



Chapter 6: Mitigation

6.1 Relocation Assistance

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

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

Relocation resources would be available to all residential relocatees without regard to race, creed, color, sex, national origin, or economic status, as required by the Uniform Act and Title VI of The Civil Rights Act of 1964. Financial assistance will be available to eligible persons displaced by this project. Payments received are not considered as income under the provisions of the Internal Revenue Code of 1954; or for the purposes of determining any person’s eligibility, or the extent of eligibility, for assistance under the Social Security Act or any other federal law.

The single-family homes to be acquired by Preferred Alternative G-Es represent a wide range of values. The following information was taken from multiple listing services and local publications to determine the availability of replacement housing in the St. Joseph and Marshall County area. Generally, about 60% of the homes on the market have 3 or more bedrooms. It appears that there is sufficient available housing to accommodate the expected number of relocations. Alternative G-Es is projected to require approximately 124 single-family homes. Tables 6.1.1 and 6.1.2 show the available housing in the project area during the fall of 2003 and again in the winter of 2005.

Table 6.1.1 Available Residential Housing Units (Fall 2003)*			
Price Range of Available Housing Units	Marshall County	St. Joseph County	Southern St. Joseph County**
\$0 - \$50,000	13	239	5
\$50,000 – 100,000	102	555	28
\$100,000 – 150,000	91	246	22
\$150,000 – 200,000	33	167	11



Price Range of Available Housing Units	Marshall County	St. Joseph County	Southern St. Joseph County**
\$200,000 – 250,000	14	94	14
\$250,000 +	18	161	19
Total	271	1462	99

** Includes Madison, Union, Liberty, Lincoln, Centre and Greene Townships

• Source: St. Joseph-Elkhart Board of Realtors and North Central Indiana Association of Realtors.

Price Range of Available Housing Units	Northern Marshall County	St. Joseph County	Southern St. Joseph County**
\$0 - \$50,000	4	197	105
\$50,000 – 100,000	43	568	214
\$100,000 – 150,000	40	253	54
\$150,000 – 200,000	18	139	14
\$200,000 – 250,000	7	54	10
\$250,000 +	13	150	32
Total	125	1361	429

** Includes Madison, Union, Liberty, Lincoln, Centre and Greene Townships, and SE and SW South Bend

• Source: St. Joseph-Elkhart Board of Realtors and North Central Indiana Association of Realtors.

The availability of residential building lots was also evaluated in southern St. Joseph County and northern Marshall County. In February 2005, there were a total of 247 residential lots for sale in St. Joseph County ranging in price from \$2,400 to \$187,500. The majority of residential lots were priced under \$50,000. In Marshall County there were 37 residential lots for sale under \$50,000 and 23 lots available with a price over \$50,000.

The availability of farm acreage is difficult to ascertain because many farms trade hands without coming on the real estate market. In February 2005 there were 15 farms (some with residences and outbuildings) available in southern St. Joseph and northern Marshall Counties. The size of the available farm parcels ranged from 20 to 153 acres. Prices ranged from \$69,900 to \$519,500.

The mitigation of negative social impacts can be accomplished in the same way as relocation impacts are mitigated. Where reasonable, impacts to neighborhoods and subdivisions can be reduced through the use of frontage and access roads to maintain access to specific properties that are impacted by US 31 construction. Rights-of-way will be minimized, where reasonable, in urbanized areas.

The availability of commercial real estate is most prevalent in the South Bend area at the north end of the corridor. In general there appears to be adequate availability of commercial property available. Commercial properties are most heavily affected by Preferred Alternative G-Es because it utilizes a section of existing US 31 north of Kern Road. It is expected that there will be some small uneconomic remnant commercial parcels adjacent to the new US



31 frontage roads following right-of-way acquisition for the new facility. These parcels may be combined and allow opportunities for some relocated businesses to rebuild in the same general vicinity.

Benefits would be made available for all commercial properties displaced by this project in accordance with 42 USC 4601-4655, 49 CFR Part 24, Title VI of the Civil Rights Act of 1964, and IC 8-23-17. Mitigation measures for displaced businesses include moving expenses, compensation for direct loss of tangible property, and replacement property search. The following table 6.1.3, shows the availability of commercial property in St. Joseph and Marshall County in the fall of 2003:

Table 6.1.3 Availability of Commercial Property				
Price Range and County	Commercial or Retail with Building	Industrial or Manufacturing With Building	Commercial or Retail Parcel	Industrial Parcel
St. Joseph County:				
\$0 – 100,000	3		1	3
\$100,000 – 300,000	21	8	27	13
\$300,000 – 500,000	8	4	9	4
\$500,000 – 1,000,000	5	7	10	3
\$1,000,000 – 2,000,000	2	4	4	
\$2,000,000+	4	3	2	2
Marshall County:				
\$0 – 100,000	2	1	1	
\$100,000 – 300,000	6	3	3	2
\$300,000 – 500,000	3		1	
\$500,000 – 1,000,000	2			

- Source: St. Joseph-Elkhart Board of Realtors and North Central Indiana Association of Realtors.

Due to the high number of business relocations in the northern part of the corridor, an additional evaluation was completed to determine the availability of commercial and industrial sites in St. Joseph County during February of 2005. The availability of business replacement sites is sometimes difficult to pinpoint since not all available sites are advertised. The market can be expected to fluctuate over time, but it appears that the South Bend region has a very active market with a good volume of sales and leasing activities. The actual right-of-way acquisition stage for this project will take place over an extended period of time, thus allowing for natural fluctuations in the real estate market. Relocation assistance advisory services will be available to all nonresidential displacements. The Uniform Relocation Assistance and Real Property Acquisition Policies Act allows for the identification and resolution of the unique problems that a business encounters when displaced.



Table 6.1.4 Availability of Commercial Property (Winter 2005)			
Price Range and County	Commercial Office or Retail with Building	Industrial or Manufacturing With Building	Commercial Industrial or Retail Parcel
St. Joseph County:			
\$0 – 100,000	29	3	4
\$100,000 – 300,000	34	5	8
\$300,000 – 500,000	16	6	6
\$500,000 – 1,000,000	0	6	5
\$1,000,000 – 2,000,000	0	0	3
\$2,000,000+	1	0	2

- Source: St. Joseph-Elkhart Board of Realtors and North Central Indiana Association of Realtors.



6.2 Historic and Archaeological Resources Mitigation

Historic Resources Mitigation

As a result of the finding of Historic Properties Affected, Adverse Effect, for the W.O. Bunch Farm, FHWA, SHPO and other consulting parties entered into consultation regarding a Memorandum of Agreement (MOA). The widening of Pierce Road (SR 4 extension) from existing US 31 to the proposed US 31 is a planned local road improvement project that is included as part of the US 31 Improvement Project. The W.O. Bunch Farm, a property that is eligible for the National Register of Historic Places (NR), is located on the south side of Pierce Road and is within the limits of the Pierce Road (SR 4 extension) local road improvement project. For this local road improvement project, in the vicinity of the W.O. Bunch Farm, Pierce Road (SR 4 extension) was shifted northward so that any additional right-of-way required for the improvements were on the north side of Pierce Road. The right-of-way along the south side of Pierce Road, in the vicinity of the W.O. Bunch Farm, will remain at the current right-of-way location. In doing this, the use of any property associated with the W.O. Bunch Farm was avoided. The increase in traffic and the potential for development at the nearby interchange may reduce the integrity (the surrounding rural context) of the property but does not represent a substantial impairment to its listing in the NR. FHWA and the State Historic Preservation Officer (SHPO) have mitigated the impact on the W.O. Bunch Farm and executed a Memorandum of Agreement (MOA) (See Appendix P), to which INDOT was an invited signatory.

The 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. This educational CD will be developed in consultation with the Indiana Department of Natural Resources-Division of Historic Preservation & Archaeology. This CD will be distributed to grade schools in Marshall and St. Joseph counties and placed at repositories designated by FHWA and INDOT. These repositories may include but will not be limited to the Indiana Department of Natural Resources-Division of Historic Preservation & Archaeology, the Indiana Historical Bureau, the Indiana State Archives, and Historic Landmarks Foundation of Indiana. Approximately 100 copies of the CD will be produced. (Copyright will rest with INDOT.) All work will be completed within two (2) years of the publishing of the Record of Decision. Educational material will be formatted so that it may be published on a website if desired.”

The MOA addresses Post Review Discovery stating that

“In the event that one or more historic properties--other than Evergreen Hill, Lakeville High School, Cover House, Ullery/Farneman House, Conrad Schafer Farmstead, Francis Donaghue Farmstead, Court Farmstead, and W.O. Bunch Farm – are discovered or that unanticipated effects on historic properties are found during the implementation of this memorandum of agreement, the FHWA shall follow the procedure specified in 36 C.F.R. Section 800.13.”

Additionally,

“If, during the implementation of the project, a previously unidentified historic property is encountered, or a previously identified historic property is affected in an unanticipated manner, the FHWA will consult with the SHPO, and ensure that work shall cease in the area, and the provisions of IC 14-21-1, 312 IAC 21, and 312 IAC 22 will be followed.”

Archaeological Resources Mitigation

Based on the results of the Phase 1a archaeological field reconnaissance (see Appendix I) and other available information, the proposed project should have no effect on archaeological resources meeting the criteria established for inclusion to the Indiana Register of Historic Sites and Structures (IRHSS) or the NR. Three previously recorded archaeological sites were resurveyed and 20 previously undocumented archaeological sites were discovered during



the Phase 1a field reconnaissance of the project area. Based on this field reconnaissance, no further work was recommended on any of these sites. This is with the understanding that if human remains, features or midden deposits are revealed during construction, any disturbances will cease until an archaeologist is contacted and mitigation is completed.

The MOA executed between the FHWA and the SHPO (See Appendix P), to which INDOT was an invited signatory, stipulates that the:

“FHWA may withhold or limit public disclosure of information about historic properties in accordance with Section 304 of the National Historic Preservation Act and 36 CFR 800.6(a)(5) and 36 CFR 800.11(c)”.

The MOA also addresses Post Review Discovery stating that

“If human remains are discovered, the appropriate County Coroner and law enforcement officials will be notified immediately, and the discovery of any human remains dating on or before December 31, 1939 must be also reported to the IDNR within two (2) business days. The discovery must be treated in accordance with IC 14-21-1 and 312 IAC 22. If a Native American Indian burial ground is discovered, the IDNR shall immediately provide notice to the Native American Indian Affairs Commission as per IC 14-21-1-25.5”.



6.3 Air Quality

The project would be designed to minimize any impacts on ambient air quality in or around the project vicinity. No violations of the NAAQS are projected for this project. Therefore, no air quality mitigation measures are required for the roadway improvements. During construction, the contractor will comply with all federal, state, and local laws and regulations governing the control of air pollution. Adequate dust-control measures will be maintained so as not to cause detriment to the safety, health, welfare, or comfort of any person or cause any damage to any property or business.



6.4 Noise Impacts

At all sensitive receivers where traffic noise impacts are predicted under the Build Alternatives, noise mitigation measures must be considered. One method of mitigation for traffic noise impacts is to construct a noise barrier in the form of an earthen berm and/or vertical wall. According to INDOT's Highway Traffic Noise Policy, when impacts have been identified, there must be consideration of any reasonable and feasible measures that would abate the traffic noise impacts. Abatement must be implemented if it is feasible and reasonable on any significant segment of the project.

In Chapter 5.8 the "feasibility" and "reasonableness" of abatement through the use on noise barrier walls was assessed at eighteen locations along Preferred Alternative G-Es alignment. The criteria for "feasible" and "reasonable" according to INDOT policy are as follows.

Feasibility of Abatement

"Feasible" means that it is structurally and acoustically possible to attenuate traffic noise occurring at a receiver by at least 5 dBA $L_{eq}(h)$. Traffic noise abatement measures include traffic control measures (TCM), alteration of vertical or horizontal alignment, acquisition of buffering land, noise insulation of impacted receivers, and construction of traffic noise barriers.

Reasonableness of Abatement

"Reasonable" means that INDOT believes abatement of traffic noise impacts is prudent based on consideration of all the following factors:

1. The number of benefited receivers, those for whom the mitigation will benefit by at least 5 dBA $L_{eq}(h)$ at the noisiest hour conditions. This number is not necessarily the number of receivers impacted.
2. The cost of abatement on a benefited receiver basis and on a project level basis. INDOT has set the acceptable cost per benefited receiver range as \$20,000 - \$30,000. This cost should be arrived at by applying a square footage cost basis on the square footage of the noise barrier. A reasonable square footage cost basis will be determined by the INDOT.
3. The severity of existing and future traffic noise level. The absolute level and the increase of the future noise are two aspects with which to assess the severity of the noise impacts.
4. The timing of development near the project. The state considers it appropriate to give more consideration for development that occurs before initial highway construction.
5. The views of noise impacted residents. Potential negative impacts of noise barriers include unsightliness, shortened daylight, poor air circulation, degradation by weather, reduced safety, vandalism, and restriction of access for emergency vehicles.



As a result of the preliminary barrier performance analysis for US 31, noise barrier walls were found to likely be feasible and meet all the reasonableness criteria at two locations in the northern end of the project. These sites are highlighted in green in Table 6.4.5.

ID	Location	NAC	No. Impacted	No. Analyzed	No. Benefited	Length	Height	Cost	Cost Per Benefited	Severity of Impact
5	West side of Alt GEs along Tyler Road	67	1	1	1	200	8	\$32,008	\$32,008	Severe = 1
13	East side of Alt GEs from Gilmer Street to Johnson Road	67	7	26	22	1856	12-15	\$493,433	\$22,428	Minor = 3 No Impact = 23
14	West side of Alt GEs from Johnson Road to Jackson Road	67	5	19	10	800	14-19	\$267,792	\$26,779	Minor = 1 No Impact = 18
15	East side of Alt GEs from Johnson Road to Jackson Road	67	5	15	11	1400	8-16	\$375,990	\$34,180	Minor = 4 No Impact = 11
18	Northeast side of Alt GES/US20 interchange along Reasor Street	67	4	4	4	800	9-10	\$151,998	\$36,999	No Impact = 4

Notes: Yellow shaded cells indicate locations where optimized barrier is slightly above the \$30,000 reasonableness criteria
 Green Shaded Cells indicate locations where optimized barrier is within the \$30,000 reasonableness criteria

- Site 13 occurs along the east side of Alternative G-Es from Gilmer Street to Johnson Road where a preliminary design for a barrier of 12 to 15 feet high and approximately 1,850 feet long at a cost of approximately \$493,000 is predicted to reduce the noise level by 5 to 12 dBA for an estimated 16 residences, 5 businesses and the Southlawn Church (Figure 6.4.1).
- Site 14 is located along the west side of Alternative G-Es from Jewel Avenue to Jackson Road where a preliminary design for a barrier 14 to 19 feet high and approximately 800 feet long at a cost of approximately \$268,000 is predicted to reduce the noise level by 5 to 10 dBA for an estimated 10 residences (Figure 6.4.1).

In addition to the two aforementioned locations, barrier performance at three additional locations resulted in cost per benefited receiver values of slightly over \$30,000, highlighted in yellow in Table 6.4.5. Barrier abatement is considered feasible at all three locations.

- The solution barrier at Site 5 at Tyler Road is not considered reasonable since it provides abatement to a single isolated residence; therefore, it is not currently recommended as an abatement measure.
- Site 15 occurs along the east side of Alternative G-Es from Johnson Road to Jackson Road where a preliminary design for a barrier of 8 to 16 feet high and approximately 1400 feet long at a cost of



approximately \$364,005 is predicted to reduce the noise level by 5 to 11 dBA for an estimated 11 residences (Figure 6.4.1). Despite a cost per benefited receiver of \$4,180 over the INDOT criteria, this location is recommended for further consideration during the design phase based on the number of residences that would potentially benefit from such a measure.

- Site 18 is located along Reasor Street northeast of the Alternative G-Es/US20 interchange where a preliminary design for a barrier 9 to 10 feet high and approximately 800 feet long at a cost of approximately \$151,998 is predicted to reduce the noise level by 5 to 6 dBA for an estimated 4 residences (Figure 6.4.1). Due to the relatively small number of benefited receivers, low severity of impact and cost per benefited receiver of \$7,000 above the INDOT criteria, barrier abatement at this location is not currently recommended, but should be given further consideration during the design phase.

If during final design these conditions substantially change, the abatement measures might not be provided. A final decision on the installation of abatement measure(s) will be made upon completion of the project design and the public involvement process. Federal guidelines allow for the insulation of public use or non-profit institutional structures. However, no such properties were identified as sensitive noise receivers along Preferred Alternative G-Es.

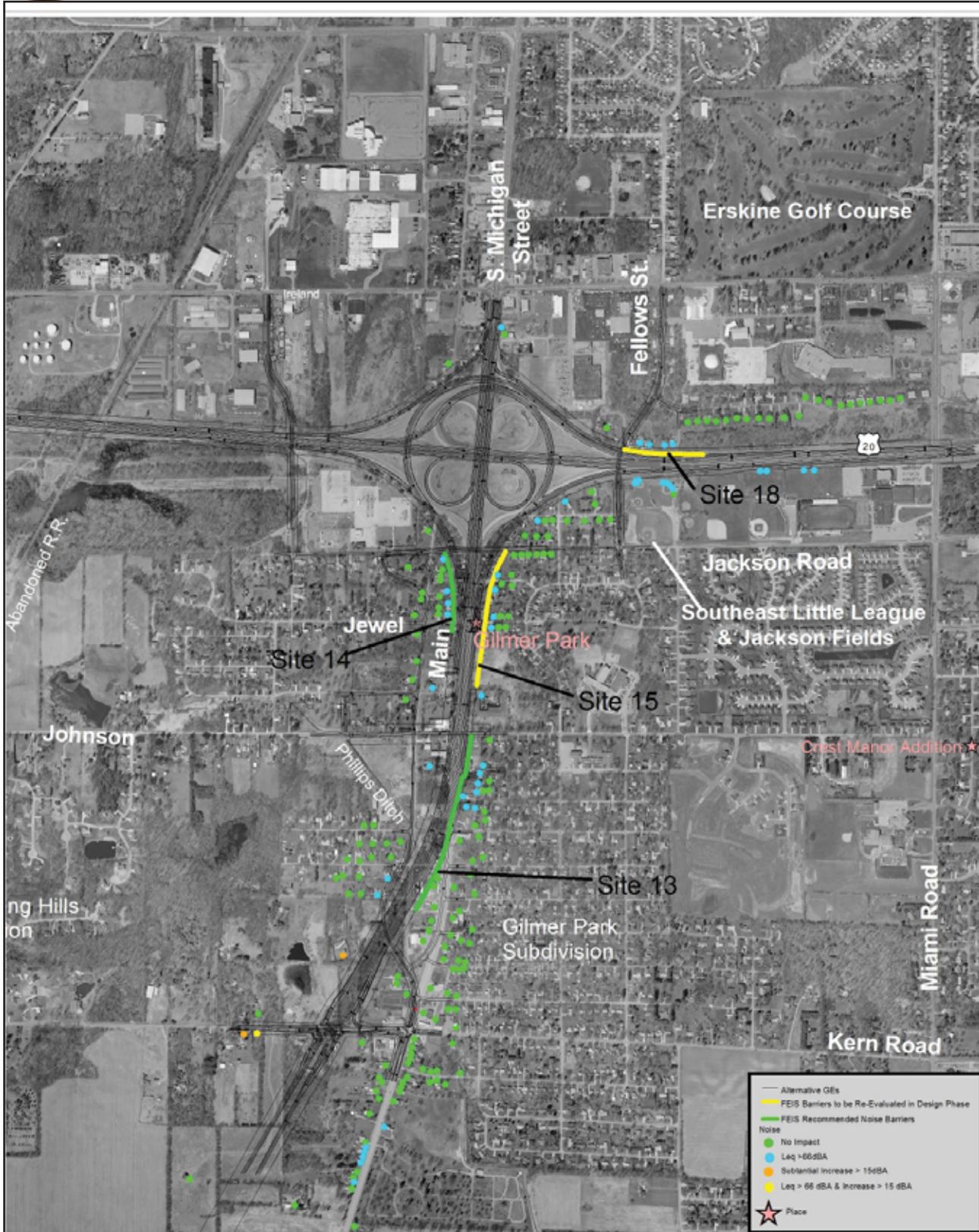


Figure 6.4.1: Proposed Noise Barrier Locations and Barriers Identified for Re-Evaluation During Design Phase



6.5 Farmland

Agricultural impacts in the form of permanent conversion of farmland to non-farmland use generally cannot be mitigated easily by the creation of new farmland elsewhere. For this reason, the mitigation of agricultural impacts tends to focus on those practices that assist in avoiding and/or minimizing conversion, or designing alignments to minimize disruption to existing agricultural patterns. The following lists a few general practices that can be taken into consideration to avoid or minimize farmland impacts.

- Where reasonable, the alignment should follow existing property lines and minimize dividing or splitting large tracts of farmland.
- Follow agricultural property lines as much as possible or cross fields at perpendicular angles to reduce point rows and the creation of uneconomic remnants.
- Work with local officials to control access through interchange locations. In so doing, subsequent development can possibly be directed away from large expanses of prime farmland, thus preserving this resource.



6.6 Wetland Mitigation

Wetland mitigation is based on requirements set forth in Section 404 of the Clean Water Act (33 USC 1344). In 1991, the IDNR, USFWS, and INDOT signed a Memorandum of Understanding (MOU) that established standard mitigation ratios for impacts to wetland resources. While not signatory to the agreement, the USACE and IDEM typically follow the MOU for those wetland impacts that fall under federal jurisdiction. The agreed mitigation ratios of 2:1 for emergent wetlands, 3:1 for scrub/shrub wetlands, and 3:1 to 4:1 for forested wetlands are still used as guidance for regulatory determination of a permit applicant's request for wetland mitigation. The USACE and IDEM may require more or less impact acreage depending on the quality, location, size, function, and value of the wetland. For those isolated wetland impacts that fall under the IDEM Isolated Wetlands Regulatory Program, mitigation ratios will depend on the Class of wetland impact, timing of mitigation, and location of mitigation site.

Compensatory mitigation for disturbances to natural resources is the final alternative that should be considered when a project is planned. The sequence to follow during project planning is 1) avoidance of disturbance, 2) minimization of disturbance, and 3) where these two alternatives do not dispose of the issue, compensatory mitigation for the loss of natural resources will be required.

Compensatory wetland mitigation for transportation projects traditionally requires restoration of wetland conditions at an off-site location that is currently not identified as a wetland by USCOE standards. Performance standards for wetland mitigation and monitoring have been proposed by the Detroit District Corps of Engineers in a document titled Detroit District U.S. Army Corps of Engineers Mitigation Guidelines and Requirements dated June 2004. According to these guidelines and requirements, site construction should be followed by three to ten years of monitoring (depending on wetland type) to ensure the wetland's proper development.

Based on wetland delineations for Preferred Alternative G-Es, this project is anticipated to impact approximately 29.93 acres of wetlands. Of these, 13.21 acres are forested wetlands, 1.45 acres are scrub/shrub wetlands, and 15.27 acres are emergent wetlands.

In a jurisdictional determination letter dated February 24, 2005 (Appendix C) the USACE identifies which impact sites are considered "waters of the United States," thus falling under federal jurisdiction. Of the total wetland acreage impacted, 25.51 acres fall under federal jurisdiction. This includes 12.18 acres of emergent wetlands, 0.58 acres of scrub/shrub wetlands, and 12.75 acres of forested wetlands. The replacement of wetlands that fall under federal (USACE) jurisdiction will follow INDOT's MOU dated January 28, 1991 (Appendix H). The MOU was developed to ensure that compensatory wetlands would be appropriately designed, acquired, and constructed in such a manner as to ensure no net loss of this valuable habitat. Wetland mitigation for this project includes the following replacement ratios: 2:1 for emergent wetlands, 3:1 for scrub/shrub wetlands, 4:1 for forested wetlands, and 1:1 for aquatic bed wetlands and farmed wetlands. These ratios are recommendations and actual mitigation ratios will be decided upon during permitting. Federal jurisdictional wetland mitigation will require approximately 77.10 acres.

The remaining 4.42 acres do not fall under federal jurisdiction. This includes 3.09 acres of emergent wetlands, 0.87 acres of scrub/shrub wetlands, and 0.46 acres of forested wetlands. These sites will likely fall under state jurisdiction under the IDEM Isolated Wetlands Regulatory Program. As part of this program, isolated wetlands are grouped into one of three Classes based upon wetland quality. Class III isolated wetlands are generally of higher quality and Class I wetlands of lower quality, while Class II wetlands fall somewhere in the middle. Different wetland classes require different mitigation requirements. Prior to permitting each isolated wetland will be appropriately classified.



A total of 22.10 acres (25% of required wetland acreage) will be needed for buffers around wetland mitigation sites. Consideration will be given to tree plantings as part of wetland mitigation buffers. Additional acres will be required for access easements (ingress and egress) to the mitigation sites for construction and monitoring.

Wetland impacts are within two 8-digit watersheds, the Kankakee (07120001) and the St. Joseph (04050001). Approximately 24.75 acres of wetland impacts are within the Kankakee watershed and 5.18 acres are within the St. Joseph watershed. Table 6.6.6 shows the different wetland types impacted and required mitigation in each watershed for federal jurisdictional wetlands. Table 6.6.7 shows the different wetland types impacted and required mitigation (based on “worst-case” scenario) for isolated wetlands.

Wetland impact types, mitigation ratios, and mitigation requirements for Preferred Alternative G-Es are listed in Tables 6.6.6 and 6.6.7 for federal jurisdictional and isolated wetlands in each watershed.

Table 6.6.6. Habitat types, Impacts, Mitigation Ratios, and Mitigation Required for Federal Jurisdictional Wetland Impacts for the US 31 Plymouth to South Bend Preferred Alternative G-Es.			
Habitat Type	Impacts (Acres)	Mitigation Ratio	Mitigation Required (Acres)
Kankakee Watershed (07120001)			
Forested Wetlands	12.32	4:1	49.28
Scrub/Shrub Wetlands	0.56	3:1	1.68
Emergent Wetlands	7.79	2:1	15.58
Wetland Buffers	-----	---	16.64
Watershed Total	20.67	---	83.18
St. Joseph Watershed (07120001)			
Forested Wetlands	0.43	4:1	1.72
Scrub/Shrub Wetlands	0.02	3:1	0.06
Emergent Wetlands	4.39	2:1	8.78
Wetland Buffers	-----	---	2.64
Watershed Total	4.84	---	13.20
TOTAL			
	25.51	---	96.38



Table 6.6.7. Habitat types, Impacts, Mitigation Ratios, and Mitigation Required for Isolated Wetland Impacts for the US 31 Plymouth to South Bend Preferred Alternative G-Es.			
Habitat Type	Impacts (Acres)	Mitigation Ratio	Mitigation Required (Acres)
Kankakee Watershed (07120001)			
Forested Wetlands	0.46	3:1	1.38
Scrub/Shrub Wetlands	0.75	2.5:1	1.88
Emergent Wetlands	2.87	2.5:1	7.18
Wetland Buffers	-----	---	2.61
Watershed Total	4.08	---	13.05
St. Joseph Watershed (07120001)			
Forested Wetlands	0	3:1	0
Scrub/Shrub Wetlands	0.12	2.5:1	0.30
Emergent Wetlands	0.22	2.5:1	0.55
Wetland Buffers	-----	---	0.21
Watershed Total	0.34	---	1.06
TOTAL	4.42	---	14.11

A Conceptual Wetland Mitigation Plan was developed for this project and can be found in Appendix N. This mitigation plan is conceptual and compensatory for probable wetland losses resulting from Preferred Alternative G-Es. This plan lists general site locations where mitigation could take place. These sites include: Potato Creek State Park, Flat Lake Watershed, Lake of the Woods Watershed, Lakeville Lakes Watershed, Catfish/Wharton Lakes Area, Place Trail Marsh Area, Marker & Grimes Ditches Area, and the St. Patrick’s County Park Area. There are conceptual sites located in both the Kankakee and St. Joseph watersheds. In many cases there is a community interest in the protection and/or enhancement of the watershed.

Reasons for expected success of the wetland mitigation sites include the occurrence of unique and high quality habitats in the areas near these mitigation sites. Mitigation sites are to extend outward from such environmentally productive sites. These sites will also involve the restoration of areas that were historically wetlands, rather than the creation of wetlands from upland areas. The likelihood of success in these areas is greater because proper hydrology is more likely to be achieved and a seed bank of wetland species may also be present. A more detailed mitigation and monitoring report will be developed as the project proceeds.

Property used for US 31 wetland mitigation will be protected from future development and land use change indefinitely. This protection will be ensured by purchase of fee simple title to the property, or a perpetual conservation easement restricting any alteration of the wetland. Interagency agreements will also be pursued to provide for future management of the mitigation sites following successful wetland establishment. Continued coordination with review agencies will assure that the wetland mitigation sites are suitable and that they are located in areas which assure the greatest potential for successful wetland habitat development.



6.7 Mitigation of Visual Impacts and Aesthetics

This project will consider visual mitigation measures for associated visual impacts. Potential aesthetic enhancements for possible incorporation into the project would reflect input from the affected communities. The adjacent communities of Plymouth, LaPaz, Lakeville, and South Bend offer natural, cultural, historical, and scenic resources. The setting and character of the study area and the needs of the highway users are factors that must be considered within the US 31 corridor. Impacts would result primarily from road reconstruction for the upgrade of US 31 to a freeway which include such elements as cut and fill slopes, increased pavement surface, removal of vegetation, bridges, lighting standards, guardrails, and other roadway features.

The US 31 project would incorporate cost-effective design features for the purpose of mitigating adverse aesthetic impacts. Specific mitigation measures and aesthetic design features should be refined during the final design phase, coordinated with local communities. These communities will be granted the opportunity to underwrite enhanced design amenities and/or architectural elements and maintenance.

Interchanges and overpasses along US 31 could provide effective opportunities for incorporation of reasonable aesthetic enhancements. Whenever possible, opportunities for maintaining the views of existing landmarks within the visual corridor could also be included in the project. Supplemental gateway elements, including distinctive signage, lighting, and landscaping associated with entry features, if so desired by the communities, could be integrated into the final design where feasible based upon current safety standards and funding availability.

Walls, landscaping, and signage should not block the views of the corporate office buildings and commercial facilities within the visual corridor. Mitigation measures involving landscaping, bridge treatments, lighting, signing, and contour grading could be incorporated into the final design to minimize these potential impacts. Where practicable, design elements could match prominent architectural elements and styles within each of the adjacent communities. The design for these structures could be incorporated into the landscape and site context to lessen its visual impact upon the corridor.

Natural topography, stormwater detention ponds, trees, shrubs, and native Indiana prairie grasses would also provide continuity throughout the landscape and influence the view of the roadway. Landscape plantings within established safety guidelines and clear zone setbacks could be used to mitigate impacts and undesired views. The project should be designed to retain existing trees and vegetation to the extent possible to create a natural screen between the roadway and residential areas. Additional plantings could be introduced in areas where impacts are unavoidable, especially within areas where vegetation is limited. In areas where trees are being removed for additional right-of-way, irregular feather cut lines with selective tree removal should be considered.



6.8 Construction

Construction activities will follow good heavy highway construction practices, and will be regulated by INDOT and (Occupational Safety and Health Administration) OSHA standards.

6.8.1 Construction Noise

Noise and vibration impacts will originate from heavy equipment movement and construction activities such as pile driving and vibratory compaction of embankments. Noise and vibrations control measures will include those contained in INDOT *Standard Specifications*.

Noise generated by construction equipment may be an impact of construction. The presence of a sensitive noise receptor within close proximity of the construction limits could raise the concern of potential construction noise impacts. Generally speaking, the potential for construction-related noise impacts will be much higher where an alternative passes through a developed area, and where an alternative follows an existing alignment. The potential in these areas is increased due to the higher number of noise receptors in close proximity to the construction activity.

Noise impacts could be controlled through the regulation of construction time and hours worked, using noise-controlled construction equipment, limitations of construction vehicles during evening and weekend hours and by locating equipment storage areas away from noise sensitive areas.

6.8.2 Erosion Control

Erosion on the construction site is accelerated due to vegetation clearing and the prominence of bare disturbed soils on the site during construction. Procedures to reduce the impact of erosion and runoff into streams will be implemented. Best Management Practices (BMPs) shall be used in the construction of this roadway to minimize impacts of erosion. These measures may include, but are not necessarily limited to the following:

- Minimize disturbance to existing vegetation, including no clearing of vegetation outside of the construction limits.
- Develop site-specific revegetation plans to provide adequate post-construction ground cover.
- Implement temporary erosion and siltation control devices such as covering exposed areas with erosion control materials and grading slopes to retain runoff in sedimentation basins.
- Revegetate all disturbed soil areas immediately upon project completion.

Storm water detention areas may be required and locations will be determined during the design phase of the project. It is likely that they may be outside of the project footprint. Land use for these detention areas would likely be agricultural and impacts will be assessed when the final locations are determined.

6.8.3 Stream Crossings

There are multiple stream crossings under any proposed alternative that could be adversely affected by construction activity. To minimize any adverse effects to these streams, the following measures will be implemented during construction, where reasonable.



- Where appropriate and feasible, restrict low-water work to placement of piers, pilings and /or footings, shaping of spill slopes around bridge abutments, and placement of riprap.
- Where appropriate and feasible, restrict channel work and vegetation clearing to within the width of the normal approach road right-of-way.
- Where appropriate and feasible, minimize the extent of artificial bank stabilization.
- If riprap is utilized for bank stabilization, extend it below low-water elevation to provide aquatic habitat.
- Consideration will be given to tree plantings as part of stream mitigation.

6.8.4 Traffic Maintenance

Traffic flow maintenance and construction sequences will be planned and scheduled to minimize traffic delays on existing public crossroads and US 31, where possible. Signs will be used to notify the traveling public of road closures and other pertinent information.

Access to all properties will be maintained to the extent practical through controlled construction scheduling. Traffic delays will be controlled to the extent possible where many construction operations are in progress at the same time.

6.8.5 Solid Waste Disposal

Solid waste generation resulting from construction activities should be short-term and confined to the vicinity of the project area. Solid waste generated by clearing and grubbing, demolition or other construction practices would be removed from the location and properly disposed.

Burning of construction related debris would be conducted in accordance with all local, state and federal regulations. All burning would be conducted within a reasonable distance from all homes and care will be taken to alleviate any potential atmospheric conditions that may be a hazard to the public. All burning will be monitored.

6.8.6 Air Quality

The main component of air pollution derived from construction activities is fugitive dust. Fugitive dust is the generation of airborne particulate matter which escapes beyond the right-of-way or construction boundary. Fugitive dust emissions can be created by many construction-related activities. Reasonable precautions are typically sufficient to control fugitive dust emissions. Emissions from construction equipment and open burning would be regulated in accordance with appropriate state and federal regulations. During construction the contractor must comply with all regulations governing the control of air pollution.



6.9 Design

As part of this project, no property will be acquired from any of the following Section 4(f) resources:

- Pleasant Lake Public Access Site
- Erskine Golf Course
- Evergreen Hill National Register Property
- Lakeville High School National Register Property
- Cover House Property
- Conrad Schafer Farmstead
- Emil Johnson House Property
- Ullery/Farneman House Property
- Francis Donaghue Farmstead Property
- Court Farmstead
- W.O. Bunch Farm Property



6.10 Ecosystem Impacts

The following measures will be utilized to address impacts on ecosystems:

- DO NOT SPRAY OR MOW – Where woody vegetation, wetlands, wildflowers or environmentally sensitive areas occur, “DO NOT SPRAY OR MOW” signs will be posted.
- Forest Fragmentation – All efforts have and will continue to be made to avoid or minimize forest fragmentation.
- Invasive Plant Species – INDOT will use appropriate herbicides and / or physical mechanisms to control invasive plants, such a purple loosestrife, reed canary grass, kudzu, and others, in mitigation sites and within the proposed US 31 right-of-way.
- Conservation Measures for Wildlife – Transportation designers will design, where feasible and practicable, conservation measures for the maintenance of wildlife movements and landscape connectivity.



6.11 Threatened & Endangered Species Impacts

Federally Listed Species

Coordination with the USFWS concluded that the project has the potential to impact Indiana bat summer maternity roosting habitat. Mist netting for bats occurred in July 2004. Four sites were netted for two nights each. No Indiana bats were captured. Because suitable habitat for this species could exist throughout the project corridor, where removal or modification of habitat cannot be avoided, steps to minimize impacts to potential Indiana bats will be required. The following mitigation measure for the Indiana bat is suggested and will be implemented during design and construction of the project.

Indiana bat

To avoid any direct take of Indiana bats, no trees with a diameter of 3 or more inches will be removed between 15 April and 15 September. Tree clearing and snag removal will be kept to a minimum and limited to within the construction limits. If INDOT proposes to cut trees during the prohibited time, INDOT and FHWA must consult with the USFWS before any tree cutting may proceed.



6.12 Hazardous Material Site Mitigation

From the information in Chapter 5.14, it was concluded that there are five potential hazardous material sites that could be impacted by Preferred Alternative G-Es. These sites do not include the conditionally exempt small quantity generators and gas stations with removed or NFA 94 Guidance tank closures. In addition, this does not include the ARCO (Transmontaigne, COZ, Buckeye) property, of which the potentially contaminated areas are not being encroached upon by Preferred Alternative G-Es or the property currently undergoing remediation (Ireland Road Site), which includes the Buds Wrecker Service on the western edge of the property. The abandoned landfill (Ireland Road Site) is currently in the process of remediation as part of the development of a commercial shopping area. The fill area that is nearest to the alignments has been remediated and is no longer an issue for this project. Buds Wrecker Service is located within the right-of-way of the Scott Street local road improvement. This site is also undergoing remediation and has become part of the redevelopment associated with the Ireland Road Site. All efforts will be made to avoid or minimize impacts to this commercial development.

The five potentially hazardous material sites within and close to the right-of-way consist of one body shop, three gas stations, and one carwash, which are all located along US 31 south of US 20. For the development in this area is primarily commercial. Potential hazardous material sites within the right-of-way Preferred Alternative G-Es include:

- **Galloway Body Shop**- This site is a small quantity generator of hazardous material. A phase 1 site investigation of this site is recommended to make sure that none of the hazardous materials handled at this site have been released from their storage containers and have potentially caused contamination of the soil or ground water at the site.
- **McClure Oil**- This property is within the right-of-way and there are currently five USTs at this site currently in use. This site has two LUSTs listed as active on the premises. It is recommended that further coordination will need to be conducted with appropriate agencies to determine the status of the LUSTs currently undergoing site characterization or corrective action through IDEM. If corrective action has not taken place and site characterization is not finished it is recommended that a phase II be performed to determine possible boundaries of contamination and what potential hazards exist. All tanks at the site must be removed in accordance to appropriate state protocol.
- **Country Convenience**- This property is immediately adjacent to the right-of-way and has three tanks that are currently in use. This site also has one LUST that is listed as active. This station will more than likely not need to be acquired but further coordination will need to be conducted with appropriate agencies to determine the status of the LUST currently undergoing site characterization or corrective action through IDEM. If corrective action has not taken place and site characterization is not finished it is recommended that a phase II be performed to determine possible boundaries of contamination and what potential hazards exist if the contamination has entered into the right-of-way.
- **Sparkle Wash (Key Oil)**- It is within the right-of-way and has four permanently out of service tanks that their status is listed as unknown. Further coordination with IDEM and other agencies will need to be conducted for this site. It is recommended that a phase I site assessment be completed for this site and that tanks be removed in accordance to appropriate state protocol.
- **Singer Tire (Professional Detailing and Carwash)**- This business is located within the right-of-way of the local road improvements along existing US 31 associated with Alternative G-Es. It has one open permanently out of service tank. This site may not be affected by the construction of Preferred Alternative G-Es. If the property will need to be taken as part acquisition it is recommended that a phase I site assessment be performed and the tank be removed in accordance with appropriate state protocol.



The condition of stored agricultural chemicals should be evaluated prior to relocation and or disposal in accordance with applicable laws and regulations. Structures within the right-of-way of the preferred build alternative that are to be demolished prior to construction should be screened for asbestos. If present, this material should be handled and disposed of according to profile and prior to demolition.

With respect to asbestos removal: all facilities slated for renovation or demolition (except residential buildings that have (4) four or fewer dwelling units and which will not be used for commercial purposes) must be inspected by an Indiana-licensed asbestos inspector prior to the commencement of any renovation or demolition activities. If regulated asbestos-containing material (RACM) that may become airborne is found, any subsequent demolition, renovation, or asbestos removal activities must be performed in accordance with the proper notification and emission control requirements.



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