

Chapter 4: Identification of the Recommended Preferred Alternative and Proposed Mitigation

4.1 PROPOSED ACTION

The proposed action analyzed in this Environmental Document is to complete the original Proposed Relocation of US 231 and Wabash River Crossing project in Tippecanoe County, Indiana.

This Environmental Document reevaluates and documents changes in the proposed action that would result in substantial environmental impacts that were not evaluated in the prior DEIS and FEIS, as well as new information or circumstances relevant to environmental concerns and bearing on the proposed action that result in substantial environmental impacts that were not evaluated in the prior studies.

The focus of this Environmental Document is twofold: 1) to demonstrate the environmental consequences of the alternatives carried forward for detailed study and 2) to identify a preferred alternative for the northern segment.

4.2 RECOMMENDED PREFERRED ALTERNATIVE

Based upon the technical analyses presented in Chapters 1, 2, and 3 of this Environmental Document, Build Alternative alignment Line 7 has been identified as the recommended preferred alternative.

Line 7 completes the proposed action, meets the purpose and need of the project, does not impact Section 4(f) resources, and does not result in substantial impacts to the environment. Environmental impacts associated with Line 7 are discussed in detail in Chapter 2 and Chapter 3 of this Environmental Document. Comparatively, the environmental consequences of Line 7 are generally less than those of the Line 1 - the original preferred alternative identified in the 1992 ROD - and are preferred over all other Build Alternative alignments carried forward for detailed study. A synopsis of environmental impacts associated with Line 7 as compared to the No-Build Alternative and Line 1 (the original preferred alternative) is provided in Table 4-1 below; and comparison with all of the Alternatives is provided in Chapter 2 (Table 2-5).

**Table 4-1
Summary Matrix of Environmental Impacts for Line 1 and Line 7**

Environmental Impacts	No-Build Alternative	Build Alternative Alignments	
		Line 1	Line 7
SOCIO-ECONOMIC ENVIRONMENT			
Land Use - Direct (acres)			
Agriculture	0	96.8	117.4
Community	0	0	4.1
Multi-family	0	19.8	2.5
Office and Industrial	0	3.3	0
Parks and Recreation	0	0.6	0
Retail	0	3.2	0
Single-family	0	0.2	5.8
TOTAL ACRES	0	120.8	129.8
Farmland Soils (prime and state-wide in acres)	0	91	52
Consistency with local plans ¹	2	4	8
Displacements (#)			
Residential (units)	0	335	18
Businesses	0	3	0
Community	0	0	1
Environmental Justice Disproportionate Impacts (yes or no)	No	No	No
NATURAL ENVIRONMENT			
Stream Impacts (# of crossings/Length of impact in ft)	0/0	2/694	2/636
Floodplain Impacts (acres)	0	0	0
Wetland Impacts ² (acres)			
PAB	0	0	0
PEM	0	0	3.4
PSS	0	0	0
PFO	0	0	1.1
TOTAL ACRES	0	0	4.5
Land cover (total acres of impacts)	0	139.0	129.9
PHYSICAL ENVIRONMENT			
Hazardous Waste Site Impacts (#)	0	0	0
OTHER ENVIRONMENT			
Noise Impacts (#)	6	3	3

Source: Michael Baker Jr., Inc.

¹ Eight plans were reviewed and consistency with these plans is discussed in Chapter 3.

²Detailed wetland delineations, using Army Corp of Engineers methodology, were performed only on the recommended preferred alternative.

4.3 MITIGATION

Line 7 does not result in substantial impacts; however, some mitigation measures are necessary for project compliance. These measures are discussed in the following sections.

4.3.1 Relocation Assistance

Relocation assistance and benefits will be made available to all individuals and businesses displaced by the Proposed Action in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Relocation Act) and Title VI of the Civil Rights Act of 1964. The Uniform Relocation Act requires that no person shall be displaced until adequate, decent, safe, and sanitary housing is made available. The acquisition and relocation program will be conducted in accordance with 49 CFR Part 24, and relocation resources are available to all residential and business relocates without discrimination.

Information about the Indiana's relocation assistance program will be made available during the public involvement process. Affected individuals will be contacted personally and all benefits and services of the program will be made available to them.

4.3.2 Wetland Mitigation

Field personnel trained in the USACE 1987 Wetland Delineation manual performed wetland delineations on the recommended preferred alternative (Line 7). The purpose of this additional fieldwork was to determine more precise boundaries for the wetlands that may be impacted by Line 7. The delineated wetland impacts were assessed by GIS analysis on a 300-foot wide buffer of Line 7 (150 feet on either side of the centerline). Generally, functions and values of each wetland were assessed using a modified Hydrogeomorphic (HGM) method called the "Wetland Functions and Characterization Tool for Linear Projects" developed by the Washington State Department of Transportation (WSDOT). HGM was developed as a rapid assessment tool for wetlands functions based on best professional judgment (WSDOT June 2000).

Line 7 will result in impacts to three jurisdictional wetlands within the 300-ft wide buffer. These wetlands are identified as Wetland 2, Wetland 6, and Wetland 8, and are displayed on Figure 4-2. In total, the preferred alternative will impact 4.5 acres of wetlands (Table 4-2).

**Table 4-2
Wetland Type, Impacts, and Mitigation**

Wetland ID	Wetland Type	Acres Impacted	Amount of Mitigation Required (acres)
Wetland 2	PEM	2.3	6.9
Wetland 6	PEM	1.1	3.3
Wetland 8	PFO	1.1	4.4
Totals:		4.5	14.3

Mitigation, based on the established mitigation requirements, is as follows:

- 4:1 for PFO wetland impacts, and
- 3:1 for all other wetland impacts.

The total mitigation required for the impacts associated with Line 7 is 14.3 acres.

A discussion of each impacted wetland is provided in the following paragraphs.

Wetland 2

Wetland 2 is a PEM wetland and is located approximately 900 feet northwest of wetland 8 along the Kankakee, Beaverville, and Southern Railroad (KBS Railroad). This wetland is approximately three acres in area. The wetland is bordered by and drains into a small man-made pond. This pond is situated at the opening of a culvert that passes under the KBS Railroad. There is a man made ditch draining the adjacent farm fields that leads into the pond; the pond has no vegetation. Wetland 2 borders the pond and is 2.9 acres in size.

The preferred alternative will impact 2.3 acres of this wetland. Analyses of high resolution aerial photography from 1997 and 2000, highly accurate contour information at a interval of two feet, and detailed hydrology mapping, all obtained from the Tippecanoe County Management Information Technology Services Geographic Information System, along with direct field observations, uncovered evidence that this wetland has been altered due to man made activities. More specifically, it appears that sometime between 1997 and 2000 the existing drainage ditch was deepened and straightened, and the area that is now a small pond was created by excavation, from which the excess material was deposited on the sides/banks of the pond. This has altered the hydrology and caused the wetland to drain at a faster rate than it normally would. Analysis of 1997 aerial photographs and detailed hydrology mapping indicates that this wetland has decreased in size. Wetland 2 still exhibits the following functions and values to varying degrees: sediment removal, nutrient and toxicant removal, general habitat suitability, and habitat for amphibians. However, as the size of this wetland continues to decrease through the ditching and draining that is occurring, so will it's functions and values. This wetland also exists in an area that is planned for future development by Purdue University. Portions of Purdue University's planned Athletic Facilities expansion will occur in this wetland.

Wetland 6

Wetland 6 is a PEM wetland and is located on the west side of McCormick Road between Lindberg Road and US 52, where McCormick Road makes a an "S" curve.

This wetland is approximately five acres in area. While some saplings and trees exist in this wetland, the dominant cover type is emergent in nature. This wetland is bordered by McCormick Road on two sides, existing and developing residential areas on one side, and a pond that seems to serve as a stormwater catchment pond on one side. There is a culvert that allows the large cornfield on the opposite side of McCormick Road to drain into this wetland. The soil has very poor drainage and stays saturated for some time after a rain event (USDA, Soil Survey of Tippecanoe County, Indiana). Water tends to pool up in the low areas. During the first field visit (June 2002), the entire wetland had approximately 1-10 inches of standing water. During the second field visit, drainage patterns, watermarks and other signs of inundation were noticed, but there was no standing water. Water entering this wetland will eventually drain into the approximately one acre pond immediately south of this wetland. Analysis of USGS quadrangles photo revised in 1986, NWI wetland information created from 1981 imagery, 1997 aerial photography, and direct field observations indicates that this man made pond was created sometime between 1986 and 1997. The creation of this pond has affected the hydrology of this wetland causing it to drain at a faster rate than normal, and to decrease in size. This wetland is also located in an area where future residential development to the Wake Robin II subdivision is planned. The preferred alternative will impact 1.1 acres of this wetland. This wetland exhibits the functions and values of flood flow alteration, nutrient and toxicant removal, and the production of organic matter.

Wetland 8

Wetland 8 is classified as a palustrine forested wetland (PFO) and is located in a patch of forest adjacent to a large cornfield. It is situated in a low spot in the landscape, and runoff from the surrounding landscape inundates and pools up in this area's very poorly drained soils (USDA, Soil Survey of Tippecanoe County, Indiana). During the original identification of this wetland (June 2002) there was standing water ranging from 1-12 inches in depth covering approximately 90% of the wetland, and watermarks were visible demonstrating a fluctuating water level. Wetland 8 is 1.1 acres in size, and Line 7 impacts the entire wetland. The dominant tree species present in this wetland are *Salix nigra* and *Fraxinus pennsylvanica*. This wetland exists in an area where future development by Purdue University is planned. Portions of Purdue University's planned Athletic Facilities expansion will occur in this wetland. Wetland 8 exhibits the following functions and values to varying degrees: flood flow alteration, nutrient and toxicant removal, general habitat suitability, and habitat for amphibians.

To the extent possible, impacts to wetlands have been avoided or minimized through the interdisciplinary, interagency approach and the use of GIS analysis. A mitigation site located in the northeast quadrant of the Wabash River crossing was established for wetland impacts resulting from construction of the preferred alternative selected in the 1992 FEIS. The mitigation site is approximately 48 acres; 33 acres have been constructed as wetlands. Of the 33 acres of created wetlands, approximately 18.6 acres of these have been used as mitigation for the portions of US 231 already constructed and in the final engineering design stage. Therefore, 14.4 acres remain available for mitigation on this portion of the project (from SR 26 to US 52).

Impacts to wetlands will be considered during the mitigation development phase; additional avoidance and minimization measures will be implemented, if feasible.

4.3.3 Community Impact Mitigation

Community Impact issues that remain a concern with the preferred alternative will be addressed with mitigation proposals. These proposals will be developed with the CAC's input, and may include landscaping of the median, pedestrian treatments at crossings, and measures to mitigate the project's impacts on access to neighborhoods and community facilities.

All project impacts will be reviewed for additional avoidance, minimization, and mitigation measures. Feasible measures be explored and any applicable preliminary design changes will be documented in FHWA's final project decision document, as well as the projects Engineer's Report.

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Exhibits

Exhibit 4-1 Recommended Preferred Alternative

Exhibit 4-2 Wetlands Impacted by the Preferred Alternative