of West 4A Road in Marshall County, just south of LaPaz. It then continues northward on new alignment east of LaPaz and parallels existing US 31. Just south of the Marshall-St. Joseph County line, the alternative assumes a northeasterly direction around the east side of Riddles Lake, where it then continues in a northerly direction bypassing Lakeville on the east and paralleling existing US 31. Near Miller Road, the alternative turns in a northwesterly direction and crosses to the west side of existing US 31 just south of Roosevelt Road. The alternative then turns in a northerly direction, paralleling existing US 31, and terminates at US 20, approximately one mile west of the existing US 31 and US 20 interchange.



The proposed facility would require existing intersections and access points to be converted to interchanges, overpasses (grade-separations), or access closures. It is anticipated that there will be five new interchanges along Alternative G-Cs, not including the use of the existing interchange at US 30 and US 31 or modifications required at the existing US 31 and US 20 interchange. All anticipated interchange locations and types are conceptual and will be refined in later phases of the project development. Anticipated interchange types and locations are:

- Utilize existing interchange at US 30
- Diamond Interchange at the Marshall County proposed extension of 7th Road
- Diamond interchange at US 6 (with provisions for a potential future partial cloverleaf)
- Diamond interchange at SR 4 (Pierce Road)
- Diamond interchange at Kern Road
- Trumpet Interchange at US 20 (approximately 1-mile west of existing US 31 and US 20 interchange location)
- Modify existing interchange at existing US 31 and US 20

2.3.5 SELECTED ALTERNATIVE (G-Es) (FREEWAY ALTERNATIVE)

Selected Alternative (G-Es) begins at the existing US 31 and US 30 interchange, utilizing the existing cloverleaf configuration, and proceeds northward along the existing US 31 alignment to just south of West 4A Road in Marshall County, just south of LaPaz. It then continues northward on new alignment east of LaPaz, paralleling existing US 31. Just south of the Marshall-St. Joseph County line, the alternative assumes a northeasterly direction east of Riddles Lake, and then continues north, east of Lakeville, paralleling existing US 31. Near Miller Road, the alternative turns in a northwesterly direction and crosses existing US 31 just south of Roosevelt Road. As the alternative approaches Kern Road, it assumes a northeasterly direction and ties into existing US 31, just north of Kern Road. It then follows existing US 31 northward and terminates at the existing US 31 and US 20 interchange location. It should be noted that Selected Alternative (G-Es) between Kern Road and the US 31/US 20 interchange includes the same modifications as those made to Alternative Es to be an “at grade” facility and not an elevated roadway, constructed on retaining walls.

The proposed facility would require existing intersections and access points to be converted to interchanges, overpasses (grade-separations), or access closures. It is anticipated that there will be five new interchanges along Selected Alternative (G-Es), not including the use of the existing interchange at US 30 and US 31 or modifications required at the existing US 31 and US 20 interchange. All anticipated interchange locations and types are conceptual and will be refined in later phases of the project development. Anticipated interchange types and locations are:

- Utilize existing interchange at US 30
- Diamond Interchange at the Marshall County proposed extension of 7th Road
- Diamond interchange at US 6 (with provisions for a potential future partial cloverleaf)



- Diamond interchange at SR 4 (Pierce Road)
- Diamond interchange at Kern Road
- Reconstruction of the existing interchange at existing US 31 and US 20

2.4 SUMMARY OF IMPACTS OF ALTERNATIVES SELECTED FOR DETAILED STUDY

Following the modifications made to the preliminary alternatives throughout the study process, as detailed above and based on the following findings, the range of reasonable alternatives in the decision-making process included the No-Build Alternative and four Freeway Alternatives Cs, Es, G-Cs and the Selected Alternative (G-Es) (see Exhibit 3). As the study progressed, additional information was collected and analyzed, more specific design parameters and details were developed, and the associated impacts were revised and updated for each of the alternatives being considered in the decision-making process.

Direct impacts are defined by the Council on Environmental Quality (CEQ) Regulation as “effects which are caused by the action and occur at the same time and place.” For this project, the direct impacts are the result of the right-of-way needs for the project. Impacts such as these may be permanent or temporary, and positive or negative in nature. Temporary direct impacts typically occur in the right-of-way during construction activities. They usually result in physical effects but do not cause permanent alteration of the land or water bodies. Temporary easements, for example, may be required for access and storage of equipment on site. Indirect impacts are those that occur as a result of a project action but are removed from the immediate right-of-way. The FHWA defines indirect impacts as those that are “caused by an action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induce changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” Cumulative impacts are “the impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (FHWA Executive Order 13274).

The No-Build Alternative did not address the purpose and need for this project; however, it was carried forward for evaluation throughout the development of the EIS and served as a baseline when comparing the effectiveness and potential impacts of other alternatives. The No-Build Alternative, while having no *direct* construction costs or impacts, would result in indirect economic and quality of life impacts that can be expected from the continued deterioration of system capacity as identified in the Purpose and Need Statement. The No-Build Alternative fails to address existing and future congestion in the US 31 Corridor. Traffic growth over the next 30 years results in deterioration of the LOS along all US 31 roadway segments, signalized intersections and major unsignalized (two-way stop-controlled) intersections. In fact, while LOS C is the minimum acceptable standard, an LOS of E or F results on all US 31 roadway segments from Michigan Road to the US 20 Bypass, all signalized intersections, and all but one unsignalized intersection.

Throughout the development of this project, some socio-economic and environmental issues emerged as very important issues to resource agencies, the public, local elected and appointed officials as well as the project management team. These important issues included impacts to wetlands, residential and business impacts and historic property impacts. These important issues played major roles in the screening of alternatives, modifications made to alternatives aimed at avoidance and minimization of impacts and also



ultimately in the identification of the Selected Alternative (G-Es). The following are some generalizations related to the impacts associated with some of these very important socio-economic and environmental issues (note that the generalizations are based on data shown in Table 1 below). A comparison of the remaining freeway alternatives, Alternatives Cs, Es, G-Cs and the Selected Alternative (G-Es) identified different types of impacts related to each alternative as detailed in Table 1 below and more comprehensively described in Chapter 3.4 of the FEIS. It should be noted that following the identification of Alternative G-Es as the Selected Alternative, additional, in-depth studies were performed on the Selected Alternative (G-Es). These additional studies included, but were not limited to, refinement of the local access plan and proposed right-of-way requirements, wetland delineations, Phase 1a Archaeological Review, etc. While this more refined impact information was not available or utilized in the identification of Alternative G-Es as the Selected Alternative (G-Es) it is provided in the shaded column of Table 1 and in the following text for information only. The data utilized in the identification of the Preferred Alternative G-Es during the development of this EIS is contained in Table 1 under the column headings of Alternatives Cs, Es, G-Cs and G-Es.

- ***Purpose and Need*** – the alternatives that utilized more of the existing US 31 corridor (Alternatives Es and the Selected Alternative (G-Es)) were generally better traffic performers; however, all remaining freeway alternatives meet the projects purpose and need and the associated performance measures.
- ***Wetland and Forest Impacts*** – the alternatives that were west of existing US 31 (Alternatives Cs, Es and the northern most portion of G-Cs) exhibited higher impacts to the natural environment, particularly wetlands and forests.
 - Alternatives Cs and Es traverse an area of complex glacial drift in the northwestern quarter of the study area, from approximately the north edge of Lakeville to US 20, formerly the Maxinkukee Moraine. The glacial deposits in this area are also unique from a wildlife habitat perspective. These areas are less conducive to agriculture, thus many forested and wetland communities remain. The majority of threatened and endangered species records from the Indiana Natural Heritage Data Center are from this area, as are many of the notable wildlife habitat areas as identified by the Indiana Department of Natural Resources (IDNR), and lands enrolled in state and federal programs that promote and manage wildlife habitat. Alternative G-Cs avoids this area for the most part, with the exception of the northern most portion, from approximately Roosevelt Road to its northern terminus at US 20. The Selected Alternative (G-Es) is located east of and avoids this complex glacial drift area.
 - Wetland delineations were performed for the Selected Alternative (G-Es) during July - October 2004. A total of 29.93 acres of wetland were delineated within the Selected Alternative (G-Es) footprint. Representatives from the United States Army Corps of Engineers (USACE) and the Indiana Department of Environmental Management (IDEM) reviewed the potential wetland impacts for the Selected Alternative (G-Es) during a field review on November 4-6, 2004. In a jurisdictional determination letter dated February 24, 2005, the USACE identified 25.51 acres as falling under federal jurisdiction and 4.42 acres as isolated wetlands. Isolated wetland impacts are regulated under state jurisdiction via the Indiana Department of Environmental Management (IDEM) Isolated Wetlands Regulatory Program.



- **Farmland Impacts** – the alternatives that were east of existing US 31 (Alternatives G-Cs and the Selected Alternative (G-Es)) exhibited higher farmland impacts but had lower wetland and forest impacts.
- **Residential and Business Impacts** – the alternatives that utilized more of the existing US 31 corridor (Alternatives Es and the Selected Alternative (G-Es)) exhibited higher impacts to the human environment, particularly residential and business relocations.
- **Total Costs** – the alternatives that utilized more of the existing US 31 corridor (Alternatives Es and the Selected Alternative (G-Es)) generally exhibited higher total costs than those that were largely new terrain corridors. Total costs associated with each of the four build alternatives studied in detail range from \$324.7 to \$378.3 million. These preliminary total costs include construction costs associated with the alternative, required reconstruction of US 20, local road improvement projects, right-of-way costs, preliminary engineering (design) costs, an estimate of utility relocation costs and an estimate of mitigation costs. The costs are in year 2005 dollars. Alternative Cs has the lowest total cost between \$324.7 and \$327.9 million. Alternative G-Cs has a total cost between \$332.2 and \$339.7 million. Alternative Es has a total cost between \$362.3 and \$365.9 million. Alternative G-Es has the highest total cost between \$366.9 and \$374.4 million. Following additional analysis it was determined that Selected Alternative (G-Es) has total cost between \$371.0 and \$378.3 million..
- **Historic and Archaeological Resources** - Section 106 of the National Historic Preservation Act (“Section 106”) requires consultation with the State Historic Preservation Officer (SHPO) and other consulting parties to develop and evaluate alternatives or modifications that could avoid, minimize, or mitigate historic and archaeological effects. Consulting parties have been contacted on an ongoing basis in order to avoid and minimize the impacts of the undertaking on historic and archaeological properties. Mitigation of impacts may mean avoiding the impact altogether, minimizing the impact, rectifying the impact, reducing or eliminating the impact over time, or compensating for the impact.
 - Alternatives Es and Cs have the lowest estimated number of Historic Properties (listed or eligible for the NR) within the Area of Potential Effect (APE) with five and four, respectively. Neither alternative has any associated properties adversely affected.
 - Alternatives G-Cs and Selected Alternative (G-Es) have the highest estimated number of Historic Properties (listed or eligible for the NR) within the APE with nine and eight, respectively. Both alternatives have one property adversely affected. The FHWA finding of effects for the project is “Historic Properties Affected – Adverse Effect.” There will be adverse effects to the W.O. Bunch Farm. The Selected Alternative (G-Es) will introduce both auditory and visual adverse effects.

Thirty-one previously recorded archaeological sites were identified within an area extending one mile on either side of the alignments. These sites include two prehistoric sites of unidentified cultural affiliation and one reported historic farmstead, none of which is considered eligible for listing in the NR. Alternatives Cs and G-Cs would impact two previously recorded sites. Alternatives Es and Selected Alternative (G-Es) would impact three previously recorded sites.



A total of twenty-three archaeological sites, consisting of twenty new archaeological sites, and three previously recorded archaeological sites, were found to be within the footprint of the Selected Alternative (G-Es) alignment during the Phase Ia archaeological field study. The archaeological sites found do not appear to be of State Indiana Register of Historic Sites and Structures (IRHSS) or NR significance, and no further work concerning these sites is recommended. In addition, none of the historic cemeteries documented during this project were located in the alignments of the alternative.

- **Section 4(f) Resources** – This project involves no use of any Section 4(f) resources.

A comparative evaluation of the data contained in Table 1 above resulted in the identification of Alternative Cs as a Non-Preferred Alternative. The impacts associated with Alternatives Cs and G-Cs were very similar with respect to both social and environmental impacts, particularly costs, relocations and land use. A comparison of Alternatives Cs and G-Cs revealed that Alternative Cs had a slightly lower associated engineering (total) cost, slightly lower residential impacts and significantly lower agricultural (row crops) impacts. However, its associated business impacts were slightly higher and environmental impacts to wetlands and forests (woodland) were significantly higher than those associated with Alternative G-Cs. In fact, the impacts to wetlands and forests associated with Alternative Cs were the highest among the remaining freeway alternatives. Alternative Cs was considered a Non-Preferred Alternative due to its higher relative environmental impacts to wetlands and forests while exhibiting similar impacts to residences and businesses.

A comparative evaluation of the data contained in Table 1 above also resulted in the identification of Alternative Es as a Non-Preferred Alternative. The impacts associated with Alternatives Es and Selected Alternative (G-Es) were very similar with respect to both social and environmental impacts, particularly costs, relocations and land use. A comparison of Alternatives Es and Selected Alternative (G-Es) revealed that Alternative Es had slightly lower engineering (total) cost and significantly lower agricultural (row crops) impacts; however, its residential and business impacts were slightly higher and environmental impacts to wetlands and forests were significantly higher than those associated with Selected Alternative (G-Es). Alternative Es was considered a Non-Preferred Alternative due to its higher relative environmental impacts to wetlands and forests while exhibiting similar impacts to residences and businesses.



Table 1: Comparison of Impacts for Preliminary Alternatives Cs, Es, G-Cs, G-Es, and the Selected Alternative (G-Es)

Socio-Economic/Environmental Measure	ALTERNATIVE ¹				
	Cs	Es	G-Cs	G-Es	Selected Alternative G-Es ²
COSTS (Total) (Mil. Of \$) (year 2005 dollars)	324.7 to 327.9	362.3 to 365.9	332.2 to 339.7	366.9 to 374.4	371.0 to 378.3
Length (Miles)	19.5	19.9	20.3	20.5	20.5
No. of New Interchanges (Total Interchanges)	5 (7)	5 (6)	5 (7)	5 (6)	5 (6)
No. of Grade Separations (Overpass/Underpass)	16	16	16	16	16
No. of Grade Separations (Railroad Crossings)	2	1	2	1	1
CONSTRUCTION COSTS (Mil. of \$)	208.6 to 211.8	218.2 to 221.3	213.4 to 220.9	221.7 to 228.7	223.2 to 230.2
RECONSTRUCTION of US 20 Right-of-Way & Construction (Mil. of \$)	29.6	21.1	29.6	21.1	21.1
LOCAL & STATE ROAD IMPROVEMENT PROJECTS Right-of-Way & Construction (Mil. Of \$)	3.6	11.5	5.8	13.7	13.6
US 31 MAINLINE RIGHT-OF-WAY COSTS (Mil. of \$)	44.7	70.7	47.1	70.9	72.5
ENGINEERING COSTS (Mil. of \$)	13.7	18.1	13.9	18.3	18.3
UTILITY RELOCATION COSTS (Mil. of \$)	17.2	17.2	17.2	17.2	17.2
MITIGATION COSTS (Mil. of \$)	7.3	5.5 to 6.0	5.2	4.0 to 4.5	5.1 to 5.4
TRAFFIC PERFORMANCE					
Meet Purpose and Need	Yes	Yes	Yes	Yes	Yes
Performance (Compared to Other Alternatives, 1 is Best Performer)	3	1	4	2	2



Table 1: Comparison of Impacts for Preliminary Alternatives Cs, Es, G-Cs, G-Es, and the Selected Alternative (G-Es)

Socio-Economic/Environmental Measure	ALTERNATIVE ¹				
	Cs	Es	G-Cs	G-Es	Selected Alternative G-Es ²
LAND USE	961 Ac.	968 Ac.	1,012 Ac.	1,011 Ac.	1,061 Ac.
Agricultural (row crop)	390 Ac.	395 Ac.	504 Ac.	503 Ac.	537 Ac.
Commercial	15 Ac.	23 Ac.	16 Ac.	23 Ac.	23 Ac.
Church/Religious	2 Ac.	2 Ac.	2 Ac.	2 Ac.	2 Ac.
Herbaceous Cover	51 Ac.	48 Ac.	68 Ac.	52 Ac.	53 Ac.
Open Water	<1 Ac.	<1 Ac.	<1 Ac.	<1 Ac.	<1 Ac.
Pasture	14 Ac.	12 Ac.	3 Ac.	4 Ac.	4 Ac.
Transportation	213 Ac.	220 Ac.	217 Ac.	222 Ac.	226 Ac.
Residential	51 Ac.	86 Ac.	55 Ac.	77 Ac.	82 Ac.
Scrub/Shrub	38 Ac.	46 Ac.	31 Ac.	36 Ac.	37 Ac.
Woodland (Wetland & Non-Wetland) (Forests)	186 Ac.	135 Ac.	115 Ac.	91 Ac.	96 Ac.
RELOCATIONS					
Residences Acquired	50	128	59	124	131
Businesses Acquired ³	7	40	5	39	39
Businesses Damaged	5	13	5	13	13
Churches Acquired	1	1	1	1	1
HISTORIC PROPERTIES (Listed or Eligible)					
SECTION 4(f) PROPERTIES	0	0	0	0	0



Table 1: Comparison of Impacts for Preliminary Alternatives Cs, Es, G-Cs, G-Es, and the Selected Alternative (G-Es)

Socio-Economic/Environmental Measure	ALTERNATIVE ¹				
	Cs	Es	G-Cs	G-Es	Selected Alternative G-Es ²
PROPERTIES WITHIN A.P.E.	5	4	9	8	8
PROPERTIES ADVERSELY AFFECTED BUT NO SUBSTANTIAL LOSS OF INTEGRITY	0	0	1	1	1
ARCHAEOLOGICAL SITES					
Within Alignment	2	3	2	3	3
TOTAL WETLANDS (NWI + FARMED)	51.6 Ac.	35.6 Ac.	30.7 Ac.	23.9 Ac.	29.93 Ac.⁴
WETLANDS (From NWI Maps)	49.6 Ac.	33.7 Ac.	27.8 Ac.	21.1 Ac.	
Forested	21.8 Ac.	17.8 Ac.	17.7 Ac.	14.8 Ac.	13.21 Ac.
Scrub/Shrub	3.0 Ac.	1.6 Ac.	1.4 Ac.	0.0 Ac.	1.45 Ac.
Emergent	24.0 Ac.	13.6 Ac.	8.7 Ac.	6.3 Ac.	15.27 Ac.
Aquatic Bed	0.8 Ac.	0.7 Ac.	0.0 Ac.	0.0 Ac.	0.0 Ac.
ESTIMATED FARMED WETLANDS	2.0 Ac.	1.9 Ac.	2.9 Ac.	2.8 Ac.	0.44 Ac.⁵
STREAM IMPACTS (No. of Impact Locations) (USGS)	18	19	18	17	17
WILDLIFE HABITAT AREAS					
Potato Creek State Park & Swamp Rose Nature Preserve	0	0	0	0	0
Notable Wildlife Habitat (IDNR)	2	1	0	0	0
Classified Wildlife Habitat (IDNR)	4	3	0	0	0
Classified Forest (IDNR)	2-3	2-3	1-2	1-2	1-2
Conservation Reserve Program (CRP) (NRCS)	1	2	2	1	1



Table 1: Comparison of Impacts for Preliminary Alternatives Cs, Es, G-Cs, G-Es, and the Selected Alternative (G-Es)

Socio-Economic/Environmental Measure	ALTERNATIVE ¹				
	Cs	Es	G-Cs	G-Es	Selected Alternative G-Es ²
Wetland Reserve Program (WRP) (NRCS)	1	1	0	0	0
Partners for Fish and Wildlife Program (USFWS)	2	1	0	0	0
INDIRECT IMPACTS					
Farmland	115 Ac.	50 Ac.	105 Ac.	45 Ac.	45 Ac.
Wetland	3 Ac.	3 Ac.	3 Ac.	3 Ac.	3 Ac.
Forests	30 Ac.	25 Ac.	10 Ac.	10 Ac.	10 Ac.

NOTES: The final impacts associated with Selected Alternative (G-Es) are Shaded

1. No-Build Alternative – does not meet purpose and need of the project; however, it was carried forward for detailed study.
2. Following the identification of Alternative G-Es as the Selected Alternative, additional, in-depth studies were performed on the alternative. These additional studies included, but were not limited to, refinement of local access plan and proposed right-of-way requirements, wetland delineations, Phase 1a Archaeological Review, etc. This more refined data is included in this column.
3. Businesses acquired include large farming operations
4. Delineations of wetlands resulted in 29.93 acres of wetlands impacted, of which, 25.51 acres were jurisdictional and 4.42 acres were isolated wetlands.
5. One farmed wetland area was identified. This area met the three U.S. Army Corps of Engineers wetland criteria and was considered an emergent wetland. This farmed wetland was included in the emergent wetland total.



Following the initial comparative evaluation of the data contained in Table 1, Alternatives Cs and Es were identified as Non-Preferred Alternatives. Alternatives G-Cs and Selected Alternative (G-Es) remained as alternatives to be further evaluated. Since these alternatives follow the same alignment from US 30 northward to near Roosevelt Road, the FHWA and the INDOT agreed that additional field data should be collected and analyzed, roadway engineering and associated costs should be refined and further developed and the human and natural environmental impacts should be re-assessed. The additional analysis focused on the area in which Alternatives G-Cs and Selected Alternative (G-Es) did not follow a common alignment, essentially from Roosevelt Road northward to US 20. Some of the additional items included in the additional analysis of Alternatives G-Cs and Selected Alternative (G-Es) from Roosevelt Road to US 20:

- Delineation and quality evaluation of wetland complexes and refinement of wetland impacts;
- Refinement of forest and farmland impacts;
- Further conceptual design and cost update for the US 31 and US 20 interchange associated with each of the alternatives including reconstruction of US 20 within the interchange limits;
- Further conceptual design and cost update of local access issues, particularly related to Selected Alternative (G-Es) from Kern Road to US 20 and northward to Ireland Road;
- Refinement of residential and business relocations and the associated costs; and
- Determination of potential mitigation measures and estimation of associated mitigation costs – wetland mitigation and bridging of wetlands, context sensitive solutions and noise mitigation.

A comparative evaluation of this data obtained for additional analysis resulted in the identification of Alternatives G-Cs as a Non-Preferred Alternative and Alternative G-Es as the Selected Alternative. Alternative G-Cs had lower associated total project cost and lower residential and business impacts than those associated with Selected Alternative (G-Es). While residential and business impacts associated with Alternative G-Es are higher than those for Alternative G-Cs, the FEIS found that it appears that there is sufficient availability of comparable housing to accommodate the expected number of residential relocations. The FEIS also found that the availability of commercial real estate is most prevalent in the South Bend area at the north end of the corridor (near the US 20 Bypass) and that there appears to be adequate availability of commercial property. It is anticipated that there will be opportunities for many of the relocated businesses to rebuild in the same general vicinity with little or no loss in business in the long-term.

The traffic performance of Alternative G-Cs was not as good as Selected Alternative (G-Es). Alternative G-Cs utilized very little of existing US 31, although it did meet the purpose and need of the project and the associated performance measures. As a more detailed conceptual design of the interchange of Alternative G-Cs with US 20 developed, engineers expressed concerns with operational problems associated with the interchanges proximity to the existing US 31 and US 20 interchange. The operation problems associated with the interchange configuration focused on insufficient traffic weaving lengths for several traffic movements. Traffic weaving lengths are essentially a distance that a driver has to weave through other lanes of traffic in order to get to an appropriate lane that allows the traffic movement that a driver desires. Inadequate weaving lengths or lengths near minimum allowable values tend to lead to traffic congestion and generally less safe driving conditions as driver actions become less predictable. The proposed interchange at US 20 for Selected Alternative (G-Es) consists of the reconstruction of the existing interchange and did not exhibit operational problems.



The associated environmental impacts to wetlands and forests for Alternative G-Cs were higher than those for Selected Alternative (G-Es). Alternative G-Cs had severe impacts on several wetland complexes located north of Roosevelt Road, south of US 20 and west of existing US 31. Impacts to these wetland complexes would be very difficult to mitigate. Bridging of these wetlands as a mitigation measure was evaluated, but this method of mitigation is relatively expensive and often still results in the destruction of considerable amounts of forested wetlands. By utilizing the existing US 31 alignment north of Kern Road, the Selected Alternative (G-Es) does not impact these wetland complexes. In comments received during the DEIS Public Comment Period, the U.S. Environmental Protection Agency (USEPA) emphasized the importance of selecting a preferred alternative in accordance with the wetlands permitting requirements under Section 404 of the Clean Water Act. In particular, the USEPA mentioned the need to ensure consistency with the Section 404(b)(1) Guidelines, which require (in the context of Section 404 permit decisions) selection of the “least environmentally damaging practicable alternative” or “LEDPA”. A LEDPA consistency analysis was completed as part of the FEIS (see Appendix T of the FEIS) and showed Alternative G-Es (Selected Alternative) as the LEDPA. Alternative G-Cs would also have resulted in a higher loss of forestland and the fragmentation of forest habitat.

2.5 SELECTION OF BUILD ALTERNATIVE OVER A NO-BUILD ALTERNATIVE

This ROD identifies Alternative G-Es as the Selected Alternative for the US 31 Improvement Project from Plymouth to South Bend in Marshall and St. Joseph counties in Indiana, as described in the Final Environmental Impact Statement (FEIS). Construction of the Selected Alternative will cause some unavoidable, adverse impacts; however, efforts have been made during the development of this EIS to avoid and minimize those impacts. The Selected Alternative is the alternative that best balances project impacts with the transportation needs identified for the project. The No-Build Alternative did not address the purpose and need for this project; however, it was carried forward for evaluation throughout the development of the EIS and served as a baseline when comparing the effectiveness and potential impacts of other alternatives. The No-Build Alternative, while having no *direct* construction costs or impacts, would result in indirect economic and quality of life impacts that can be expected from the continued deterioration of system capacity as identified in the Purpose and Need Statement. Due to its failure to meet the project’s Purpose and Need, the No-Build Alternative was eliminated from consideration as a viable alternative.

2.6 ENVIRONMENTALLY PREFERRED ALTERNATIVE – SELECTED ALTERNATIVE

The FHWA is required to identify the environmentally preferred alternative(s) in its ROD. In the CEQ’s guidance titled “Questions and Answers about the NEPA Regulations,” the environmentally preferred alternative is defined as “...the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.” Further guidance is also provided in stating that if the selected alternative is other than the environmentally preferable alternative, the ROD should clearly state the reasons for not selecting the environmentally preferred alternative.

As is evident in Table 1 above, the potential impacts to the biological and physical environment associated with each of the freeway alternatives considered vary according to the geographic location of the alternative. A comparison of the freeway alternatives yielded some generalizations related to the impacts of the alternatives:



- Alternatives that were west of existing US 31 (Alternatives Cs, Es and the northern most portion of G-Cs) exhibited higher impacts to the natural environment, particularly wetlands and forests
- Alternatives that were east of existing US 31 (Alternatives G-Cs and G-Es) exhibited higher farmland impacts but had lower wetland and forest impacts
- Alternatives that utilized more of the existing US 31 corridor (Alternatives Es and G-Es) exhibited higher impacts to the human environment, particularly residential and business relocations
- Alternatives that utilized more of the existing US 31 corridor (Alternatives Es and G-Es) generally exhibited higher total costs than those that were largely new terrain corridors
- Alternatives that utilized more of the existing US 31 corridor (Alternatives Es and G-Es) were generally better traffic performers; however, all remaining freeway alternatives meet the projects purpose and need and the associated performance measures

A review of the information contained in Table 1 verifies the above generalizations and indicates that the impacts to some natural resources by the Selected Alternative (G-Es) are in some cases greater than and in other cases lesser than impacts by other alternatives.

Impacts related to farmland (row crops) indicate that Alternatives Cs and Es have very similar impacts at 390 and 395 acres respectively. Alternatives G-Cs and the Selected Alternative (G-Es) also have very similar impacts at 504 and 537 acres respectively; however these impacts are approximately 115 to 150 acres more than Alternatives Cs and Es.

Impacts related to floodplains indicate that Alternatives Cs and Es have the least amount of potential floodplain impacts at 1,400 and 1,450 feet in length of impacts, respectively, along with 10.3 and 9.9 acres in area. Alternatives G-Cs and the Selected Alternative (G-Es) have similar potential floodplain impacts at 1,995 and 2,045 feet in length of impacts, respectively, along with 11.4 acres in area. Related to the floodplain impacts is the number of water crossings noted for each of the build alternatives. Stream crossings for each of the alternatives are nearly the same with the Selected Alternative (G-Es) estimated to cross 17 streams, Alternatives Cs and G-Cs are estimated to cross 18 streams and Alternative Es is estimated to cross 19 streams.

Impacts related to wetlands indicate that the Selected Alternative (G-Es) has the least amount of estimated wetland impacts at 29.93 acres. Alternative G-Cs has essentially the same amount of wetland impacts with an estimated 30.7 acres. Alternative Es has an estimated 35.6 acres of wetland impacts while Alternative Cs has the highest amount at 51.6 acres.

Impacts related to forest (woodland) indicate that the Selected Alternative (G-Es) has the least estimated forest (woodland) impacts with 96 acres. Alternative G-Cs has an estimated 115 acres of forest (woodland) impacts. Alternative Es has an estimated 135 acres of forest (woodland) impacts and Alternative Cs also has the highest estimated forest (woodland) impacts with 196 acres.

FHWA has identified the Selected Alternative, Alternative G-Es as the environmentally preferred alternative. In determining this, as a part of the FEIS, a LEDPA Consistency Analysis was completed (See Appendix T of the FEIS). In addition, a Conceptual Wetland Mitigation Plan (See Appendix N of



the FEIS) has been developed for this project, including compensatory wetland mitigation, to offset unavoidable impacts.

The LEDPA analysis shows that the detailed evaluation completed in the EIS identified four (practicable) alternatives (Alternatives Cs, Es, G-Cs and G-Es) to be considered for detailed evaluation. Of the four remaining (practicable) alternatives, Alternative G-Es, the Selected Alternative is the least environmentally damaging alternative. Additionally, the development of the Selected Alternative will cause no violation of other laws and will not cause or contribute to significant degradation of waters of the United States. Finally, preliminary plans have been developed to minimize and mitigate unavoidable impacts caused by the Selected Alternative. These factors show that the Selected Alternative is the LEDPA and meets all Section 404(b)(1) guidelines for selection of an alternative.

2.7 SELECTED ALTERNATIVE

On September 23, 2004, INDOT announced, at a press conference, its recommendation that Alternative G-Es (a modified version Alternative G-E) had been identified as the Preferred Alternative for the proposed improvements to US 31 between US 30 and US 20 and would be advanced to the Final Environmental Impact Statement (FEIS). The FEIS, which identified Alternative G-Es as the Preferred Alternative, was signed by FHWA and INDOT on April 3, 2006, and the notice of the document's availability was published in the *Federal Register* on April 21, 2006. Modifications made to the Selected Alternative, as well as many other alternatives, are described in detail in Chapter 3 of the FEIS.

As the study progressed, additional information was collected and analyzed, more specific design parameters and details were developed, and the associated impacts were revised and updated. As the project continued to progress, the study team continually investigated potential modifications to the alternatives that would avoid and/or minimize impacts to both the natural and human environment. Often these modifications were initiated by comments received from the public, local elected and appointed officials, and/or federal and state agencies. The modifications ranged from slight shifts in the alignment to the development of "hybrid" alternatives. The goal of alternative modifications was to avoid and/or minimize environmental and socio-economic impacts. Additionally, alternatives were, in some cases, eliminated due to environmental constraints encountered along their alignments.

This ROD identifies Alternative G-Es as the Selected Alternative. The Selected Alternative satisfies the project's Purpose and Need performance measures and was among the best traffic performers of all alternatives under consideration. It utilizes more of existing US 31 and utilizes a reconstructed interchange with US 20 to provide free-flow traffic movements and did not exhibit operational problems by introducing an additional interchange approximately one-mile west of the existing US 20 and US 31 interchange.

While the Selected Alternative had higher associated total project cost and higher residential and business impacts than those associated with other alternatives, the FEIS found that it appears that there is sufficient availability of comparable housing to accommodate the expected number of residential relocations. The FEIS also found that the availability of commercial real estate is most prevalent in the South Bend area at the north end of the corridor (near the US 20 Bypass) and that there appears to be adequate availability of commercial property. It is anticipated that there will be opportunities for many of the relocated businesses to rebuild in the same general vicinity with little or no loss in business in the long-term.

The associated environmental impacts to wetlands and forests for the Selected Alternative were lower than those for any of the other alternatives under consideration. Alternatives that terminated west of



existing US 31 at US 20 had severe impacts on several wetland complexes located north of Roosevelt Road, south of US 20 and west of existing US 31. Bridging of these wetlands as a mitigation measure was evaluated but this method of mitigation is relatively expensive and often still results in the destruction of considerable amounts of forested wetlands. By utilizing the existing US 31 alignment north of Kern Road, the Selected Alternative does not impact these high quality wetland complexes. Because of this, the Selected Alternative also results in a lower loss of forestland and the fragmentation of forest habitat in this area.

In comments received during the DEIS Public Comment Period, the U.S. Environmental Protection Agency (USEPA) emphasized the importance of selecting a preferred alternative in accordance with the wetlands permitting requirements under Section 404 of the Clean Water Act. In particular, the USEPA mentioned the need to ensure consistency with the Section 404(b)(1) Guidelines, which require (in the context of Section 404 permit decisions) selection of the “least environmentally damaging practicable alternative” or “LEDPA”. A LEDPA consistency analysis was completed as part of the FEIS (see Appendix T of the FEIS). The Selected Alternative is not only the “least environmentally damaging practicable alternative”, LEDPA, but it is also the “environmentally preferred alternative” as described in Section 2.6 of this document.

2.8 SECTION 4(f) FINDING

The Section 4(f) evaluation for parks, recreation areas, and wildlife or waterfowl refuges involve the following steps: (1) identifying publicly owned lands that may be protected by Section 4(f) as parks, recreation areas, or wildlife or waterfowl refuges; (2) evaluating the applicability of Section 4(f) to those lands; (3) determining whether any of the alternatives would result in a “use” of Section 4(f) protected park, recreation, or wildlife or waterfowl refuge lands; and (4) evaluating avoidance and minimization alternatives for any such lands that would be used by an alternative. The alternatives considered in this evaluation include the Non-Preferred Alternatives Cs, Es, and G-C and the Selected Alternative (G-Es). None of the alternatives, including the Selected Alternative (G-Es), will impact any public parks or recreation areas.

Section 4(f) also applies to historic properties and archaeological sites that are listed in or are eligible for listing in the NR. Section 106 is the process that identifies listed and eligible historic and archaeological resources. Section 4(f) applies to NR listed or eligible sites if preservation in place is warranted. Section 4(f) does not apply to archaeological sites that are determined to be important chiefly because of what can be learned by data recovery and has minimal value for preservation in place (23 CFR 771.135(g)(2)).

There are two properties already listed on the NR and seven properties eligible for the NR that are protected by Section 4(f) within the APE of this project. Details concerning each of these historic properties are included in Section 5.6 of the FEIS. Efforts were made to avoid and/or minimize use of Section 4(f) historic resources (see Chapter 3 of the FEIS). There would be no permanent or temporary use from any of these historic Section 4(f) resources by any of the freeway alternatives.

One of the properties that is within the APE of this project and is eligible for the NR and protected by Section 4(f) is the W.O. Bunch Farm located along the south side of Pierce Road. The W. O. Bunch Farm is the best example of a late-nineteenth-century, general-purpose farm in Union Township with a large inventory of extant buildings and historic field patterns. In this portion of the project, the Selected Alternative is located east of existing US 31 and the W.O. Bunch Farm is located between existing US 31 and the Selected Alternative. SR 4 currently terminates at existing US 31, at the Pierce Road intersection. West of existing US 31 the roadway is SR 4 and east of existing US 31 the roadway is a



county road, Pierce Road. For the Selected Alternative there is an interchange proposed at the S.R. 4 extension eastward, along Pierce Road from existing US 31 to the proposed interchange. The proposed interchange is approximately 1,830 feet east of the property boundary for the W.O. Bunch Farm. As a part of the Selected Alternative, the segment of Pierce Road between existing US 31 and the proposed interchange will be upgraded and will become S.R. 4. The W.O. Bunch property is located along this planned widening of Pierce Road or extension of S.R. 4. With the widening of Pierce Road, additional right of way will be necessary. In order to avoid the taking of a historic resource, the S.R. 4 extension along Pierce Road will be shifted slightly northward, away from the W.O. Bunch Farm. The existing south roadway right-of-way line adjacent to the W.O. Bunch Farm will be maintained and all additional right-of-way will be taken from the north side of Pierce Road.

The Pierce Road widening (extension of SR 4) will be a Federally-funded project under state review occurring either in conjunction with the US 31 project or at a later date. The improvement of Pierce Road, which is an extension of SR 4, maintains the continuity of SR 4 and the integrity of the State Roadway Network by linking SR 4 with the new US 31. In keeping this local road improvement project to the north side of Pierce Road (SR 4 extension), there will be no direct taking of land from the W.O. Bunch Farm.

Coordination with the Indiana State Historic Preservation Officer (SHPO), a Memorandum of Agreement (MOA) between the FHWA, the INDOT and the SHPO was executed to take into account the effect of the US 31 Improvement Project: Plymouth to South Bend, Indiana, on historic properties, including the W.O. Bunch Farm. This MOA stipulates that "...FHWA and INDOT agree to implement and provide funding for an educational CD that will complement the 4th grade Indiana History curriculum whereby the role of settlement and agriculture in northern Indiana are discussed, especially as it relates to roads and agricultural properties." The CD will be distributed to grade schools in St. Joseph and Marshall counties and placed at repositories designated by FHWA and INDOT.

This project involves no Section 4(f) use of any Section 4(f) resources. A more detailed discussion of Section 4(f) Resources can be found in Chapter 7 of the FEIS.