APPENDIX F: WATER RESOURCES

Aaron Koehlinger 9/13/2021

Waters of the U.S. Report

I-469 & US 24 Intersection Modification

Allen County
Interchange Improvement Project

Des. Nos. 1800092 & 2000601

Prepared by:

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September 9, 2021

1. PROJECT INFORMATION

Date of Field Reconnaissance: October 9, 2020

1.1 LOCATION

The project is located 9.9 miles southeast of I-69 in Allen County, Indiana.

- Section 6, Township 30 North, Range 14 East
- Maples, Indiana Quadrangle
- Lat/Long 41.082906, -84.996709 – World Geodetic System 1984 (WGS84)

1.2 PROJECT DESCRIPTION

The Federal Highway Administration (FHWA) and Indiana Department of Transportation (INDOT), Fort Wayne District, are planning to proceed with the modification of the interchange between Interstate 469 (I-469) and US Highway 24 (US 24) in New Haven, Allen County, Indiana. The interchange modification at I-469/US 24 Interchange in Allen County, IN was divided into two phases due to the immediate need for safety improvements and funding constraints.

Phase I is fully constructed and opened to traffic in Fall 2020. The east side of the interchange was reconstructed to address urgent safety and traffic operations issues at the northbound I-469 ramps. Ramps for I-469 northbound to US 24 eastbound and US 24 eastbound to I-469 northbound were constructed, which allowed for the traffic signal at the northbound ramp terminal intersection to be removed. A traffic signal was placed at the southbound ramp terminal intersection as an interim improvement until Phase II is completed. A Wetland and Waterway Delineation was completed in 2018 for the entire interchange area as part of this project under Des. No. 1383675.

Phase II originally included a non-conventional flyover ramp to serve the US 24 westbound to I-469 southbound movement and avoid Neimeyer farm. At the time the 2016 Engineer's Report was completed, Neimeyer farm was a farmstead eligible for the National Register of Historic Places located northwest of the interchange. However, the residence and outbuildings that contribute to the integrity of the farmstead were removed; therefore, it is assumed that the farmstead is no longer eligible.

A full cloverleaf interchange is recommended as a more cost-effective solution. The southbound ramps will be constructed in the northwest quadrant. The new concept has a lower construction cost, fewer utility impacts, and comparable traffic operations.

As part of a separate project (Des. No. 2000601, the existing 84-inch Corrugated Metal Pipe carrying the Wetland F / Wabash and Erie Canal under I-469 will be lined by installing a 2 inch cured in place plastic (CIPP) linear. Revetment riprap bed stabilization may be used at the culvert entrance and revetment riprap over geo-textiles at the culvert outlet. As both projects are located in the same interchange, the intent of this report is to include both projects.

2. DESKTOP RECONNAISSANCE

2.1 SOIL ASSOCIATIONS AND SERIES TYPES

According to the Soil Survey Geographic (SSURGO) Database for Allen County, Indiana, the following mapped soils series is found within the I-469 & US 24 interchange investigated area (Attachment Pages 7-11).

- **Berrien loamy fine sand (BkA):** very deep, somewhat poorly drained soils formed in sandy outwash on outwash plains, lake plains, beach ridges, and water-worked till plains. Slope ranges from 0 to 2 percent. Berrien loamy fine sand is not considered a hydric soil although it does include 3 percent inclusions of Rensselaer on depressions which is s a hydric soil.

- **Chelsea fine sand (ChB):** very deep, excessively drained soils formed in eolian sand. These soils are on convex summits of interfluves, side slopes, and crests of escarpments, commonly along the eastern side of stream valleys. These soils also occur on dunes on valley trains along the major rivers containing sandy outwash. Slope ranges from 2 to 6 percent. Chelsea fine sand is not considered a hydric soil.

- **Eel silt Loam (Es):** very deep, moderately well drained soils that formed in alluvium and are on flood plains and flood-plain steps. Slope ranges from 0 to 2 percent. Eel silt loam is not considered a hydric soil although it does include up to 8 percent inclusions of Sloan – Occasionally ponded on depressions which is s a hydric soil.

- **Genesee silt loam (Gh):** very deep, well drained soils that formed in loamy alluvium on flood plains. Slope ranges from 0 to 2 percent. Genesee silt loam is not considered a hydric soil although it does include up to 10 percent inclusions of Sloan – Occasionally ponded on depressions which is s a hydric soil.

- **Genesee silty clay loam (Gm):** very deep, well drained soils that formed in loamy alluvium on flood plains. Slope ranges from 0 to 2 percent. Genesee silty clay loam is not considered a hydric soil although it does include up to 5 percent each of inclusions of poorly drained aquolls and poorly drained aquents depressions which are both hydric soils.

- **Whitaker fine sandy loam (HnA):** very deep, somewhat poorly drained soils formed in stratified silty and loamy outwash on outwash plains, lake plains, till plains, valley trains, and stream terraces. Slope ranges from 0 to 6 percent. Whitaker fine sandy loam is not considered a hydric soil although it does include up to 5 percent each of inclusions of Rensselaer and Westland in depressions which are both hydric soils.

- **Whitaker loam (HoB):** very deep, somewhat poorly drained soils formed in stratified silty and loamy outwash on outwash plains, lake plains, till plains, valley trains, and stream terraces. Slope ranges from 0 to 6 percent. Whitaker loam is not considered a hydric soil although it does include 10 percent inclusions of Rensselaer on depressions which is s a hydric soil.

- **Whitaker silt loam (HpA)**: very deep, somewhat poorly drained soils formed in stratified silty and loamy outwash on outwash plains, lake plains, till plains, valley trains, and stream terraces. Slope ranges from 0 to 6 percent.

Whitaker silt loam is not considered a hydric soil although it does include 10 percent inclusions of Rensselaer on depressions which is s a hydric soil.

- **Martinsville loam (McB):** very deep, well drained soils that formed in as much as 20 inches of loess and in the underlying loamy outwash. The soils are on stream terraces, outwash plains, outwash terraces, and till plains. Slope ranges from 0 to 35 percent. Martinsville loam is not considered a hydric soil.

- **Oshtemo fine sandy loam (OfB):** very deep, well drained soils formed in stratified loamy and sandy deposits on outwash plains, valley trains, moraines, and beach ridges. Slope ranges from 0 to 55 percent. Oshtemo fine sandy loam is not considered a hydric soil.

- **Plainfield fine sand (PlB**): very deep, excessively drained soils formed in sandy drift on outwash plains, valley trains, glacial lake basins, stream terraces, and moraines and other upland areas. Slopes range from 0 to 70 percent. Plainfield fine sand is not considered a hydric soil.

- **Rensselaer loam (Rm):** very deep, poorly drained or very poorly drained soils formed in loamy sediments on till plains, stream terraces, outwash terraces, outwash plains, glacial drainage channels, and lake planes. Slope ranges from 0 to 2 percent. Rensselaer loam is considered a hydric soil with a hydric rating of 88%. This soil type also includes up to 10 percent Whitaker and 8 percent Crosier which are not considered hydric soils and up to 8 percent Houghton-Undrained which is considered a hydric soils

- **Rensselaer silty clay loam (Rs):** very deep, poorly drained, or very poorly drained soils formed in loamy sediments on till plains, stream terraces, outwash terraces, outwash plains, glacial drainage channels, and lake planes. Slope ranges from 0 to 2 percent. Rensselaer silty clay loam is considered a hydric soil with a hydric rating of 100%.

2.2 National Wetlands Inventory

Based on the U.S. Fish and Wildlife National Wetlands Inventory (NWI) data (www.fws.gov/wetlands/Data/State-Downloads.html) there are two wetlands within the investigated area (Attachment Page 6). One wetland polygon represents the channel of Wabash-Erie Canal. Wabash-Erie Canal is represented as a riverine, unknown perennial, unconsolidated bottom, semi permanently flooded, excavated wetland (R5UBFx). The other wetland polygon is a palustrine, forested, broad-leaved deciduous, seasonally flooded wetland (PFO1C). The nearest wetland outside of the investigated area is located 0.03 mile north. The polygon represents the Maumee river as a riverine, lower perennial, unconsolidated bottom, permanently flooded wetland (R2UBH). There is a palustrine, unconsolidated bottom, intermittently exposed (PUBG) wetland polygon located .03 miles away from the investigated area in the southwest quadrant.

2.3 Hydrology

The investigated area lies within the Sixmile Creek-Maumee River watershed (HUC 041000005013) and Bullerman Ditch – Maumee River (HUC 041000050102). The investigated area is within the floodplain of Maumee River (Attachment Page 13).

3. FIELD RECONNAISSANCE

HNTB Indiana staff performed a field review of the investigated area on October 9, 2020. The purpose was to determine the presence of Waters of the U.S. within the investigated area. HNTB Indiana staff collected data during the field review to appropriately characterize the investigated area and determine the presence or absence of jurisdictional waters. The field investigation area encompassed the area required for construction access. HNTB staff photographed select features and areas of interest throughout the investigated area. A photo location map and selected photographs are included as Attachment Page 21-37.

The proposed investigated area was analyzed using the methods outlined in the Routine Determination, On-site Inspection Necessary procedure in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement of the Corps of Engineers* Wetland *Delineation Midwest Region* (US Army corps of Engineers, 2010). Identification indicator status of the plant species utilized the 2018 Midwest Region National Wetland Plant List. Field GIS data was collected using a Trimble ® hand-held GPS with sub-meter accuracy.

The study area falls within the transitional zone between the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (US Army Corps of Engineers, 2010) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (US Army Corps of Engineers, 2012). Per guidance from the manuals, in the transitional zone, the delineator may select which supplement to use based upon experience and good judgment. The Midwest Supplemental was selected because of its close proximity to the regional boundary, disturbed nature of the site, and the similarity of ecosystem and indicators to sites within the Midwest Region.

4. WATERS

The October 2020 field reconnaissance for the I-469 & US 24 investigated area identified four wetlands (Wetlands A-C, and F) and three roadside ditches (RSD). Information obtained during the field investigation is provided in detail below.

Two National Hydrography Dataset (NHD) flowlines are present within the investigated area. The location of one NHD flowline correspond directly with Wetland F / Wabash-Erie Canal identified during the field investigation as Wetland F (Attachment Page 13). The other NHD flowline corresponds to RSD 3 and no defined bed and bank was observed.

4.1 WETLANDS

WETLAND A

Wetland A, located within a wooded habitat, is a palustrine, forested, broad-leaved deciduous, seasonally flooded (PFO1C) wetland according to the classifications defined by Cowardin et al. (1979). This wetland is mapped within an NWI PFO1C wetland. Within the investigated area, Wetland A is 0.03 acre in size. INDOT acknowledges that this wetland is likely a Waters of the State. However, we are requesting USACE take jurisdiction over it.

DATA POINT 1 (WETLAND A)

This data point was taken within the wooded area north west of the I-469 off ramp and typifies Wetland A. Dominant vegetation consisted of sugar maple (*Acer saccharinum,* FACW), (*Fraxinus pennsylvanica,* FACW), shagbark hickory (*Carya ovata,* FACU), American elm (*Ulmus americana,* FACW), common wood sedge (*Carex blanda,* FAC), white grass (*Leersia virginica*, FACW), and riverbank grape (*Vitis riparia*, FACW). This data point did pass the dominance test for hydrophytic

vegetation as more than 50% of the dominant species were FAC or wetter. The entire vegetative composition has a prevalence index of 2.57; therefore, hydrophytic vegetation was observed. Soils within a pit excavated to a depth of 20 inches included:

- 0-20 inches: 10YR 2/1 clay loam with 10% 10YR 5/3 and 5% 10YR 4/4 depletion within the matrix.

This point exhibited depleted dark surface (F7); and therefore, would be considered hydric soil. Hydrology indicators present were water marks (B1) and the FAC-neutral test (D5). There is a distinct change in vegetation and topography which establishes the boundary of Wetland A. The data form for this point is included in Attachment Pages 38-40.

Data Point 2 (Upland – Wetland A and B)

This data point was taken within the wooded area north west of the I-469 off ramp. Dominant vegetation consisted of silver maple (*Acer saccharinum*, FACW), Eastern cottonwood (*Populus deltoides*, FAC), rough leaf dogwood (*Cornus drummondii,* FAC), shagbark hickory (*Carya ovata*, FACU), meadow foxtail (*Alopecurus pratensis* , FACW), tall goldenrod (*Solidago altissima*, FACU), tall fescue (*Schedonorus arundinaceus,* FACU), and poison ivy (*Toxicodendron radicans*, FAC). This data point did pass the dominance test for hydrophytic vegetation as 50% of the dominant species were FAC or wetter; therefore, hydrophytic vegetation was observed. Soils within a pit were excavated to a depth of 20 inches included:

- 0-2 inches: 10YR 2/1 clay loam,
- 2-20 inches: 10YR 4/2 clay loam with 15% 10YR 4/6 depletion within the matrix.

This point did not indicate any hydric soil indicators. No hydrology indicators were observed as surface water from this area drains into Wetland B and Wetland A; therefore, this point was not within a wetland and determined the boundary of Wetland A and Wetland B. The data form for this point is included in Attachment Pages 41-43.

Wetland B

Wetland B, located within a wooded habitat, is a palustrine, forested, broad-leaved deciduous, seasonally flooded (PFO1C) wetland according to the classification defined by Cowardin et al. (1979). This wetland is mapped within an NWI PFO1C wetland. Within the investigated area, Wetland B is 0.76 acre in size. INDOT acknowledges that this wetland is likely a Waters of the State. However, we are requesting USACE take jurisdiction over it.

Data Point 3 (Wetland B)

This data point was taken within the wooded area north west of the I-469 off ramp in a depressional area. Dominant vegetation consisted of silver maple (*Acer saccharinum*, FACW), reed canary grass (*Phalaris arundinacea*, FACW), and Eastern woodland sedge (*Carex blanda*, FAC). This data point passed the dominance test for hydrophytic vegetation as 50% of the dominant species were FAC or wetter. The entire vegetative composition has a prevalence index of 2.16; therefore, hydrophytic vegetation was observed. therefore, hydrophytic vegetation was observed. Soils within a pit were excavated to a depth of 20 inches included:

- 0-2 inches: 10YR 2/1 clay loam,
- 2-20 inches: 10YR 2/1 clay loam with 5% 10YR 5/6 depletion within the matrix.

This point exhibited depleted dark surface (F7) hydric soil indicators. Hydrology indicators present were water marks (B1), drift deposits (B3) and the FAC-neutral test (D5). There is a distinct change in vegetation and topography which establishes the boundary of Wetland B. The data form for this point is included in Attachment Pages 44-46.

Data Point 6 (Upland Wetland A & B)

This data point was taken within the wooded area north west of the I-469 off ramp. Dominant vegetation consisted of silver maple (*Acer saccharinum,* FACW), honey locust (*Gleditsia triacanthos,* FACU), creeping jenny (*Lysimachia nummularia*, FACW, eastern woodland sedge (*Carex blanda,* FAC), and riverbank grape (*Vitis riparia,* FACW). This data point did pass the dominance test for hydrophytic vegetation as greater than 50% of the dominant species were FAC or wetter. The entire vegetative composition has a prevalence index of 2.69; therefore, hydrophytic vegetation was observed. Soils within a pit were excavated to a depth of 18 inches included:

- 0-5 inches: 10YR 3/1 clay loam,
- 5-18 inches: 10YR 4/2 clay loam with 5% 10YR 4/6 depletion within the matrix.

No hydric soil indicators were observed. Hydrology indicators present were the FAC-neutral test (D5). There is a distinct difference in vegetation and topography from the wetland data points. This data point is typical of the upland area to the east of both Wetlands A and C. The data form from this point is included in Attachment Pages 53-55.

Wetland C

Wetland C, located within a wooded habitat, is a palustrine, forested, broad-leaved deciduous, seasonally flooded (PFO1C) wetland according to the classification defined by Cowardin et al. (1979). This wetland is not within a mapped NWI wetland. Within the investigated area, Wetland is 0.11 acre in size. INDOT acknowledges that this wetland is likely a Waters of the State. However, we are requesting USACE take jurisdiction over it.

Data Point 4 (Wetland C)

This data point was taken within the wooded area north west of the I-469 off ramp in a depressional area. Dominant vegetation consisted of silver maple (*Acer saccharinum,* FACW), American sycamore (*Platanus occidentalis,* FACW), northern spicebush (*Lindera benzoin,* FACW), and eastern woodland sedge (*Carex blanda,* FAC). This data point did pass the dominance test for hydrophytic vegetation as greater than 50% of the dominant species were FAC or wetter. The entire vegetative composition has a prevalence index of 2.15; therefore, hydrophytic vegetation was observed. Soils within a pit were excavated to a depth of 20 inches included:

- 0-5 inches: 10YR 3/1 clay loam,
- 5-18 inches: 10YR 2/1 clay loam with 5% 10YR 4/6 depletion within the matrix.
- 18-20 inches: 10YR clay loam with 10% 10YR 5/2 and 10% 10YR 4/4 depletion within the matrix

This point exhibited depleted dark surface (F7) hydric soil indicators. Hydrology indicators present were water marks (B1), drift deposits (B3), and the FAC-neutral test (D5). There is a distinct change in vegetation and topography which establishes the boundary of Wetland C. The data form from this point is included in Attachment Pages 47-49.

Data Point 5 (Upland Wetland C)

This data point was taken within the wooded area north west of the I-469 off ramp. Dominant vegetation consisted of silver maple (*Acer saccharinum,* FACW), rough leaf dogwood (*Cornus drummondii,* FAC), honey locust (*Gleditsia triacanthos,* FACU), green ash (*Fraxinus pennsylvanica,* FACW), and goldenrod (*Solidago altissima,* FACU). This data point did pass the dominance test for hydrophytic vegetation as greater than 50% of the dominant species were FAC or wetter; therefore, hydrophytic vegetation was observed. Soils within a pit were excavated to a depth of 20 inches included:

- 0-2 inches: 10YR 3/1 clay loam,
- 2-20 inches: 10YR 4/3 clay loam with 2% 10YR 4/6 concentration within the matrix.

No hydric soil indicators were observed. Hydrology indicators present were the FAC-neutral test (D5). There is a distinct change in vegetation and topography from data point 4 which establishes the boundary of Wetland C. The data form from this point is included in Attachment Pages 50-52.

Wetland F

Wetland F is located on the southside of Rose Avenue (US 24) west of the I-469 entrance ramp southbound. This wetland formed as a result of ponding at the base of the roadside slope due to the relatively low relief and compacted soils along the roadway. The boundaries of this wetland were determined by sloping topography and a change in the plant community as documented with an upland data point. Within the investigated area, Wetland F totals 0.75 acre. Wetland F is an emergent wetland. A portion of Wetland F includes what remains of the bed and bank of the Wabash-Erie Canal which functions as the roadside ditch for SR 24. This wetland is classified as poor due to the position within a roadside ditch and low species diversity. Wetland F flows northeast outside of the investigated area eventually draining into the US 24 roadside drainage system.

Data Point 13 (Wetland F)

This data point was taken on the south side of Rose Avenue and southwest of the I-469/US 24 interchange. Dominant vegetation consisted of narrowleaf cattail (*Typha angustifolia,* OBL). This data point passed the dominance test since greater than 50% of the dominant species were FAC or wetter. The entire vegetative composition has a prevalence index of 1.07; therefore, hydrophytic vegetation was observed. Soils within a pit were excavated to a depth of 7 inches included:

- 0-16 inches: GLEY 3/10Y clay loam with 10% 10YR 3/3 concentration within the matrix.

Hydric soil indicators that were observed were thick dark surface (A12) and redox dark surface (F6). Hydrology indicators present were Saturation (A3) and FAC-neutral test (D5). There is a distinct change in vegetation and topography which establishes the boundary of Wetland F. The data form from this point is included in Attachment Pages 56-58.

Data Point 14 (Upland Wetland F)

This data point was taken on the south side of Rose Avenue and southwest of the I-469/US 24 interchange. Dominant vegetation consisted of Fuller's teasel (*Dipsacus fullonum,* FACU) and tall fescue (*Schedonorus arundinaceus*, FACU). This data point did not pass the dominance test since less than 50% of the dominant species were FAC or wetter. The entire vegetative composition has a prevalence index of 3.50; therefore, no hydrophytic vegetation was observed. Soils within a pit were excavated to a depth of 16 inches included:

- 0-16 inches: 10YR 5/2 clay loam with 5% 10YR 4/4 and 2% 10YR 3/6 concentration within the matrix.

Hydric soil indicators were observed. No wetland hydrology indicators were observed. There is a distinct change in vegetation and topography from Data point 13 which establishes the boundary of Wetland F. The data form from this point is included in Attachment Pages 59-61.

TABLE 1: WETLAND SUMMARY TABLE

Wetland	Photo	Lat/Long	Cowardin Classification	Areas (Acre)	Quality	Isolated Wetland?	Water of the U.S.?	Difference from April 3, 2018 PJD)
A	6, 7, 8	41.084203, -84.995299	PFO1C	0.03	Poor	Yes, Class II	No	Not included
B	9, 10, 11, 16	41.083704, -84.996360	PFO1C	0.76	Poor	Yes, Class II	No	Not Included
C	12, 13	41.084492, -84.996227	PFO1C	0.11	Poor	Yes, Class II	No	Not Included
F	50, 51, 52, 53, 35, 36, 37, 38, 39, 40, 41, 44, 49, 54, 55	41.078538, -85.000901	PEM1A	0.75	Poor	No	Yes	Essentially the same, portion of Wabash and Erie Canal included in Wetland F

TABLE 2: DATA POINT SUMMARY TABLE

Data Point-ID	Vegetation	Soils	Hydrology	Within a Wetland?
DP1	Yes	Yes	Yes	Yes – Wetland A
DP2	Yes	No	No	No
DP3	Yes	Yes	Yes	Yes – Wetland B
DP4	Yes	Yes	Yes	Yes – Wetland C
DP5	Yes	No	No	No
DP6	Yes	No	No	No
DP13	Yes	Yes	Yes	Yes – Wetland F
DP14	No	Yes	No	No

4.2 STREAMS

Site investigations did not identify stream features within the investigated area.

4.3 ROADSIDE DRAINAGE FEATURES

As illustrated in the ground level photographs included as Attachment Pages 25-57, three roadside ditches (RSD 1, RSD 2, RSD 3) were identified within the investigated area. None of the RSD exhibited consistent OHWM or defined bed and bank (Attachment Pages 25-57). The roadside ditch is located within the I-469 southbound right-of-way. RSD 1, RSD 2 and RSD

3 likely convey stormwater drainages from I-469. These RSDs are likely non-jurisdictional. Photos of RSD 1, RSD 2 and RSD 3 are included in Attachment Pages 36-38.

TABLE 4: ROADSIDE DRAINAGE FEATURES TABLE

Roadside Drainage Feature	Photo #	Lat/Long	Linear feet in Investigated area (Feet)	Substrate
RSD-1	23, 25-29	41.084067, -84.993419	3135	Riprap, silt
RSD-2	42, 43, 45	41.081652, -84.993320	844	Riprap, silt
RSD-3	56, 61-65	41.080980, -84.994000	1847	Riprap, silt

4.4 OPEN WATERS

Site investigations did not identify open water features within the investigated area.

5. CONCLUSION

The October field review for the I-469 and US 24 Intersection modification project identified four water features within the identified survey area (Wetland A, Wetland B, Wetland C, Wetland F). Wetland A, B, and C are isolated. Wetland F may be jurisdictional due to a hydrological connection to the I-469 drainage system which is hydrologically connected to the Maumee River, a TNW. INDOT acknowledges that Wetlands A, B, and C are likely a Waters of the State. However, we are requesting USACE take jurisdiction over all wetlands identified for this project.

If construction exceeds the limits of the survey review area illustrated in this document, further field investigation will be needed. This report is this office's best judgement of water resources that are likely to be under federal jurisdiction, based on the guidelines set forth by the U.S. Army Corps of Engineers (USACE). The final determination of jurisdictional waters is ultimately the responsibility of the USACE. The INDOT Office of Environmental Services should be contacted immediately if impacts occur.

This waters determination has been prepared based on the best available information, interpreted in the light of the investigator's training, experience and professional judgement in conformance with the 1987 *Corps of Engineers Wetlands Delineation Manual*, the appropriate regional supplement, the USACE *Jurisdictional Determination Form Instructional Guidebook*, and other appropriate agency guidelines.

Date: September 9, 2021

Landon Little, Scientist

PREPARERS:

HNTB Inc., Staff	Position	Contributing Effort
Christine Meador	Science Project Manager	Project Management Field Data Collection
Landon Little	Scientist	Field Data Collection Report Preparation

Investigated Area
Wetlands
Roadside Ditch
Data Points

0 500 1,000 Feet

Delineated Features Map

I-469 and US 24
Intersection Modification
Allen County, Indiana

Des. No. 1800138

1 inch = 642 ft

HNTB

Graphics created by HNTB Corporation (2021)

Investigated Area
Wetlands
Roadside Ditch
Data Points

0 100 200 Feet

Delineated Features Map

I-469 and US 24
Intersection Modification
Allen County, Indiana

Des. No. 1800138

1 inch = 108 ft

HNTB

Graphics created by HNTB Corporation (2021)

U.S. Fish and Wildlife Service
National Wetlands Inventory

Des. No. 1800092

October 27, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine


85° 0' 18" W
84° 59' 22" W
41° 5' 30" N
41° 4' 35" N
667600
667800
668000
668200
668400
668600
668800
4550800
4550600
4550400
4550200
4550000
4549800
4549600
4549400
4549200
Maumee River
Gm
Es
Gh
HpA
OfB
HoB
Rs
ChB
Rm
HnA
ChB
Rm
PlB
HnA
PlB
Rs
ChB
PlB
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Rm
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BkA
ChB
ChB
ChB
Rm
HpA
ChB
HpA
McB
Rs
HnA
Rm
HnA
Rm
McB
24
469
Map Scale: 1:8,340 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
100
200
400
600
Feet
0
400
800
1600
2400
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BkA	Berrien loamy fine sand, moderately fine substratum, 0 to 2 percent slopes	2.7	3.8%
ChB	Chelsea fine sand, 2 to 6 percent slopes	13.2	18.1%
Es	Eel silt loam, 0 to 2 percent slopes, frequently flooded	0.1	0.2%
Gh	Genesee silt loam, 0 to 2 percent slopes, occasionally flooded	0.7	0.9%
Gm	Genesee silty clay loam	0.1	0.1%
HnA	Whitaker fine sandy loam, 0 to 2 percent slopes	10.8	14.8%
HoB	Whitaker loam, 2 to 6 percent slopes	0.8	1.1%
HpA	Whitaker silt loam, 0 to 2 percent slopes	0.8	1.1%
McB	Martinsville loam, 2 to 6 percent slopes	0.7	0.9%
OfB	Oshtemo fine sandy loam, loamy substratum, 2 to 6 percent slopes	0.9	1.2%
PlB	Plainfield fine sand, moderately fine substratum, 2 to 6 percent slopes	3.8	5.3%
Rm	Rensselaer loam, 0 to 1 percent slopes	34.1	46.8%
Rs	Rensselaer silty clay loam	4.2	5.8%
Totals for Area of Interest		**72.8**	**100.0%**

Report—Hydric Soil List - All Components

Hydric Soil List - All Components–IN003-Allen County, Indiana					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
BkA: Berrien loamy fine sand, moderately fine substratum, 0 to 2 percent slopes	Berrien	90	Outwash plains,terraces	No	—
	Rensselaer	3	Depressions	Yes	2,3
ChB: Chelsea fine sand, 2 to 6 percent slopes	Chelsea	85-95	Dunes	No	—
	Brems	0-5	Outwash plains,dune fields	No	—
	Tracy	0-5	Outwash plains	No	—
	Metea	0-5	Moraines	No	—
	Boyer	0-5	Moraines,outwash plains	No	—
Es: Eel silt loam, 0 to 2 percent slopes, frequently flooded	Eel-Frequently flooded	70-100	Flood plains	No	—
	Genesee-Occasionally flooded	5-15	Flood-plain steps,natural levees	No	—
	Shoals-Occasionally flooded	0-10	Flood-plain steps	No	—
	Sloan-Occasionally ponded	0-8	Depressions	Yes	2
Gh: Genesee silt loam, 0 to 2 percent slopes, occasionally flooded	Genesee-Occasionally flooded	75-95	Flood-plain steps,natural levees	No	—
	Eel-Frequently flooded	0-12	Flood plains	No	—
	Sloan-Occassionally ponded	0-10	Depressions,flood-plain steps	Yes	2
	Shoals-Occasionally flooded	0-8	Flood-plain steps	No	—
Gm: Genesee silty clay loam	Genesee	90	Flood plains	No	—
	poorly drained aquolls	5	Depressions	Yes	2,3
	poorly drained aquents	5	Depressions	Yes	2,3
HnA: Whitaker fine sandy loam, 0 to 2 percent slopes	Whitaker	90	Outwash plains,stream terraces	No	—
	Rensselaer	5	Depressions	Yes	2,3
	Westland	5	Depressions on outwash plains,depressions on stream terraces	Yes	2,3

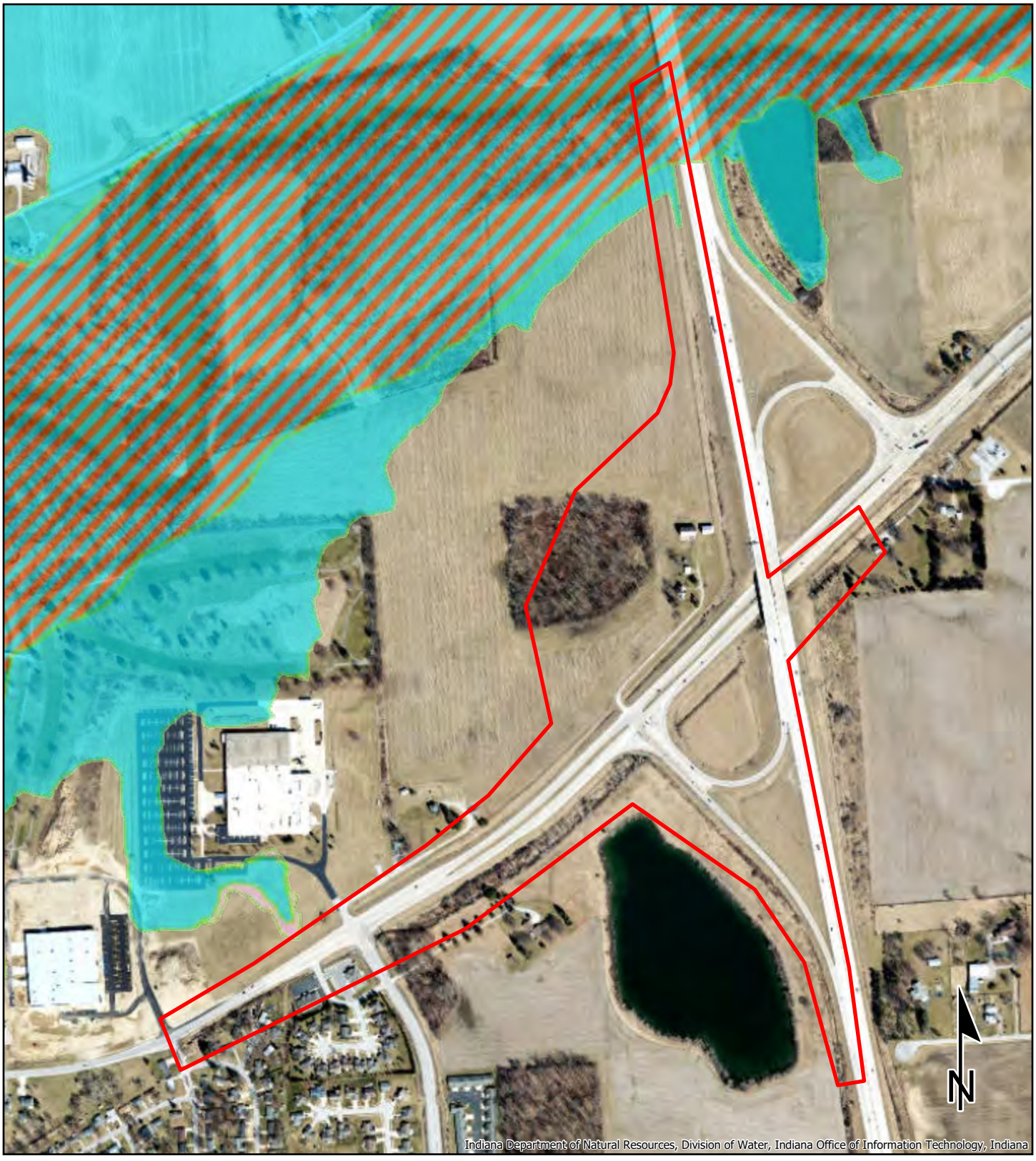
Hydric Soil List - All Components–IN003-Allen County, Indiana					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
HoB: Whitaker loam, 2 to 6 percent slopes	Whitaker	90	Outwash plains,stream terraces	No	—
	Rensselaer	10	Depressions	Yes	2,3
HpA: Whitaker silt loam, 0 to 2 percent slopes	Whitaker	90	Stream terraces,outwash plains	No	—
	Rensselaer	10	Depressions	Yes	2,3
McB: Martinsville loam, 2 to 6 percent slopes	Martinsville	70-100	Outwash plains,stream terraces,lake plains	No	—
	Digby	0-10	Outwash plains,glacial drainage channels	No	—
	Wawaka	0-10	Till plains	No	—
	Rawson	0-10	Till plains	No	—
	Haney	0-10	Glacial drainage channels,outwash plains	No	—
OfB: Oshtemo fine sandy loam, loamy substratum, 2 to 6 percent slopes	Oshtemo	100	Moraines,outwash plains,stream terraces	No	—
PlB: Plainfield fine sand, moderately fine substratum, 2 to 6 percent slopes	Plainfield	100	Outwash plains,stream terraces	No	—
Rm: Rensselaer loam, 0 to 1 percent slopes	Rensselaer	75-90	Depressions	Yes	2
	Whitaker	0-10	Outwash plains	No	—
	Crosier	0-8	Moraines	No	—
	Houghton-Undrained	0-8	Depressions	Yes	1,3
Rs: Rensselaer silty clay loam	Rensselaer	100	Depressions on stream terraces,depressions on outwash plains	Yes	2,3

Data Source Information

Soil Survey Area: Allen County, Indiana
Survey Area Data: Version 20, Jun 2, 2020

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BkA	Berrien loamy fine sand, moderately fine substratum, 0 to 2 percent slopes	3	2.7	3.8%
ChB	Chelsea fine sand, 2 to 6 percent slopes	0	13.2	18.1%
Es	Eel silt loam, 0 to 2 percent slopes, frequently flooded	4	0.1	0.2%
Gh	Genesee silt loam, 0 to 2 percent slopes, occasionally flooded	7	0.7	0.9%
Gm	Genesee silty clay loam	10	0.1	0.1%
HnA	Whitaker fine sandy loam, 0 to 2 percent slopes	10	10.8	14.8%
HoB	Whitaker loam, 2 to 6 percent slopes	10	0.8	1.1%
HpA	Whitaker silt loam, 0 to 2 percent slopes	10	0.8	1.1%
McB	Martinsville loam, 2 to 6 percent slopes	0	0.7	0.9%
OfB	Oshtemo fine sandy loam, loamy substratum, 2 to 6 percent slopes	0	0.9	1.2%
PlB	Plainfield fine sand, moderately fine substratum, 2 to 6 percent slopes	0	3.8	5.3%
Rm	Rensselaer loam, 0 to 1 percent slopes	88	34.1	46.8%
Rs	Rensselaer silty clay loam	100	4.2	5.8%
Totals for Area of Interest			**72.8**	**100.0%**



- FEMA Zone AE Floodway
- DNR Detailed Floodway
- DNR Approximate Floodway
- FEMA Zone A
- FEMA Zone AE
- DNR Detailed Fringe
- DNR Approximate Fringe
- Additional Floodplain Area
- FEMA Protected by Levee
- FEMA Floodplain - Ponding (Depth)
- FEMA Floodplain - Sheet Flow (Depth)
- Investigated Area

0 250 500 Feet

IDNR Floodplain Map

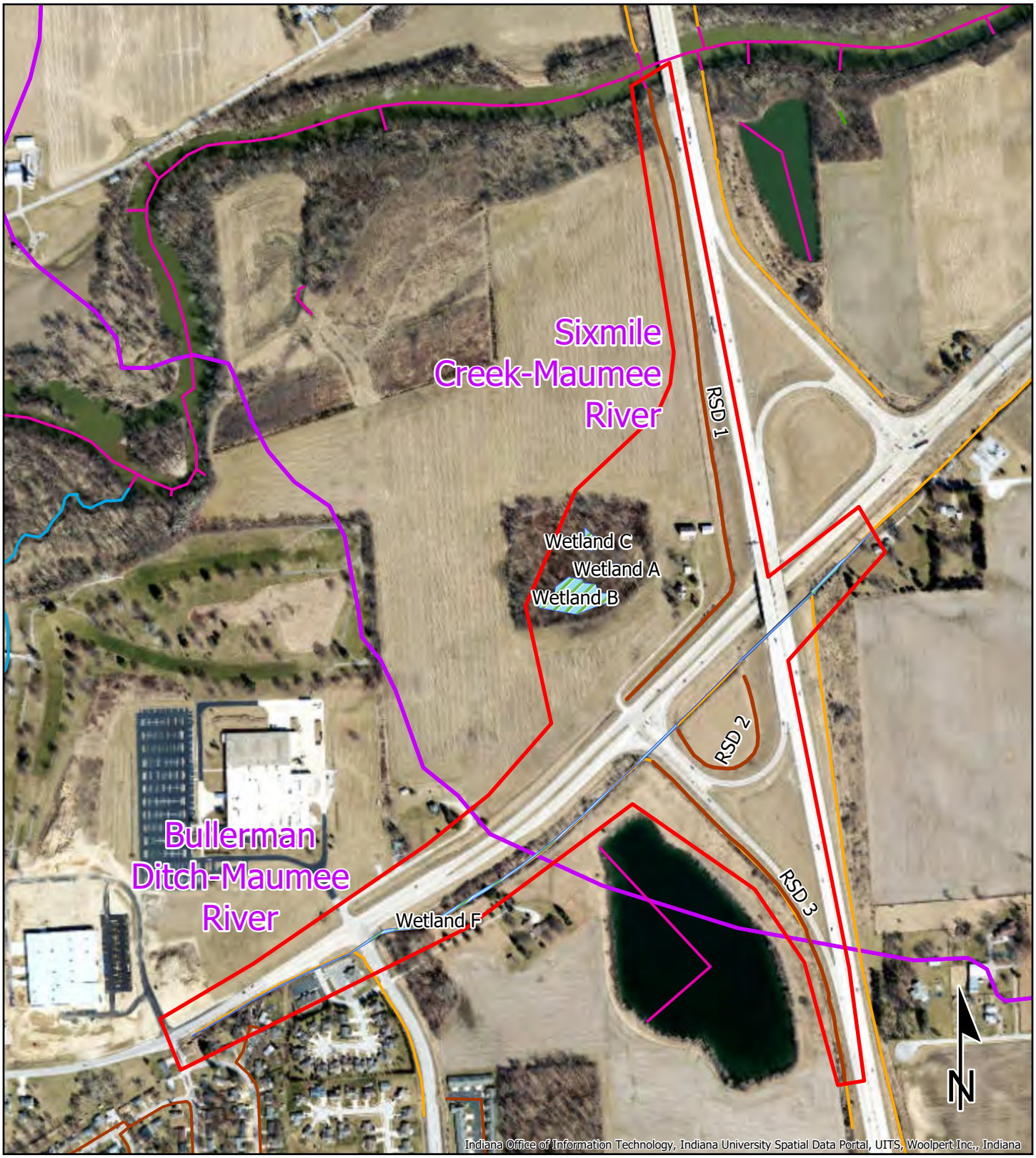
I-469 and US 24
Intersection Modification
Allen County, Indiana

Des. No. 1800138

1 inch = 652 ft

HNTB

Graphics created by HNTB Corporation (2021)



Streams (Local-Resolution NHD)
- ArtificialPath
- CanalDitch
- Coastline
- Connector
- Pipeline
- StreamRiver

- Underground Conduit
- Investigated Area
- Roadside Ditch
- Wetlands
- WATERSHEDS_HUC12_2009_USDA_IN

0 250 500 Feet

NHD Flowlines Map

I-469 and US 24
Intersection Modification
Allen County, Indiana

Des. No. 1800138

1 inch = 652 ft

HNTB

Graphics created by HNTB Corporation (2021)

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD:

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Landon Little, 111 Monument Circle, Suite 1200, Indianapolis, IN 46204; 317-917-5328; ltlittle@hntb.com

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

The FHWA and INDOT are proposing intersection modification (Des. No. 1800092) of US 24 and I-469 project in Allen County, Indiana. A full cloverleaf interchange is recommended as a more cost-effective solution the southbound ramps will be construction in the northwest quadrant. The new concept has a lower construction cost, fewer utility impacts and comparable traffic operations. The project is located approximately 9.9 miles south east of I-69 in Allen County, Indiana. More specifically, the project is located in Section 6, Township 30 North, Range 14 East in Maples Township. Project plans are still being developed.

(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: Indiana County/parish/borough: Allen City: New Haven

Center coordinates of site (lat/long in degree decimal format):

Lat.: 41.082906 Long.: -84.996709

Universal Transverse Mercator: Zone 16 - Easting: 668578 Northing: 4549951

Name of nearest waterbody: Wabash-Erie Canal

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Wetland A	41.084203	-84.995299	0.03 acre	Wetland	Section 404
Wetland B	41.083704	-84.996360	0.004 acre,	Wetland	Section 404
Wetland C	41.084492	-84.996227	0.13 acre	Wetland	Section 404
Wetland F	41.078538	-85.000901	0.75 acre	Wetland	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- [x] Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
  Map: Aerial, USGS topo, StreamStats, Web of Soil, NWI.
- [x] Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - [ ] Office concurs with data sheets/delineation report.
  - [ ] Office does not concur with data sheets/delineation report. Rationale: _____.
- [ ] Data sheets prepared by the Corps: _____.
- [ ] Corps navigable waters' study: _____.
- [x] U.S. Geological Survey Hydrologic Atlas: NHD Hydrography layers, 2014.
  - [x] USGS NHD data.
  - [ ] USGS 8 and 12 digit HUC maps.
- [x] U.S. Geological Survey map(s). Cite scale & quad name: Maple1:24,000 and 1:6,000 Quadrangles.
- [x] Natural Resources Conservation Service Soil Survey. Citation: Web of Soil Service, 2019.
- [x] National wetlands inventory map(s). Cite name: NWI Mapper Online Tool 2019.
- [ ] State/local wetland inventory map(s): _____.
- [x] FEMA/FIRM maps: IDNR Floodplain GIS Database.
- [ ] 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- [ ] Photographs: [x] Aerial (Name & Date): 2016 - Indiana Ortho.
  or [x] Other (Name & Date): Ground Photos Taken October 9, 2020.
- [ ] Previous determination(s). File no. and date of response letter: _____.
- [ ] Other information (please specify): _____.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

_____	9-8-2021
Signature and date of Regulatory staff member completing PJD	Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

APPENDIX G: PUBLIC INVOLVEMENT

APPENDIX H: AIR QUALITY

INDOT Roadway Projects

Project Location (Description of Project)	DES #	Phase	Estimated Cost 2020	2021	2022	2023	2024*	Other Year	Federal Funds	State Funds	A/M	Contract # Funding Letting	TIP Date ICG Date Finding
*I-69 Coldwater Rd br over I-69 NB/SB, 1.3 mi n/o I-69 Bridge Deck Overlay	1901492	PE CN	255,000		 2,719,885				204,000 2,175,908	51,000 543,977	 20-14 20-108	R-41544 NHPP	
*I-69 Coldwater Rd br over I-69 NB/SB, 1.36 mi n/o I-69 Bridge Deck Overlay	1901493	PE CN	250,000		 2,654,868				200,000 2,123,894	50,000 530,974	 20-15 20-109	R-41544 NHPP	
*I-69 so I-469 Pavement Patching	2001589	 CN		 1,016,873					 813,498	 203,375	 21-9	R-43034 NHPP 2/10/2021	8/31/2020 exempt
*SR 101 3.59 mi s/o US 30, Br over Flat Rock Creek Replace Structure	1600471	 RW CN		 20,000	 912,789				 16,000 730,231	 4,000 182,558	 20-102	B-42462 STP 1/30/2020	
*SR 205 From 0.65 mi s/o US 33 to 0.60 mi n/o US 33 (Churubusco) Pavement Patching	2001588	 CN		 305,062					 244,050	 61,012	 21-8	R-43033 STP 3/10/2021	8/31/2020 exempt
I-469 Bridge over Lafayette Ctr Rd, EB 0.94 mi e/o I-69 Partial Super Replacement	1701375	PE CN		 2,040,201				2018	247,500 1,836,181	27,500 204,020	 18-1	B-40466 90/10 10/7/2020	7/2/2019
I-469 Bridge over Lafayette Ctr Rd, WB 0.94 mi e/o I-69 Partial Super Replacement	1701376	PE CN		 2,040,201				2018	247,500 1,836,181	27,500 204,020	 18-2	B-40466 90/10 10/7/2020	7/2/2019
I-469 SB off-ramp at SR 37 Interchange Modification	1800034	PE CN				 391,912		2019	64,000 352,721	16,000 39,191		R-41568 90/10 8/10/2022	7/2/2019
I-469 at I-69 N Junction Interchange Modification	1800089	PE CN				 7,522,302		2019	1,040,000 6,770,072	260,000 752,230		R-41580 90/10 11/16/2022	7/2/2019
*I-469 At the US 24 Interchange Interchange Modification	1800092	PE RW CN	1,200,000		 250,000	 100,000	 6,845,349		960,000 200,000 5,556,279	240,000 50,000 1,389,070	 20-22	 NHPP	
I-469 Various Locations Small Structure Pipe Lining	1800581	 CN		 6,061,262					 5,455,136	 606,126		RS-41069 90/10 2/5/2020	7/2/2019

Indiana Department of Transportation (INDOT)

State Preservation and Local Initiated Projects FY 2020 - 2024

SPONSOR	CONTRACT # / LEAD DES	STIP NAME	ROUTE	WORK TYPE	LOCATION	DISTRICT	MILES	FEDERAL CATEGORY	Total Cost of Project*	PROGRAM	PHASE	FEDERAL	MATCH	2020	2021	2022	2023	2024
Indiana Department of Transportation	42359 / 1900244	A 03	SR 930	Small Structure Replacement	UNT of Martin Ditch, 0.10 Miles west of I469	Fort Wayne	1.06	STBG	$3,418,561.00	Bridge Construction	CN	$2,454,048.80	$613,512.20			$15,000.00		$3,052,561.00
										Bridge Consulting	PE	$280,800.00	$70,200.00	$351,000.00				
Performance Measure Impacted: Bridge Condition																		
Comments:NIRCC MPO TIP Resolution 20-3 dated 7-16-19. DES 1900244 adding PE to FY 2020 for $351,000; adding CN to FY 2022 for $15,000; adding CN to FY 2024 for $3,052,561.																		
Indiana Department of Transportation	42360 / 1800092	A 07	I 469	Interchange Modification	I-469 at the US 24 Interchange.	Fort Wayne	.56	NHPP	$8,395,349.00	Mobility Construction	CN	$6,250,814.10	$694,534.90				$100,000.00	$6,845,349.00
										Mobility Consulting	PE	$1,080,000.00	$120,000.00	$1,200,000.00				
										Mobility ROW	RW	$225,000.00	$25,000.00			$250,000.00		
Performance Measure Impacted: Safety																		
Comments:NIRCC MPO TIP Resolution 20-22 dated 9-11-19. DES 1800059 adding PE to FY 2020 for $1.200,000, RW to FY 2022 for $250,000, and CN to FY 2023 for $100,000, and FY 2024 for $6,845,349.																		
Indiana Department of Transportation	42462 / 1600471	A 18	SR 101	Replace Superstructure	3.59 miles South of US 30, Bridge over Flat Rock Creek.	Fort Wayne	.1	STBG	$1,129,479.00	Bridge Construction	CN	$730,231.20	$182,557.80			$912,789.00		
										Bridge ROW	RW	$16,000.00	$4,000.00		$20,000.00			
Performance Measure Impacted: Bridge Condition																		
Comments:NIRCC MPO TIP Resolution 20-102 dated 3-4-2020. DES 1600471 adding PE to FY 2020 for $107,490, RW to FY 2021 for $20,000, and CN to FY 2022 for $912,789. AQC Exempt 1/30/2020.																		
Indiana Department of Transportation	42463 / 1900619	A 05	I 69	Concrete Pavement Restoration (CPR)	From 1.25 Miles South of US 24 to 2.13 Miles South of US 30.	Fort Wayne	6.43	NHPP	$10,774,866.00	Bridge Construction	CN	$3,052,622.70	$339,180.30			$3,391,803.00		
										Road Construction	CN	$5,279,877.90	$586,653.10			$5,866,531.00		
										Road Consulting	PE	$914,878.80	$101,653.20	$1,016,532.00				
Performance Measure Impacted: Pavement Condition																		
Comments:NIRCC MPO TIP Resolution 20-70																		
Indiana Department of Transportation	42469 / 1602284	A 15	SR 37	Bridge Replacement, Other Construction	Over Dietzen Ditch, 3.71 miles N of SR 101	Fort Wayne	.25	STBG	$3,334,043.00	Bridge Construction	CN	$2,110,586.40	$527,646.60			$2,638,233.00		
Comments:NIRCC MPO TIP Resolution 20-94 thru 20-97 dated 1-8-20. DES 1602284 adding CN to FY 2022 for $2,638,233.AQC Exempt 01/02/2020.																		
Indiana Department of Transportation	42469 / 1602284	A 18	SR 37	Bridge Replacement, Other Construction	Over Dietzen Ditch, 3.71 miles N of SR 101	Fort Wayne	.25	STBG	$2,683,233.00	Bridge ROW	RW	$36,000.00	$9,000.00		$45,000.00			
Comments:NIRCC MPO TIP Resolution 20-96, 20-97, 20-102 dated 1-8-2020, ACQ Exempt 1-30-2020.																		
Indiana Department of Transportation	42470 / 1600290	A 11	SR 3	Replace Superstructure	4.19 miles S of SR 205, over Willow Creek Ditch, Northbound Lane	Fort Wayne	0	NHPP	$2,044,956.00	Bridge Construction	CN	$1,403,964.80	$350,991.20			$1,754,956.00		
Performance Measure Impacted: Bridge Condition																		

Report Created:7/2/2021 11:03:59AM

*Estimated Costs left to Complete Project column is for costs that may extend beyond the four years of a STIP. This column is not fiscally constrained and is for information purposes.

APPENDIX I: ADDITIONAL STUDIES

Engineer's Report – Final

I-469/US 24 Interchange Modification Phase II

INDOT Fort Wayne District
Allen County, IN
DES No: 1800092

May 5, 2021

Prepared For
INDOT Fort Wayne District
Contact: Damien Perry

Prepared By
HNTB Corporation
111 Monument Circle, Suite 1200
Indianapolis, IN 46204
Phone (317) 636-4682
Contact: Jonathan Oakley, PE

Approved: _____ Date: 05/05/2021
Jonathan Oakley
HNTB, Project Manager

Reviewed: _____ for Damien Perry Date: 05/14/2021
Damien Perry
INDOT, Project Manager

Reviewed: _____ Date: 5/10/21
Susan Doell
INDOT, Scoping Manager

Reviewed: _____ Date: 5/11/21
Dana Plattner
INDOT, Traffic Engineer

Approved: _____ Digitally signed by Nathan Edwards Date: 2021.05.14 10:07:43 -04'00' Date 5/14/2021
Nathan Edwards, System Asset Engineer

Table of Contents

Tables and Figures

Attachments

A. No Build or "Do Nothing" Alternative
B. Alternative 4a
C. Recommended Alternative

Executive Summary

The purpose of this report is to serve as an update to the Engineer's Report (Des No. 1383675) submitted by HNTB Corporation in February 2016. The interchange modification at I-469/US 24 in Allen County, Indiana was divided into two phases due to the immediate need for safety improvements and funding constraints.

Phase I is fully constructed and opened to traffic in Fall 2020. The east side of the interchange was reconstructed to address urgent safety and traffic operations issues at the northbound I-469 ramps. Ramps for I-469 northbound to US 24 eastbound and US 24 eastbound to I-469 northbound were constructed, which allowed for the traffic signal at the northbound ramp terminal intersection to be removed. A traffic signal was placed at the southbound ramp terminal intersection as an interim improvement until Phase II is completed.

Phase II originally included a non-conventional flyover ramp to serve the US 24 westbound to I-469 southbound movement and avoid Neimeyer farm. At the time the 2016 Engineer's Report was completed, Neimeyer farm was a farmstead eligible for the National Register of Historic Places located northwest of the interchange. However, the residence and outbuildings that contribute to the integrity of the farmstead were removed; therefore, it is assumed that the farmstead is no longer eligible.

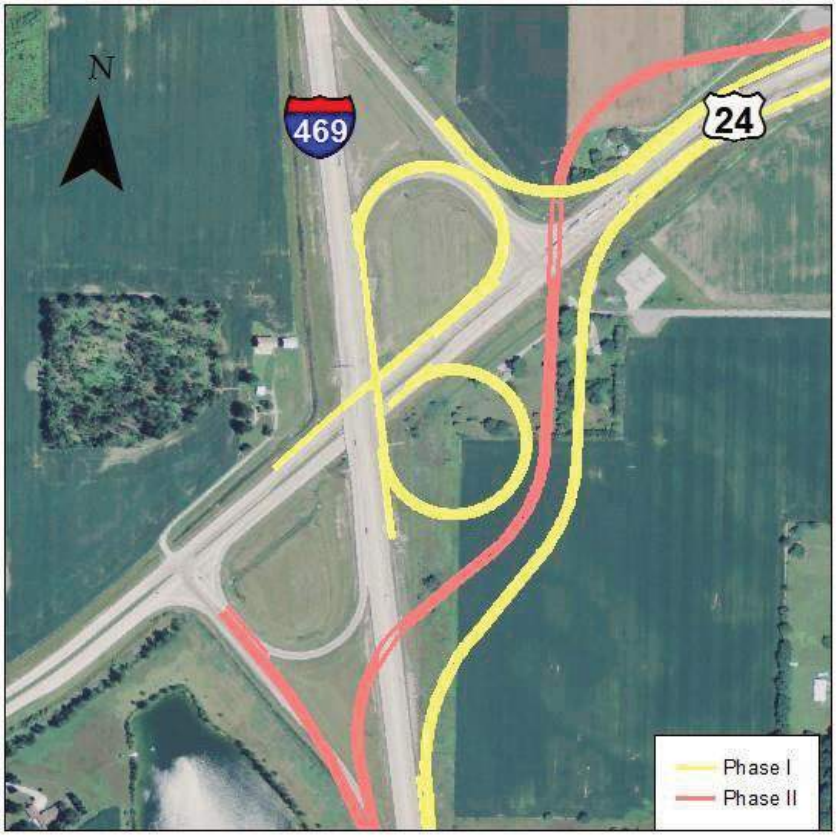
A full cloverleaf interchange is recommended as a more cost-effective solution. The southbound ramps will be constructed in the northwest quadrant. The new concept has a lower construction cost, fewer utility impacts, and comparable traffic operations.

Purpose of Report

The purpose of this report is to serve as an update to the Engineer's Report (Des No. 1383675) submitted by HNTB in February 2016. The interchange modification at I-469/US 24 interchange in Allen County, IN was divided into two phases due to the immediate need for safety improvements and funding constraints. Phase I addressed urgent safety and operations issues, while waiting for full funding to complete the remainder of the project. There were four alternatives studied in 2016 and Alternative 4a was identified as the preferred alternative.

The concept for Phase II in the 2016 Engineer's Report includes a non-conventional flyover ramp to avoid Neimeyer farm since it is a farmstead that is eligible for the National Register of Historic Places. Since that determination, the residence and outbuildings that contribute to the integrity of the farmstead were removed; therefore, it is assumed that the farmstead is no longer eligible. A qualified professional will make this determination as part of the NEPA documentation. Working under the assumption that the farmstead is no longer eligible, there are opportunities to reduce construction cost, avoid major utility relocations, and reduce long-term maintenance cost by considering new alternatives that encroach onto the farmstead. Alternative 4a Phase 1 and Phase 2 are shown in **Figure 1**.

Figure 1 - Alternative 4a, Phase I and Phase II



Project Purpose and Need

This interchange modification is the final project included in the US 24 New Haven Indiana to Defiance Ohio Corridor Project (Fort to Port) NEPA document. The Environmental Impact Statement includes a commitment that the interchange at I-469 and US 24 will be a full, free flowing interchange. The purpose of the I-469 and US 24 Interchange Modification Project is to:

- Improve overall functionality of the interchange including traffic flow and level of service.
- Enhance the regional transportation network.
- Improve overall safety.
- Implement the commitment made in the Fort to Port FEIS/ROD.
- Improve the interchange to provide free-flow operation for freeway to freeway movements.

Existing Conditions

Interchange

The existing interchange is partially reconstructed. The northbound ramps are a cloverleaf type interchange with loop ramps in the northeast and southeast quadrants. The southbound ramps are a partial cloverleaf type B with a traffic signal at the ramp terminal intersection.

Function of I-469 and US 24

US 24 is classified as a non-interstate freeway. East of the interchange US 24 is a 4-lane divided highway with a grass median. West of the interchange the 4-lane divided highway transitions to a two-lane minor arterial (Rose Avenue) under local jurisdiction. Old US 24 is referred to as Rose Avenue throughout this report. I-469 is classified as an interstate and serves as a bypass for I-69 around Fort Wayne. It is a 4-lane concrete barrier separated freeway.

Land Use

Land use from the Northeastern Indiana Regional Coordinating Council (NIRCC) 2035 Long Range Plan was provided. The land use in the immediate vicinity is mainly residential. The residential area near the interchange is bounded by the Maumee River and is not expected to expand. West of I-469, there is an industrial area near the railroad tracks. East of I-469, there is an electrical substation located near the corner of Harper Road and US 24. High power transmission lines from the substation run northwest parallel to the existing US 24 northbound on-ramp to I-469. The transmission line's support towers are located at approximately 1,250-foot intervals.

Pavement Condition

Concrete pavement patching on Rose Avenue will extend through the project limits, from Linden Road to I-469 (PK20329).

Bridge Structures

Bridge rehabilitation was included in Phase I of the project. The scope of the rehabilitation included: deck overlay, replacement of the bridge railings, replacement of the expansion joints and conversion of end bents to semi-integral, removal of existing deck drains, cleaning and painting the steel superstructure.

Culverts

There is a culvert under Rose Avenue, approximately 600 feet from the intersection of Rose Avenue and Linden Road. Replacement of this structure was originally intended to be part of a separate project. The structure to be replaced is an existing 36-inch pipe under Rose Avenue.

Crash History

Crashes on I-469 southbound, I-469 southbound ramps and ramp terminal intersections, and US 24, during the year 2017 to 2019 were studied. There were 45 crashes within the study and is separated into 3 groups: southbound I-469, southbound ramp terminal intersection and ramps, and US 24. No crashes at the Rose Avenue and Linden Road intersection were found.

The severity level of each crash is defined as property damage only, non-incapacitating injury, incapacitating injury, or fatality. Within the study area, 27% of the crashes resulted in personal injury and no fatalities occurred. Crashes are summarized by type of crash and severity in **Table 1**.

At the southbound ramp terminal intersection there were 21 crashes. A majority of the crashes were high severity left turn or right-angle crashes. Vehicles disregarding the traffic control device or following too closely to react appropriately were the cause of many crashes at the intersection.

Table 1 – Crashes by Type and Severity

Location	Property Damage Only	Non-Incapacitating Injury	Incapacitating Injury	Total
I-469 SB Intersection & Ramps	**12**	**3**	**6**	**21**
Backing crash	*1*	--	--	*1*
Head on between two vehicles	*1*	--	--	*1*
Left turn	*5*	*1*	*2*	*8*
Ran off road	*1*	*1*	--	*2*
Rear end	*1*	--	--	*1*
Right angle	*2*	*1*	*4*	*7*
Right turn	*1*	--	--	*1*
I-469 SB Mainline	**11**	**--**	**1**	**12**
Collision with deer	*1*	--	--	*1*
Ran off road	*2*	--	*1*	*3*
Rear end	*2*	--	--	*2*
Same direction sideswipe	*4*	--	--	*4*
Other - explain in narrative	*2*	--	--	*2*
US 24	**10**	**2**	**--**	**12**
Collision with object in road	*1*	--	--	*1*
Left turn	--	*1*	--	*1*
Ran off road	*3*	--	--	*3*
Rear end	*4*	*1*	--	*5*
Same direction sideswipe	*2*	--	--	*2*
Total	**33**	**5**	**7**	**45**

Environmental Issues

An Additional Information (AI) document will be prepared documenting proposed changes in the interchange configuration and updating supporting documentation as necessary to ensure that the changes are consistent with the originally approved environmental document. Supporting documentation prepared as part of the AI will include a waters report, archaeological investigation, historic properties report, and noise analysis.

Infrastructure

Casad Industrial Park Airport is located approximately 2.5 mile east of the project area; however, since the project is within the 20,000-foot radius of an airport coordination with INDOT Aviation will occur regarding limitations on construction such as crane height. Two trails are located within the 0.5-mile search radius. The nearest trail, New Haven Community Trail, is located within the project area. Coordination with New Haven/Adams Park Department will occur.

Ecological Resources

There are 24 wetlands, five streams, and eight lakes within 0.5 miles of the study area for this project. Of these, two wetlands, one river, one canal, and two floodplain polygons are located in the project area. A Waters of the US Determination will be prepared for the project documenting jurisdictional resources.

Cultural Resources

The Niemeyer Farm[1] is located in the northwest quadrant of the existing interchange, immediately adjacent to I-469 and US 24. The farm consisted of a late 19th century farmhouse, five outbuildings and a windmill. As part of the initial studies, this farmstead complex was noted to retain a high level of physical integrity and represents an intact and varied assemblage of late 19th and early 20th century agricultural buildings/structures. It was recommended as eligible for the National Register of Historic Places (NRHP) under National Register Criterion C as it embodied the "…distinctive characteristics of a type, period or method of construction" (National Register Bulletin 15, revised 1997). This recommendation is limited to the 28-acre portion of the Niemeyer Farm containing the house and farm buildings located west of I-469. The Indiana Division of Historic Preservation and Archaeology (DHPA) has concurred with this eligibility recommendation.

Since this determination, the residence, outbuildings, and windmill that contribute to the integrity of the farmstead were removed; therefore, it is assumed that the farmstead is no longer eligible for the NRHP. A qualified professional will make this determination as part of the NEPA documentation.

A Historic Property Report and Archaeological investigation will be completed for the proposed study area to assess the current conditions of above ground resources and document any buried archaeological resources that may be present. It is anticipated a complete re-evaluation of the project under Section 106 will be completed.

Indian tribes will be coordinated with per the INDOT Cultural Resources manual which states "In recognition of the unique government-to-government relationship between the Federal government and Indian tribes, FHWA shall take the lead in identifying and establishing consultation with the Indian tribes and Tribal Historic Preservation Officers (THPO) consistent with 36 CFR 800.2(c)(2). If the tribe is agreeable, further consultation may be conducted between the tribe and INDOT. Likewise, FHWA is responsible for conducting consultation with the ACHP".

Noise

A noise analysis was conducted in May 2003 as part of the Fort to Port EIS and re-evaluated in 2016 for the portions of the interchange which have already been improved. This noise analysis evaluated the three feasible interchange alternatives evaluated at that time. This evaluation found that three of the four representative receivers experience noise levels which exceed the FHWA Noise Abatement Criteria (NAC) and interchange improvements would have a negligible effect on ambient noise levels at surrounding properties.

As part of the environmental study conducted for Phase I, the previous study will be updated in accordance with 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and the INDOT

[1] Niemeyer Farm is located at 11231 US 24 East, New Haven, IN 46774 (003-382-55011).

Traffic Noise Analysis Procedure (2011). This study will evaluate the effect the project will have on noise levels at adjacent properties.

Traffic Forecast and Analysis

Traffic forecasts from the 2016 Engineer's Report were updated for the 2025 opening year and 2045 design year. The traffic data from INDOT and additional counts were balanced so that the traffic flows between intersections are consistent within the study area. A growth rate of 1% was then applied to the balanced traffic to estimate the opening year and design year traffic forecasts. The traffic forecasts are included in the attachments for each alternative.

The alternatives were evaluated using Highway Capacity Manual methodologies. Freeway traffic operations analysis was performed using HCS6 Facilities. The at-grade intersections were analyzed using Synchro 10. Alternative 4a and the new concept both performed at LOS C or better at the 2045 design year, which meets the minimum acceptable LOS. Capacity analysis summaries and reports are included in their respective attachments.

Phase II Alternatives Analysis

Working under the assumption that the farmstead is no longer eligible for the National Register of Historic Places, there is an opportunity to consider other interchange types. This is a reasonable assumption, as the residence and outbuildings that contribute to the integrity of the farmstead were removed. A screening process was used to consider which interchange types should be evaluated along with Alternative 4a and No Build.

Alternative Screening

Various interchange types with the southbound ramps were screened based on their ability to meet the project "needs" and compatibility with Phase I, which is already constructed. Currently, the heavy westbound to southbound movement is controlled by a traffic signal at the southbound ramp terminal intersection. Removal of the traffic signal is key to achieving free-flowing access, which is a primary focus of the project "needs."

In Phase I, the interchange was reconstructed from a partial cloverleaf to a full a cloverleaf interchange with ramps in the northeast and northwest quadrants. Construction was completed in Fall of 2020, therefore Phase II improvements should be compatible with Phase I. As shown in **Table 2,** a full cloverleaf type interchange meets the project "needs" and is compatible with the recently completed Phase I construction.

Table 2 – Phase II Alternative Screening

	Meets Purpose & Need	Compatible with Phase I
Diamond Interchange *A diamond interchange requires traffic signals or stop signs at the ramp terminal intersections. The west half of the interchange could be configured as a diamond, leaving the east side as is.*	No	Yes
Full Cloverleaf Interchange *A cloverleaf interchange would provide full, free-flowing access and is compatible with the Phase I improvements. The east side of the interchange will remain as is, but the west side can be reconstructed. The existing bridges and a portion of the existing ramps can be re-used.*	Yes	Yes
Displaced Left Turn Interchange *A displaced left turn interchange would not be compatible with Phase I, as the east and west sides of the interchange would need to be reconstructed. This type of interchange requires traffic signals.*	No	No
Diverging Diamond Interchange *This type of interchange would not be compatible with Phase I, as the east and west sides of the interchange would need to be reconstructed. A diverging diamond requires traffic signals at each ramp terminal intersection.*	No	No
Single Point Interchange *A single point interchange would require major reconstruction of the entire interchange. All interchange ramps are controlled by one traffic signal.*	No	No

Alternative Evaluation

The following alternatives were evaluated and not selected. In alignment with the project "purpose and need," evaluation metrics include traffic operations, crash history, ramp geometrics, cost, impacts, and the ability to provide a free-flowing connection between I-469 and US 24.

No Build or Do Nothing

The "no build" scenario referenced in this document assumes completion of Alternative 4a Phase I. The east side of the interchange was reconstructed. Ramps for I-469 northbound to US 24 eastbound and US 24 eastbound to I-469 northbound were constructed and the traffic signal at the northbound ramp terminal intersection was removed. A traffic signal was placed at the southbound ramp terminal intersection as an interim improvement. It is important that the interchange modification is completed as it was a commitment in the US 24 Fort to Port FEIS/ROD. The traffic operations analysis results are in **Table 3**. Refer to **Attachment A** for traffic forecasts and capacity analysis results for the no build scenario.

Table 3 – No Build 2045 Capacity Analysis Result

Segment		Type	AM Peak		PM Peak	
			LOS	Density	LOS	Density
I-469 at US 24	SB I-469 Mainline at SR 37	Mainline	A	10.4	B	15.8
	SB I-469 On Ramp from SR 37	Merge	B	17.0	C	23.2
	SB I-469 Mainline - SR 37 to US 24	Mainline	B	14.2	C	20.2
	SB I-469 Off Ramp to EB/WB US 24	Diverge	B	16.1	C	23.0
	SB I-469 Mainline at US 24	Mainline	B	11.1	B	16.8
	SB I-469 On Ramp from EB/WB US 24	Merge	B	15.8	C	23.9
	SB I-469 Mainline - US 24 to US 30	Mainline	B	15.4	C	23.6
	SB I-469 Off Ramp to WB US 30	Diverge	B	17.5	C	26.6
	SB I-469 Mainline at US 30	Mainline	B	12.7	C	19.7
US 24 at I-469	EB US 24	Multilane	A	8.0	B	14.1
	EB US 24 to I-469 SB	Diverge	A	3.7	A	8.5
	EB US 24	Multilane	A	7.4	B	12.3
	EB US 24 Weave	Weave	A	7.9	B	11.8
	EB US 24	Multilane	A	6.4	A	10.4
	I-469 SB to EB US 24	Merge	A	9.6	B	13.3
	EB US 24	Multilane	B	13.2	C	18.7
	WB US 24	Multilane	B	16.2	B	15.1
	WB US 24 to NB I-469	Diverge	A	9.6	A	8.7
	WB US 24	Multilane	B	11.4	B	11.5
	NB I-469 to WB US 24	Merge	A	4.7	A	4.8
	WB US 24	Multilane	B	11.8	B	12.2

Alternative 4a

The original intent was to move forward into the second phase of the project with Alternative 4a as defined in the 2016 Engineer's Report. This alternative purposefully avoids the property northwest of the interchange as it was a farmstead that was eligible for the National Register of Historic Places. The alternative includes a non-conventional flyover ramp to serve the US 24 westbound to I-469 southbound movement.

The estimated construction cost for Alternative 4a includes the construction of two bridges for the ramp from US 24 westbound to I-469 southbound. There is additional information on the cost estimate on page 13. In addition to the high construction cost, the bridges are more assets for INDOT to maintain long-term. The estimated utility cost is $1 million, including relocating transmission lines to and from the substation west of the interchange. The traffic operations analysis results are in **Table 4**. Refer to **Attachment B** for the Alternative 4a layout, traffic forecasts, and capacity analysis results.

Table 4 – Alternative 4a 2045Capacity Analysis Results

Segment		Type	AM Peak		PM Peak	
			LOS	Density	LOS	Density
I-469 at US 24	SB I-469 Mainline at SR 37	Mainline	A	10.4	B	15.8
	SB I-469 On Ramp from SR 37	Merge	B	17.0	C	23.2
	SB I-469 Mainline - SR 37 to US 24	Mainline	B	14.2	C	20.2
	SB I-469 Off Ramp to EB/WB US 24	Diverge	B	16.1	C	23.0
	SB I-469 Mainline at US 24	Mainline	B	11.1	B	16.8
	SB I-469 On Ramp from EB/WB US 24	Merge	B	15.8	C	23.9
	SB I-469 Mainline - US 24 to US 30	Mainline	B	15.4	C	23.6
	SB I-469 Off Ramp to WB US 30	Diverge	B	17.5	C	26.6
	SB I-469 Mainline at US 30	Mainline	B	12.7	C	19.7
US 24 at I-469	EB US 24/Rose Ave	Mainline	A	6.8	A	10.5
	US 24 EB to I-469 SB	Diverge	A	2.3	A	5.2
	EB US 24 - I-469 SB to Weave	Mainline	A	6.4	A	8.4
	EB US 24 Weave	Weave	A	7.1	A	8.8
	EB US 24 - Weave to I-69 NB	Mainline	A	5.3	A	6.3
	I-469 NB to US 24	Merge	A	8.8	B	10.5
	EB US 24	Mainline	B	12.0	B	14.5
	WB US 24	Mainline	B	16.2	B	15.1
	US 24 WB to I-469 SB	Diverge	A	9.6	A	8.7
	WB US 24	Mainline	B	12.0	A	7.2
	US 24 WB to I-469 NB	Diverge	A	5.1	A	2.7
	WB US 24	Mainline	A	5.9	A	3.7
	NB I-469 to WB US 24	Merge	A	4.0	A	3.5
	WB US 24	Mainline	A	3.0	A	2.4

Full Cloverleaf

The new concept to evaluate is a full cloverleaf. The US 24 westbound to I-469 southbound movement is served by a loop ramp constructed in the northwest quadrant. No additional bridges are needed, which lowers the initial construction cost**.** This alternative has lower utility impacts and avoids the transmission lines affected by Alternative 4a.

Analysis was performed to determine the design of the full cloverleaf concept. Due to the proximity of the intersection Rose Avenue and Linden Road it was included in options. Considerations include on ramp design speeds, re-use of existing pavement, etc. There are several options on how the westbound lanes between the exit ramp from I-469 southbound and the Rose Avenue/Liden Road intersection.

Options 1-2 Lane Drop Between Ramps

These options drop the lane along US 24/Rose Avenue westbound between the loop ramp for US 24 westbound to I-469 southbound traffic and the ramp for I-469 southbound to Rose Avenue westbound traffic. The ramp from I-469 southbound to Rose Avenue is a "merge style" ramp that ends just before the intersection with Linden Avenue. In option 1, the existing turn lane lengths at the Rose Avenue and Linden Road intersections are maintained. They turn lane lengths are shortened in option 2.

Option 3-4 Lane Drop After Intersection

For options 3 and 4, the lane is dropped west of the intersection with Linden Road. In option 3, the existing pavement for ramps in the southwest quadrant is re-used. Option 4 includes reconstruction of both ramps.

Option 5 Reduced Speed on I-469 Southbound to US 24 Westbound Ramp

The purpose of option 5 is to reduce traffic speeds on the I-469 southbound exit ramp to Rose Avenue.

Option 6 - I-469 Southbound to US 24 Westbound Ramp Stop Control - Recommended

This option is recommended because the end of the I-469 southbound ramp to Rose Avenue is stop controlled. This non-system connection is stop controlled to help drivers transition to an urban/suburban roadway through context. This transition is important because there is an at-grade intersection 2,000 feet from the ramp terminus. Traffic analysis results show that the 95th percentile queue is approximately one vehicle in the design year and will not negatively impact mainline I-469 operations. The westbound to southbound loop ramp is designed for 35 mph, similar to the westbound to northbound loop ramp.

The full cloverleaf operates at LOS C or higher, which is comparable to Alternative 4a. The capacity analysis is summarized in **Table 5.** Refer to **Attachment C** for the recommended alternative layout, traffic forecasts, and full capacity analysis results, and alternative development exhibits.

Sensitivity analysis was performed on the southbound weave between US 24 westbound entrance to I-469 southbound and the I-469 southbound to exit US 24 eastbound. With average annual growth of 1% per year, it is anticipated to operate at LOS B during the AM and PM peak hours as shown in **Table 5**. Assuming a higher growth rate of 1.5% per year, the weave would operate at LOS B during the AM peak

and LOS C during the PM peak. Similar to the recent modification on I-469 northbound, additional pavement will be added to the cloverleaf to assist in facilitating the weave on I-469 southbound.

Table 5 – Full Cloverleaf 2045 Capacity Analysis Results

Segment		Type	AM Peak		PM Peak	
			LOS	Density	LOS	Density
I-469 at US 24	SB I-469 Mainline at SR 37	Mainline	A	10.4	B	15.8
	SB I-469 On Ramp from SR 37	Merge	B	17.0	C	23.2
	SB I-469 Mainline - SR 37 to US 24	Mainline	B	14.2	C	20.2
	SB I-469 Off Ramp to WB US 24	Diverge	B	16.1	C	23.0
	SB I-469 Mainline at US 24	Mainline	B	13.2	C	19.1
	SB I-469 Weave	Weave	B	15.0	B	22.4
	SB I-469 Mainline at US 24	Mainline	B	15.0	C	22.2
	SB I-469 On Ramp from EB US 24	Merge	B	16.0	C	24.3
	SB I-469 Mainline - US 24 to US 30	Mainline	B	15.4	C	23.6
	SB I-469 Off Ramp to WB US 30	Diverge	B	17.5	C	26.6
	SB I-469 Mainline at US 30	Mainline	B	12.7	C	19.7
US 24 at I-469	EB US 24/Rose Ave	Mainline	A	10.5	A	5.6
	US 24 EB to I-469 SB	Diverge	A	5.2	A	1.7
	EB US 24	Mainline	A	8.7	A	5.0
	EB US 24 Weave	Weave	A	8.0	A	6.0
	EB US 24	Mainline	A	10.4	A	6.4
	I-469 NB to US 24 EB	Merge	B	13.3	A	9.6
	EB US 24	Mainline	C	18.7	B	13.8
	WB US 24	Mainline	B	16.2	B	15.1
	US 24 WB to I-469 NB	Diverge	B	11.4	B	10.5
	WB US 24	Mainline	B	11.4	B	11.5
	WB US 24 Weave	Weave	A	8.3	B	10.5
	WB US 24	Mainline	A	6.0	B	4.4

Evaluation and Recommendation

Analysis shows that Alternative 4a and the full cloverleaf have adequate traffic operations and perform at LOS C or better during the AM and PM peak hours. Most of the improvements come from removal of the signalized intersection at US 24 and the I-469 southbound ramps. The alternatives are very comparable in terms of traffic operations.

Currently there are high instances of left turn crashes between vehicles on US 24 westbound turning left onto the I-469 southbound entrance ramp and vehicles traveling eastbound on Rose Avenue/US 24. Alternative 4a will eliminate left turn crashes by routing the westbound to southbound movement onto a flyover ramp. The potential for right-angle crashes will not be eliminated, as the southbound to westbound movement will continue to cross US 24 eastbound traffic. Alternative 4a introduces a ramp-to-ramp merge between vehicles from US 24 westbound and eastbound Rose Avenue approaching I-469 southbound. The full cloverleaf alternative removes the potential for left turn and right-angle crashes at

the ramp terminal intersection and introduces weaving between ramps on the freeway. As mentioned in the traffic analysis portion of the report, weaving density remains low and traffic operates at LOS C with a higher growth rate assumption. Since the weave will continue to operate at LOS C well into the future, a collector-distributor is not needed. To mitigate the potential for crashes due to weaving additional pavement will be added to the cloverleaf to assist in facilitating the weave on I-69 southbound. The loop ramp for traffic entering I-469 southbound was increased to accommodate a 35 mph design speed.

The impacts of Alternative 4a and the full cloverleaf design differ. When the Engineer's Report was completed in 2016, Neimeyer farm was a farmstead eligible for the National Register of Historic Places. However, the residence and outbuildings were removed the engineering work has been performed under the assumption that the farmstead is no longer eligible. Alternative 4a avoided the historic farmstead in the northwest quadrant and impacted to major utility lines to and from the AEP substation, as there was not a feasible solution to avoid the utilities. The full cloverleaf avoids major utility relocations but requires right of way from the northwest quadrant. The ecological impacts of the alternatives will be analyzed in the environmental documentation.

The full cloverleaf design reduces the cost by about 40%. Beyond the initial project costs, Alternative 4a will add 1.23 lane-miles of pavement and 2 structures for INDOT to maintain. The full cloverleaf adds 0.95 lane-miles of pavement and does not require additional structures.

The cloverleaf type interchange is recommended because it has comparable traffic operations, a significantly lower cost, and avoids major utility relocations. The evaluation is summarized in ***Table 6****.*

Table 6 - Alternative Evaluation Matrix

	Do Nothing/ No Build	Alternative 4a	Full Cloverleaf *Recommended*
Purpose & Need	*Does not provide free-flowing access between I-469 and US 24*	*Meets project Purpose & Need by constructing free-flowing access between I-469/US 24*	*Meets project Purpose & Need by constructing free-flowing access between I-469/US 24*
Traffic Operations	*High left turn movement at remaining signalized intersection*	*Performs at LOS C or better*	*Performs at LOS C or better*
Safety	*High instance of left turn and right-angle crashes at intersection*	*Eliminates left turn crashes by routing vehicles to a flyover ramp*	*Eliminates signalized intersection and removes possibility of left turn or right-angle crashes. Introduces weave on freeway mainline with preemptive crash mitigation strategies.*
Ecological Impacts*	*None*	*Farmland impacts in northeast quadrant*	*Woodland impacts in northwest quadrant*
Utility Impacts	*None*	*Major utility lines to/from AEP substation $1.0 M*	*Utilities to/from northwest quadrant $0.6 M*
Assets	*None*	*1.23 lane-miles of pavement 2 additional structures*	*0.95 lane-miles of pavement no additional structures*
Estimated Cost	*$ 0*	*$22.4 M*	*$13.1 M*

**detailed impacts to be performed as part of environmental document*

Lighting

Full interchange lighting will be provided. It is anticipated that high mast towers will not be cost effective and 40-foot light poles will be installed mimicking the southeast quadrant.

Cost Estimate

A cost estimate was developed using INDOT unit prices and adjusted for inflation. The costs are summarized in **Table 7**. The utility coordination relocation costs are estimates and could vary.

Table 7 – Preliminary Alternative Cost Estimate

	Alternative 4a	New Concept
Construction	$15,409,000	$10,085,090
Right of way	$47,000	$173,700
Utility Coordination	$1,000,000	$571,300
Subtotal	(2015 Dollars) $16,456,000	(2020 Dollars) $10,830,090
Subtotal (2023 Dollars)	$20,374,271	$11,735,600
Design Engineering	$2,000,000	$1,400,000
Total (2023 Dollars)	$22,374,271	$13,135,600

Right of Way Impact

Right of way was acquired for the construction of Phase I and additional acquisition will be needed for Phase II. While Alternative 4a and the new concept both require right of way, the new concept will have a larger impact. The estimated impact for Alternative 4a is 4.7 acres. For the new concept, 13.0 acres of right of way is needed.

Local Coordination and Meetings

Two stakeholder working group meetings and a public hearing will be held. The purpose of the first meeting is to discuss the project goals and range of alternatives considered. The second meeting will focus on the details of the recommended alternative. The public hearing will include a presentation on the project and information on how the recommended alternative was chosen.

Traffic Maintenance During Construction

Existing I-469 southbound traffic accesses US 24 and Rose Avenue through the existing signal at the ramp terminal. Construction of the I-469 southbound to westbound Rose Avenue and US 24 westbound to I-469 southbound ramps should be constructed in the first phase. This construction is offline and would minimize the disruption to the traffic at the existing signal. During the preliminary field check, it shall be determined if IHCP exceptions will be applied for tie-in of the new I-469 southbound ramps for first phase of construction. The second construction phase will modify I-469 southbound to eastbound

US 24 and eastbound Rose Avenue to I-469 southbound. Phasing may utilize existing shoulders to provide a safe working width which will warrant a geotechnical investigation. Signs and sign structures that conflict with construction and phasing will be covered or relocated as necessary.

Utility Coordination

Utility coordination has not been started at this time, but knowledge of utilities from Phase 1 and additional observations of above ground facilities will be impacted by the preferred alternative. It is anticipated that service lines to the Neimeyer farm will be impacted. Frontier Communications company will relocate their underground fiber optic and copper lines which are located on the north side of US 24. Overhead electric lines located along the south side of US 24 will also have to be relocated. Additionally, it is anticipated that the Allen County Sewer district has facilities within the footprint of the recommended alternative and may be required to lower in place.

Report Distribution List

A. Office of Environmental Services, Environmental Policy Leader;
B. District Design office manager;
C. Production Management Division, Office Manager;
D. Production Management Division, Design Team leader;
E. Production Management Division, Survey Team leader;
F. Production Management Division, Property Management Team leader;
G. Production Management Division, Office of Geotechnical Services engineer;
H. Federal Highway Administration, Indiana Division, field operations engineer;
I. Others as needed or requested, e.g., local officials, MPO, Office of Materials Management engineer, district traffic or construction engineers.

Table: ACSDT5Y2019.B03002

	Allen County, Indiana		Census Tract 110, Allen County, Indiana	
Label	**Estimate**	**Margin of Error**	**Estimate**	**Margin of Error**
Total:	372,575	*****	2,658	±243
Not Hispanic or Latino:	344,757	*****	2,604	±242
White alone	275,145	±175	2,604	±242
Black or African American alone	42,030	±1,015	0	±12
American Indian and Alaska Native alone	582	±169	0	±12
Asian alone	14,159	±501	0	±12
Native Hawaiian and Other Pacific Islander alone	137	±54	0	±12
Some other race alone	553	±171	0	±12
Two or more races:	12,151	±1,200	0	±12
Two races including Some other race	450	±321	0	±12
Two races excluding Some other race, and three or more races	11,701	±1,213	0	±12
Hispanic or Latino:	27,818	*****	54	±54
White alone	18,872	±891	40	±49
Black or African American alone	768	±300	0	±12
American Indian and Alaska Native alone	129	±107	14	±24
Asian alone	0	±28	0	±12
Native Hawaiian and Other Pacific Islander alone	21	±17	0	±12
Some other race alone	6,329	±801	0	±12
Two or more races:	1,699	±463	0	±12
Two races including Some other race	784	±242	0	±12

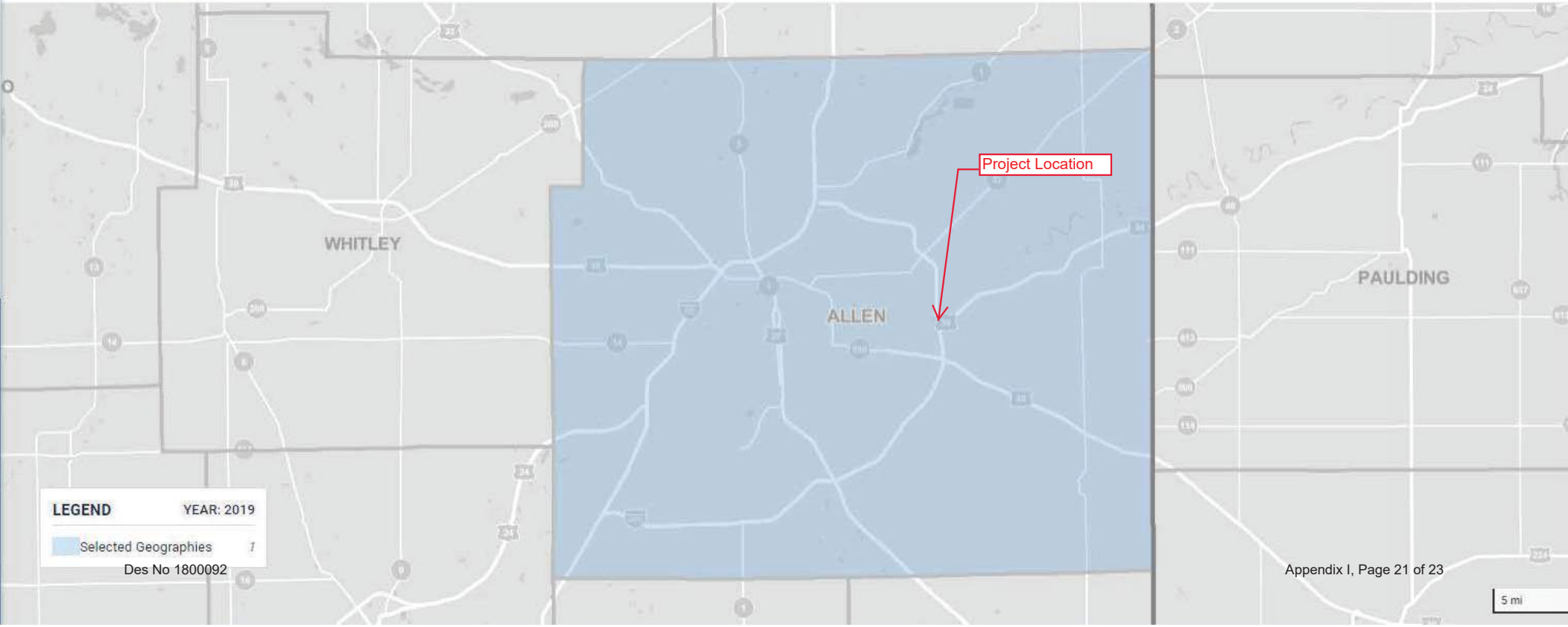
Table: ACSDT5Y2019.B17001

	Allen County, Indiana		Census Tract 110, Allen County, Indiana	
Label	**Estimate**	**Margin of Error**	**Estimate**	**Margin of Error**
Total:	366,401	±526	2,658	±243
Income in the past 12 months below poverty level:	48,580	±2,301	161	±129
Male:	21,150	±1,179	75	±67
Under 5 years	2,742	±352	20	±23
5 years	438	±143	0	±12
6 to 11 years	3,576	±379	3	±8
12 to 14 years	1,343	±279	11	±16
15 years	495	±156	0	±12
16 and 17 years	942	±218	0	±12
18 to 24 years	2,697	±460	0	±12
25 to 34 years	2,535	±340	0	±12
35 to 44 years	1,807	±259	19	±22
45 to 54 years	1,663	±257	4	±8
55 to 64 years	1,891	±255	13	±18
65 to 74 years	654	±152	5	±8
75 years and over	367	±124	0	±12
Female:	27,430	±1,406	86	±68
Under 5 years	2,915	±382	17	±20
5 years	580	±156	0	±12
6 to 11 years	2,856	±403	7	±12
12 to 14 years	1,619	±314	0	±12
15 years	394	±134	7	±13
16 and 17 years	677	±164	0	±12
18 to 24 years	3,916	±463	8	±13
25 to 34 years	4,310	±427	6	±10
35 to 44 years	2,980	±314	8	±13
45 to 54 years	2,597	±329	18	±21
55 to 64 years	2,309	±259	15	±15
65 to 74 years	1,198	±212	0	±12

COUNTY SELECTION MAP

Geographies: County **Year:** 2019

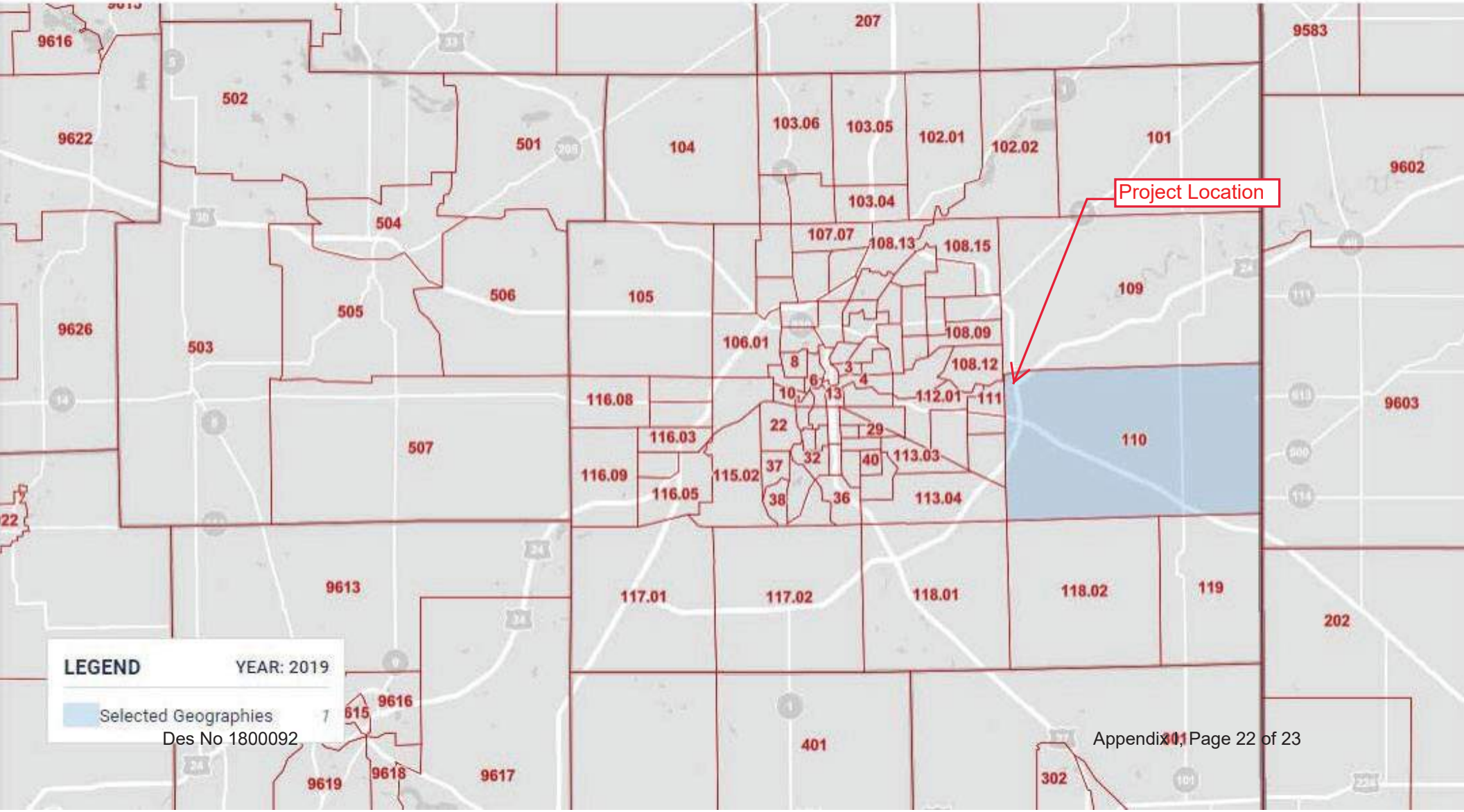
Select Clear Geos Basemap Table Notes



CENSUS TRACT SELECTION MAP

Geographies: Census Tract **Year:** 2019

Select Clear Geos Basemap Table Notes



Land and Water Conservation Fund (LWCF) County Property List for Indiana (Last Updated July 2020)

ProjectNumber	SubProjectCode	County	Property
1800030	1800030	Allen	Franke Park
1800032	1800032	Allen	Kreager Park (Maumee Park)
1800067	1800067	Allen	Fox Island Co. Park & Nature Preserve
1800097	1800097	Allen	Jury Memorial Park and Pool
1800105	1800105	Allen	Franke Park
1800153	1800153	Allen	Moser Park
1800188	1800188	Allen	Franke Park
1800201	1800201	Allen	Foster Park & Golf Course
1800315	1800315	Allen	Fox Island Co. Park & Nature Preserve
1800369	1800369A	Allen	Fox Island Co. Park & Nature Preserve
1800369	1800369N	Allen	Franke Park
1800369	1800369K	Allen	Moser Park
1800371	1800371	Allen	Jehl Park
1800392	1800392	Allen	Havenhurst Park
1800396	1800396	Allen	St. Marys River Greenway
1800408	1800408	Allen	Cooks Landing Roadside Park
1800419	1800419	Allen	St. Marys River Greenway
1800465	1800465	Allen	St. Marys River Greenway
1800469	1800469	Allen	St. Marys River Greenway
1800500	1800500	Allen	Grabill Community Park
1800526	1800526	Allen	Buckner Farm Park
1800527	1800527	Allen	Matea Park
1800570	1800570	Allen	Kreager Park
1800577	1800577	Allen	Riverside Gardens Park
1800602	1800602	Allen	Shoaff Park
1800609	1800609	Allen	Monroeville Community Park
1800614	1800614	Allen	Archbold Wilson Memorial Park
1800619	1800619	Allen	Payton County Park
1800621	1800621	Allen	Jury Park
1800634	1800634	Allen	Buckner Park

*Park names may have changed. If acquisition of publically owned land or impacts to publically owned land is anticipated, coordination with IDNR, Division of Outdoor Recreation, should occur.

APPENDIX J: NOISE ANALYSIS

From:	Bales, Ronald
To:	Christine Meador
Cc:	Perry, Damien N (INDOT); Miller, Brandon; Brandon Batt; Jonathan Oakley; Novak, Karen
Subject:	Des. No. 1800092, I469/US 24 Interchange Modification Phase II, Allen County, Noise Analysis
Date:	Wednesday, August 25, 2021 11:02:00 AM
Attachments:	image001.png image002.png image003.png image004.png

A traffic noise analysis report was completed by HNTB in August 2021 to evaluate potential traffic noise impacts for the I-469/US 24 Interchange Modification Project in Allen County, Indiana. Traffic noise was evaluated at all receptors within 500 feet of edge of pavement. Traffic noise levels were evaluated for the existing (2020) and projected (2045) traffic volumes for the build alternative.

This report evaluated potential noise impacts for the proposed improvements in compliance with the Federal Highway Administration's (FHWA) Procedures for Abatement of Highway Traffic Noise and Construction Noise as presented in the Code of Federal Regulations, Title 23 Part 772 (23 CFR 772) and the INDOT *Traffic Noise Analysis Procedure* (2017).

Existing modeled (2020) peak hour noise levels ranged from 60.8 to 68.4 dBA. Predicted design year (2045) noise levels would approach or exceed the Noise Abatement Criteria (NAC) at one residential receptor. A noise barrier was analyzed for the impacted residence. The noise barrier was feasible but unable to meet cost effectiveness per the reasonableness criterion established in the INDOT *Traffic Noise Analysis Procedure* (2017).

Based on the studies thus far accomplished, the State of Indiana has not identified any locations where noise abatement is likely. A reevaluation of the noise analysis will occur during final design. If during final design it has been determined that conditions have changed such that noise abatement is feasible and reasonable, the abatement measures might be provided. The final decision on the installation of any abatement measure(s) will be made upon the completion of the project's final design and the public involvement process.

This email will serve as INDOT's approval of this traffic noise analysis report.

Ron Bales
Environmental Policy Manager
Indiana Department of Transportation - Environmental Services Division
100 North Senate Ave., N758-ES
Indianapolis, IN 46204
Office: (317) 515-7908
Email: rbales@indot.in.gov

TRAFFIC NOISE TECHNICAL REPORT

I-469/US 24 Interchange Modification Phase II

Des. Number: 1800092

Allen County, Indiana

Prepared by:

HNTB

111 Monument Circle, Suite 1200
Indianapolis, IN 46204

August 24, 2021

EXECUTIVE SUMMARY

This report evaluates the potential noise impacts of the proposed improvements within the I-469/US 24 Interchange Modification Phase II (Des. 1800092) study area in conformance with corresponding Federal regulations and guidance, and the National Environmental Policy Act (NEPA). The noise analysis presents the existing and future acoustical environment along the project corridor.

Existing noise level measurements were conducted on October 22, 2020 at four representative sites in the project corridor. Sites were selected based on distribution throughout the project corridor. A 20-minute measurement was taken at each site. The measurements were made in accordance with FHWA and INDOT guidelines using a Larson Davis LXT integrating sound level analyzer meeting American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC) Type 1 specifications. Traffic counts were taken concurrently with the noise measurements.

TNM®2.5[1] (TNM), was used to model existing (2020) and design year (2045) worst hourly traffic noise levels within the I-469/US 24 Interchange Modification Phase II project study area. Seven (7) noise receivers representing 7 receptors were modeled in the Existing, No Build, and Build conditions. The study area includes receivers located within 500 feet from the roadway. Receivers consist of single-family residences and an outpatient medical facility.

Existing exterior peak hour (2020) noise levels range from 60.8 to 68.4 dBA L_{eq}(1h). Residential noise levels ranged from 60.8 to 68.4 dBA L_{eq}(1h).

The exterior noise levels under the Build Alternative would range from 60.4 to 69.1 dBA L_{eq}(1h). Noise levels at residential receivers would range from 60.4 to 69.1 dBA L_{eq}(1h). One noise sensitive receptor (R4) is anticipated to be impacted by approaching or exceeding the NAC as a result of the proposed project.

Predicted future noise levels change over existing noise levels range from 0.5 to 1.0 dBA. Therefore, none of the predicted future noise levels would substantially exceed existing noise levels.

One barrier was analyzed in the study area. A noise barrier 22-24 feet in height and approximately 1,046 feet in length would provide at least a 7 dBA reduction for one impacted receptor (R4); however, at an estimated cost of $719,430, this noise barrier would exceed the cost per benefited receiver threshold of $30,000 and would not be cost effective. Because abatement would be feasible but would not meet all the criteria for reasonableness (cost effectiveness), no abatement is proposed.

A re-evaluation of the noise analysis will occur during final design. If during final design it has been determined that conditions have changed such that noise abatement is feasible and reasonable, the abatement measures might be provided. The final decision on the installation of any abatement measure(s) will be made upon the completion of the project's final design and the public involvement processes.

[1] M.C. Lau, C.S.Y. Lee, J.L. Rochat, E.R. Boeker, and G.C. Fleming. FHWA Traffic Noise Model®

Users Guide (Version 2.5 Addendum). Federal Highway Administration, April 2004

Table of Contents

1.0 INTRODUCTION

The Indiana Department of Transportation (INDOT) is proposing modifications to the I-469/US 24 interchange of I-469 and US 24 in Allen County, Indiana. The project area is located at the west end of the existing interchange in New Haven, Indiana. More specifically, the project is located in Section 1, Township 30 North, Range 13 East, and Section 6, Township 30 North, Range 14 East in Adams and Jefferson Townships.

The existing interchange has a partial cloverleaf configuration with loop ramps in the northeast, southeast, and southwest quadrants and the ramp terminal is controlled by traffic signal. The west half of the interchange will be reconfigured to a full cloverleaf type. This includes removal of the existing signal west of I-469 and converting the ramps into a full cloverleaf type interchange. The US 24 westbound to I-469 southbound and I-469 southbound to Rose Avenue movement will be added. The existing ramps in the southwest quadrant will be reconstructed as needed.

The I-469/US 24 Interchange Modification Phase II project study area consists of residential (Category B), out-patient medical (Category E), and non-sensitive agricultural (Category F) land uses. The proposed project area is located within Allen County, Indiana.

The project location is shown on Figure 1.

"Highway Traffic Noise Policy and Guidance," was issued in July 2010 (revised January 2011) by the FHWA. Pursuant to 23 CFR 772, a Type I project is:

(1) The construction of a highway on new location; or,
(2) The physical alteration of an existing highway where there is either:
    (i) Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
    (ii) Substantial Vertical Alteration. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
(3) The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a (high occupancy vehicle (HOV) lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
(4) The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
(5) The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
(6) restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
(7) The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

The proposed I-469/US 24 Interchange Modification Phase II project will include the addition of interchange lanes or ramps and, therefore, it will be classified as a Type I project.

Figure 1. Project Location

2.0 NOISE ANALYSIS OVERVIEW

This report evaluates the potential noise impacts of the proposed improvements identified as part of the preferred alternative for the I-469/US 24 Interchange Modification Phase II project. The analysis documented within this report, including the determination of noise abatement measures and their potential locations, is in compliance with the Federal Highway Administration's (FHWA) Procedures for Abatement of Highway Traffic Noise and Construction Noise as presented in the Code of Federal Regulations, Title 23 Part 772 (23 CFR 772) and the INDOT's "Traffic Noise Analysis Procedure." The noise analysis presents the existing and future acoustical environment at various receptors located within the study area.

Basic Noise Information

Noise is defined as unwanted and disruptive sound. Airborne sound occurs by a rapid fluctuation of air pressure above and below atmospheric pressure. The ear is sensitive to this pressure variation and perceives it as sound. The intensity of these pressure variations causes the ear to discern different levels of loudness. These pressure differences are most commonly measured in decibels (dB).

The dB is the unit of measurement for sound. The decibel scale audible to humans spans approximately 140 dB. A level of zero dB corresponds to the lower limit of audibility, while 140 dB produces a sensation more akin to pain than sound. The dB scale is a logarithmic representation of the actual sound pressure variations. Therefore, a 26 percent change in the energy level only changes the sound level one-dB. The human ear would not detect this change except in an acoustical laboratory. A doubling of the energy level would result in a three-dB increase, which would be barely perceptible in the natural environment. A tripling in energy sound level would result in a clearly noticeable change of five-dB in the sound level. A change of ten times the energy level would result in a ten-dB change in the sound level. This would be perceived as a doubling (or halving) of the apparent loudness.

The human ear has a non-linear sensitivity to noise. To account for this in noise measurements, electronic weighting scales are used to define the relative loudness of different frequencies. The "A" weighting scale is widely used in environmental work because it closely resembles the non-linearity of human hearing. Therefore, the unit of measurement for an A-weighted noise level is dBA.

Traffic noise is not constant. It varies as each vehicle passes through a certain location. The time-varying characteristics of environmental noise are analyzed statistically to determine the duration and intensity of noise exposure. In an urban environment, noise is made up of two distinct parts. One is ambient or background noise. Wind noise and distant traffic noise make up the acoustical environment surrounding the project. These sounds are not readily recognized but combine to produce a non-irritating ambient sound level. This background sound level varies throughout the day, being lowest at night and highest during the day. The other component of urban noise is intermittent and louder than the background noise. Nearby transportation noise and local industrial noise are examples of this type of noise. It is for these reasons that environmental noise is analyzed statistically.

The statistical descriptor used for traffic noise is L_{eq}. L_{eq} is the constant, average sound level, which over a period of time contains the same amount of sound energy as the varying levels of the traffic noise. The L_{eq} correlates reasonably well with the effects of noise on people. It is also

easily measurable with integrating sound level meters. The time period for traffic noise is 1-hour. Therefore, the unit of measure for traffic noise is L_{eq}(1h) dBA.

Highway noise sources have been divided into five types of vehicles; automobiles, medium trucks, heavy trucks, buses and motorcycles. Each vehicle type is defined as follows[2]:

- Automobiles – all vehicles with two axles and four tires, includes passenger vehicles and light trucks, less than 10,000 pounds.
- Medium trucks – all vehicles having two axles and six tires, vehicle weight between 10,000 and 26,000 pounds.
- Heavy trucks – all vehicles having three or more axles, vehicle weight greater than 26,000 pounds.
- Buses – all vehicles designed to carry more than nine passengers.
- Motorcycles – all vehicles with two or three tires and an open-air driver/passenger compartment.

Noise levels produced by highway vehicles can be attributed to three major categories:

- Running gear and accessories (tires, drive train, fan and other auxiliary equipment)
- Engine (intake and exhaust noise, radiation from engine casing)
- Aerodynamic and body noise

Tire sound levels increase with vehicle speed but also depend upon road surface, vehicle weight, tread design and wear. Change in any of these can vary noise levels. At lower speeds, especially in trucks and buses, the dominant noise source is the engine and related accessories.

Noise Model and Analysis

FHWA's Procedures for Abatement of Highway Traffic Noise and Construction Noise is presented in the Code of Federal Regulations, Title 23 Part 772 (23 CFR 772). This regulation, plus the 2017 INDOT Noise Policy, sets forth the process for performing a traffic noise analysis. The process includes the following:

- Identify existing and proposed land uses in the study area;
- Determine existing noise levels:
    - through modeling, and
    - noise measurements with concurrent classification counts of vehicles passing the noise monitoring site;
- Validate predicted noise levels through comparison between measured and predicted levels;
- Model future design year traffic noise levels which will yield the worst hourly traffic noise on a regular basis (design hour noise levels);
- Identify locations that would be exposed to a noise impact based upon the Noise Abatement Criteria (NAC) as presented in Table 1;
- If traffic noise impacts are identified, evaluate noise abatement for the impacts.; and
- Modeling must be performed with TNM 2.5, which is the INDOT approved version per the 2017 INDOT Noise Policy

[2] G.S. Anderson, C.S.Y. Lee, G.G. Fleming and C. Menge, "FHWA Traffic Noise Model®, Version 1.0 User's Guide", Federal Highway Administration, January 1998, p.60.

INDOT's Noise Policy is the state's policy for implementing 23 CFR 772. The NAC, which is presented in 23 CFR 772, establishes the noise abatement criteria for various land uses. The noise level descriptor used is the equivalent sound level, L_{eq}, defined as the steady state sound level which, in a stated time period (usually one hour), contains the same sound energy as the actual time-varying sound.

Noise abatement measures will be considered when the predicted noise levels approach or exceed those values shown for the appropriate activity category in Table 1, or when the predicted traffic noise levels substantially exceed the existing noise levels. INDOT has defined the approach value to be within 1.0 dBA of the appropriate NAC[3] as shown in Table 1. INDOT has defined an increase in noise levels for which the future noise levels exceed the existing noise by 15.0 dBA as substantial.

TNM is FHWA's "computer program for highway traffic noise prediction and analysis."[4] The following parameters are used in this model to calculate an hourly L_{eq}(1h) at a specific receiver location:

- Distance between roadway and receiver;
- Relative elevations of roadway and receiver;
- Hourly traffic volume in light-duty (two axles, four tires), medium-duty (two axles, six tires), and heavy-duty (three or more axles) vehicles;
- Vehicle speed;
- Ground absorption; and
- Topographic features, including retaining walls and berms.

The I-469/US 24 Interchange Modification Phase II project study area consists of residential (NAC Category B), outpatient eye care (NAC Category E), and non-sensitive agricultural uses (NAC Category F). The criteria stated in Table 1 will help to determine if the proposed project will produce noise levels that approach or exceed the NAC throughout the corridor.

[3] "Traffic Noise Analysis Procedure", Indiana Department of Transportation, 2017, Page 3 of 10.
[4] "FHWA Traffic Noise Model®, Version 1.0 Users Guide", Report Documentation Page.

Table 1: Noise Abatement Criteria (NAC)
Hourly A-Weighted Sound Level-Decibels (dBA)

Activity Category	Activity Criteria L_{eq}(1h)	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Exterior	Residential
C	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	N/A	N/A	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	N/A	N/A	Undeveloped lands that are not permitted.

Source: Federal Highway Administration (23 CFR Part 772, Table 1).

3.0 NOISE MEASUREMENTS

Existing noise level measurements were conducted on October 22, 2020 at four representative sites in the project corridor. Sites were selected based on distribution throughout the project corridor. A 20-minute measurement was taken at each site. The measurements were made in accordance with FHWA and INDOT guidelines using a Larson Davis LXT integrating sound level analyzer meeting ANSI and IEC Type 1 specifications. Traffic classification counts were taken concurrently with the noise measurements. The data collected at the four sites is presented in Table 2. The noise measurement sites, FM1 through FM4 are shown on Figure 2. The field data sheets are presented in Appendix A and the sound level analyzer laboratory calibration certificates are presented in Appendix B of this report.

Table 2: Measured Existing Noise Levels
I-469/US 24 Interchange Modification Phase II Project
Allen County, Indiana

Field Site #	Site Description	Date	Start Time	Duration	Traffic[2]							Noise Level, dBA L_{eq}(1h)
					Roadway	A[a]	MT[b]	HT[c]	MC[d]	Buses[e]	Speed mph	
FM1	I-469 Interchange, NW Quadrant	10/22/2020	11:30 am	20:00	I-469 NB	175	17	72	1	0	70	68.3
					I-469 SB	135	23	62	0	0	70	
					US 24 EB	54	11	18	0	3	50	
					US 24 WB	47	12	55	0	0	50	
FM2	Rose Avenue, north of US 24	10/22/2020	2:26 pm	20:00	I-469 NB	194	21	81	1	1	70	65.0
					I-469 SB	189	20	44	0	0	70	
					US 24 EB	55	2	5	0	0	50	
					US 24 WB	51	2	2	1	0	50	
FM3	Power substation near Harper Road, south of US 24	10/22/2020	12:40 pm	20:00	I-469 NB	--	--	--	--	--	--	66.1
					I-469 SB	--	--	--	--	--	--	
					US 24 EB	88	10	75	0	0	50	
					US 24 WB	81	10	75	1	0	50	
FM4	Cul-de-sac, end of Edgerton Rd east of I-469	10/22/2020	1:32 pm	20:00	I-469 NB	177	7	152	3	0	70	75.0
					I-469 SB	172	9	149	2	0	70	
					US 24 EB	--	--	--	--	--	--	
					US 24 WB	--	--	--	--	--	--	

1) Vehicle counts classified as follows:
   a. Autos (A) defined as vehicles with 2-axles and 4-tires.
   b. Medium trucks (MT) defined as vehicles with 2-axles and 6-tires.
   c. Heavy trucks (HT) defined as vehicles with 3 or more axles.
   d. Motorcycle (MC) defined as vehicles with two or three-wheeled motorized vehicles.
   e. Buses defined as vehicles carrying more than 9 passengers.
2) Traffic counts are prorated from a 20 minute duration to a 60 minute duration for model validation (L_{eq}(1h))

Source: HNTB Corporation, October 2020

Measured vs. Modeled

TNM was used to validate the predicted noise levels through comparison with the measured and predicted noise levels. During the field measurements the skies were mostly clear, the temperatures ranged from 61 to 72 degrees F and the winds were from the south southwest at 1 to 5 mph. The traffic data from these four sites were used in the model. Results for the four field sites modeled were within 3 dBA of the measured levels. Since all of the field measurements were within 3 dBA of the predicted value, the noise model is considered valid.

Table 3: Comparison of Measured and Modeled Noise Levels
I-469/US 24 Interchange Modification Phase II Project
Allen County, Indiana

Field Site	Noise Level, dBA L_{eq}(1h)		Difference in Noise Level, dBA L_{eq}(1h) (Modeled Minus Measured)
	Measured	Modeled	
FM1	68.3	65.6	-2.7
FM2	65.0	62.6	-2.4
FM3	66.1	63.7	-2.4
FM4	75.0	74.5	-0.5

Source: HNTB Corporation, October 2020

4.0 NOISE MODELING

TNM 2.5 was used to model existing (2020) and design year (2045) worst hourly traffic noise levels within the I-469/US 24 Interchange Modification Phase II study area. Upon establishing these modeling limits, receivers were placed where accurate modeling results could be obtained. Consistent with current INDOT Noise Policy, seven (7) noise receivers representing the 7 receptors within 500 feet of the edge of the outside travel lane of the project were modeled in the Existing, No Build, and Build conditions. Because no impacts were identified at the edge of the 500-foot buffer, the study area was not extended to the maximum of 800 feet.

The results of the computer modeling are presented in Table 4. See Figure 2 for receiver locations.

Figure 2. Receivers

5.0 IMPACT ASSESSMENT

Existing exterior peak hour (2020) noise levels range from 60.8 to 68.4 dBA L_{eq}(1h). Residential noise levels ranged from 60.8 to 68.4 dBA L_{eq}(1h).

The exterior noise levels under the Build Alternative would range from 60.4 to 69.1 dBA L_{eq}(1h). Noise levels at residential receivers would range from 60.4 to 69.1 dBA L_{eq}(1h). One noise sensitive receptor (R4) is anticipated to be impacted by approaching or exceeding the Noise Abatement Criteria (NAC) as a result of the proposed project.

Predicted future noise levels change over existing noise levels range from 0.5 to 1.0 dBA. Therefore, none of the predicted future noise levels would substantially exceed existing noise levels.

Table 4: Design Hour Noise Levels, dBA L_{eq}(1h)
I-469/US 24 Interchange Modification Phase II
Allen County, Indiana

Receiver ID	Land Use	Activity Category*	Noise Abatement Criteria (NAC) L_{eq}(1h)**	Receptors	Existing L_{eq}(1h)	Future (No Build) L_{eq}(1h)	Future (Build) L_{eq}(1h)	Increase (Future Build - Existing)	Impact
R1	Single-Family Residential	B	67	1	59.9	60.8	60.4	0.5	No
R2	Single-Family Residential	B	67	1	61.1	62.2	61.6	0.5	No
R3	Outpatient Medical (Eye Care)	E	72	1	63.7	65.3	64.2	0.5	No
R4	Single-Family Residential	B	67	1	68.1	68.4	69.1	1.0	Yes
R5	Single-Family Residential	B	67	1	61.1	61.6	62.0	0.9	No
R6	Single-Family Residential	B	67	1	61.2	61.6	62.1	0.9	No
R7	Single-Family Residential	B	67	1	62.5	63.7	63.0	0.5	No

* The approach criteria for impact determination is within 1 dBA of the NAC

6.0 NOISE ABATEMENT MEASURES

A noise analysis identifies "where noise abatement is feasible and reasonable, and locations with impacts that have no feasible or reasonable noise abatement alternatives."[5]

Factors to be considered in determining noise abatement feasibility:

> "Acoustic Feasibility: INDOT requires that noise barriers achieve a 5dBA reduction at a majority (greater than 50%) of the impacted receptors. If a barrier cannot achieve this acoustic goal, abatement is considered to not be acoustically feasible.
>
> "Engineering Feasibility: INDOT requires noise abatement measures to be based on sound engineering practices and standards and requires that any measures be evaluated at the optimum location. For instances in which the roadway is located on fill and is at a higher location than nearby receptors, a barrier will be evaluated near the shoulder. For instances in which the roadway is located below the nearby receptors, a barrier will be evaluated near the edge of the right-of-way near the receptors. In addition, noise barriers require long, uninterrupted segments of barrier to be feasible. As such, if there are existing access points and/or driveways, it is not feasible to construct effective noise barriers for the roadway.
>
> "Engineering feasibility also takes into account topography, drainage, safety, barrier height, utilities, and access/maintenance needs (which may include right-of-way considerations). In situations where engineering considerations make noise barriers not feasible, the noise analysis will explicitly state the reasons (topography, drainage, safety, etc.). To be feasible, a mitigation measure must be acoustically feasible and must meet engineering requirements for constructability."

Factors to be considered in determining reasonableness:

> "To determine cost effectiveness, the estimated cost of constructing a noise barrier (including installation and additional necessary construction such as foundations or guardrails) will be divided by the number of benefited receptors (those who would receive a reduction of at least 5 dBA). A base material and design cost of $25,000 or less per benefited receiver is currently considered to be cost-effective. Development in which a majority (more than 50%) of the receptors was in place prior to the initial construction of the roadway in its current state (functional classification) will receive additional consideration for noise abatement. The cost-effectiveness criteria used for these cases will be 20% greater (currently $30,000 per benefited receptor)." The estimated construction costs of a noise barrier are based on a unit cost of $30.00 per square foot.
>
> "INDOT's goal for substantial noise reduction is to provide at least a 7.0 dBA reduction for benefited first row receptors in the design year. However, conflicts with adjacent lands may make it impossible to achieve substantial noise reduction at all impacted first row receptors. Therefore, the noise reduction design goal for Indiana is 7dBA for a majority (greater than 50%) of the impacted first row receptors."

[5] "Traffic Noise Analysis Procedure", Indiana Department of Transportation, 2017, Page 8 of 10.

"Consideration and Obtaining Views of Residents and Property Owners." "A survey will be mailed to each benefited resident. If the property owner is different from the current resident, both the resident and the property owners are surveyed. The concerns and opinions of the property owner and the unit occupants will be balanced with other considerations in determining whether a barrier is appropriate for a given location."

One barrier was analyzed in the study area. A noise barrier 22-24 feet in height and approximately 1,046 feet in length would provide at least a 7 dBA reduction for one impacted receptor (R4); however, at an estimated cost of $719,430, this noise barrier would exceed the cost per benefited receiver threshold of $30,000 and would not be cost effective. Because abatement would be feasible but would not meet all the criteria for reasonableness (cost effectiveness), no abatement is proposed.

7.0 UNDEVELOPED LANDS

The distances to the 66 dBA L_{eq}(1h) noise level contour, which vary along the study area, were developed to assist local planning authorities with jurisdiction over the remaining undeveloped lands within the study area to prevent development of incompatible land use. Large undeveloped lands without permitted/anticipated future development along the project corridor were modeled at 50-feet (from the nearest edge of pavement), 100 feet, and then 100-foot intervals. Four study area groups, Study Areas A through D, were identified and are considered representative of the project corridor. Study Areas A through D were evaluated in the southeast, northeast, northwest, and southwest quadrants of the I-469/US 24 interchange, respectively. Highlighted cells indicate an approximate distance from the roadway noise source where noise levels are predicted to be lower than the residential NAC. The data in Table 5 below provides information to aid local officials with jurisdiction over properties in proximity to the project.

Table 5: Study Areas
I-469/US 24 Interchange Modification Phase II
Allen County, Indiana

Study Area	50 feet (dBA L_{eq})	100 feet (dBA L_{eq})	200 feet (dBAL_{eq})	300 feet (dBA L_{eq})	400 feet (dBA L_{eq})	500 feet (dBA L_{eq})
A	70.1	66.6	63.3	61.7	60.6	59.8
B	69.6	66.9	65.6	64.1	62.9	61.7
C	73.7	75.6	71.2	68.1	65.6	63.4
D	76.9	74.0	72.4	68.6	66.1	63.9

As Shown in Table 5, the estimated distances to the 66 dB(A) Leq(1h) noise level contour are between 100 and 450 feet from the proposed edge of pavement. It is recommended that any future development proposed around the project be modeled with accurate survey data to avoid creating incompatible land uses adjacent to the project.

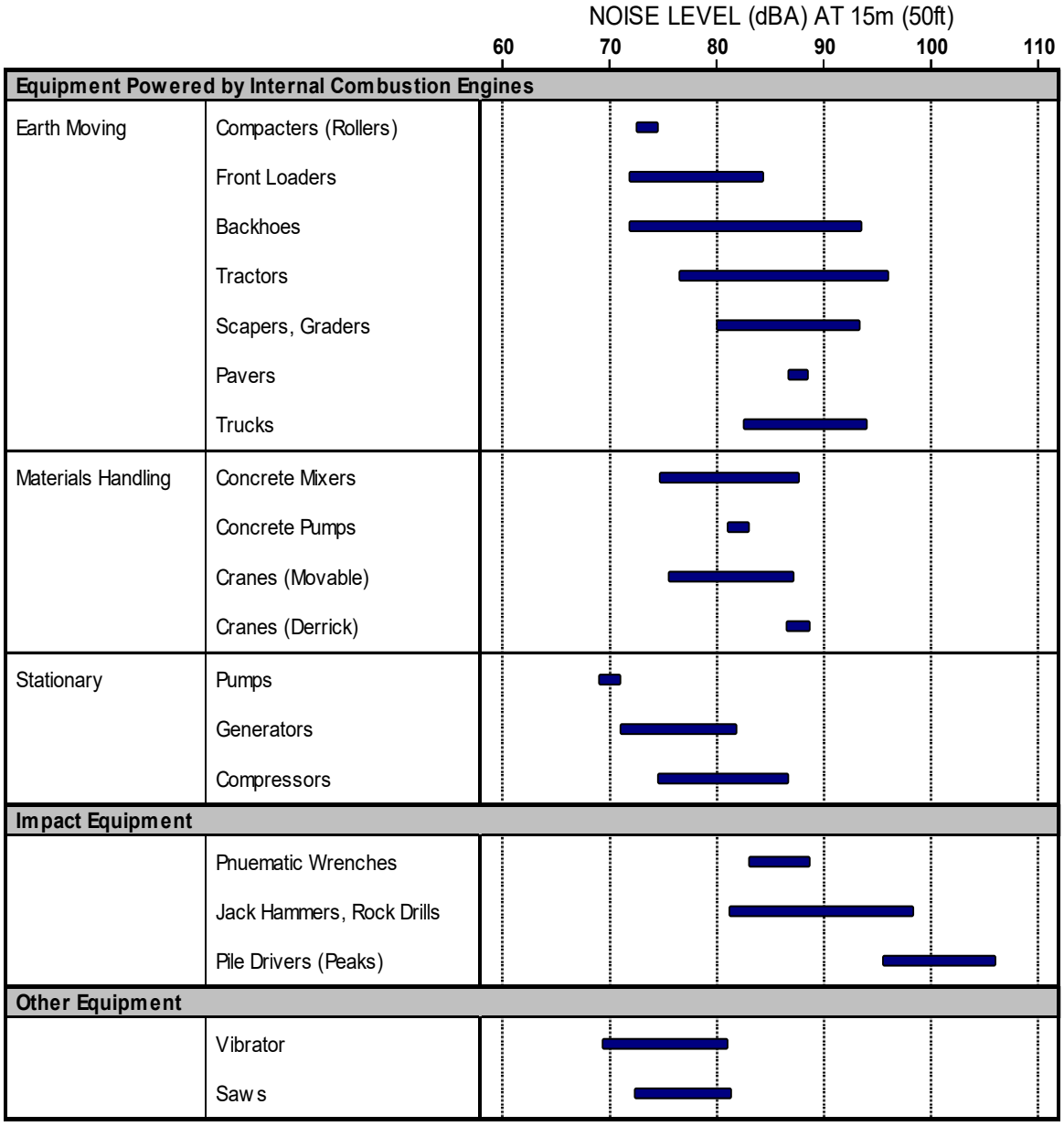
At the conclusion of this noise report, the study will be provided to the respective planning departments in Allen County, as well as the city of New Haven.

8.0 CONSTRUCTION NOISE

In addition to noise from traffic, construction activities themselves can produce increased noise of a temporary nature. INDOT will be sensitive to local needs and may make adjustments to work practices in order to reduce inconvenience to the public.

The major construction elements of this project are expected to be demolition, hauling, grading, paving, and bridge construction. Construction of the proposed improvements will result in a temporary increase in the ambient noise level within the study area. General construction noise impacts for passerby and those individuals living or working near the project can be expected particularly from demolition, earth moving, pile driving, and paving operations. Equipment associated with construction generally includes backhoes, graders, pavers, concrete trucks, compressors, and other miscellaneous heavy equipment. Figure 3 lists some typical peak operating noise levels at a distance of 15 m (50 feet), grouping construction equipment according to mobility and operating characteristics. Considering the relatively short-term nature of construction noise, impacts are not expected to be substantial. The transmission loss characteristics of nearby structures are believed to be sufficient to moderate the effects of intrusive construction noise.

Figure 3: Construction Equipment Sound Levels



SOURCE: U.S. Report to the President and Congress on Noise, February, 1972.

9.0 CONCLUSION

Existing exterior peak hour (2020) noise levels range from 60.8 to 68.4 dBA L_{eq}(1h). Residential noise levels ranged from 60.8 to 68.4 dBA L_{eq}(1h).

The exterior noise levels under the Build Alternative would range from 60.4 to 69.1 dBA L_{eq}(1h). Noise levels at residential receivers would range from 60.4 to 69.1 dBA L_{eq}(1h). One noise sensitive receptor (R4) is anticipated to be impacted by approaching or exceeding the NAC as a result of the proposed project.

Predicted future noise levels change over existing noise levels range from 0.5 to 1.0 dBA. Therefore, none of the predicted future noise levels would substantially exceed existing noise levels.

One barrier was analyzed in the study area. A noise barrier 22-24 feet in height and approximately 1,046 feet in length would provide at least a 7 dBA reduction for one impacted receptor (R4); however, at an estimated cost of $719,430, this noise barrier would exceed the cost per benefit of $30,000 and would not be cost effective. Because abatement would be feasible but would not meet all the criteria for reasonableness (cost effectiveness), no abatement is proposed.

A re-evaluation of the noise analysis will occur during final design. If during final design it has been determined that conditions have changed such that noise abatement is feasible and reasonable, the abatement measures might be provided. The final decision on the installation of any abatement measure(s) will be made upon the completion of the project's final design and the public involvement processes.

10.0 REFERENCES

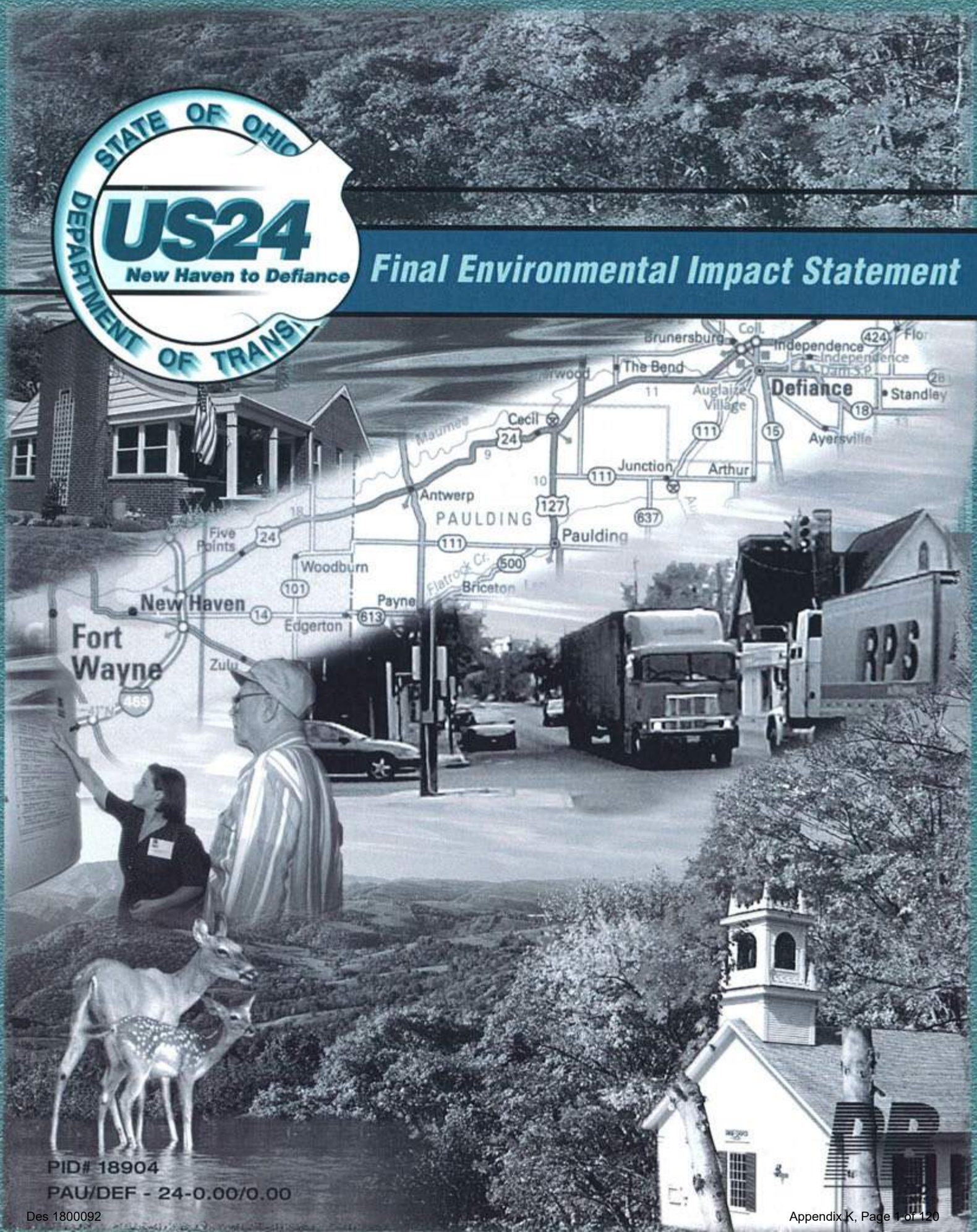
Anderson, G. S., C.S.Y. Lee, G.G. Fleming and C. Menge, "FHWA Traffic Noise Model®, Version 1.0 User's Guide", Federal Highway Administration, January 1998, p. 60.

"Engineer's Report, I-469/US 24 Interchange Modification Phase II", HNTB, December 4, 2020

Lau, Michael C., Cynthia S. Y. Lee, Gregg G. Judith L. Rochat, Eric R. Boeker, and Gregg C. Fleming. FHWA Traffic Noise Model® Users Guide (Version 2.5 Addendum). Federal Highway Administration, April 2004.

"Traffic Noise Analysis Procedure", Indiana Department of Transportation's, 2017. http://www.in.gov/indot/files/2017%20INDOT%20Noise%20Policy.pdf

APPENDIX K: APPROVED FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)


STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
US24
New Haven to Defiance
Final Environmental Impact Statement
Brunersburg
Independence
Defiance
Standley
Ayersville
The Bend
Auglaize Village
Cecil
Junction
Arthur
Antwerp
PAULDING
Paulding
Five Points
Woodburn
Briceton
Payne
Edgerton
New Haven
Fort Wayne
Zulu
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PID# 18904
PAU/DEF - 24-0.00/0.00

FHWA-OH-EIS-03-03-F

OCTOBER 2005

US 24
Interstate 469 in New Haven, Indiana to Ohio Route 15 in Defiance, Ohio

Final Environmental Impact Statement

Submitted Pursuant to 42 U.S.C. 4332 (2)(c), (and where applicable, 49 U.S.C. 303) by the

U.S. Department of Transportation – Federal Highway Administration
Ohio Department of Transportation and Indiana Department of Transportation

Cooperating Agencies:
U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Ohio Department of Natural Resources, and Ohio Environmental Protection Agency

10/26/05
Date of Approval

for Ohio Department of Transportation

10/26/05
Date of Approval

for Indiana Department of Transportation

10/26/05
Date of Approval

for Federal Highway Administration

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This project consists of a proposal to upgrade existing US Route 24 to a four-lane limited access expressway between New Haven, Indiana and Defiance, Ohio. Twenty-eight alternatives were evaluated including the No-Build, an improved two-lane facility on existing location, an improved four-lane facility on existing location, and 25 alternatives on new alignment.

The Preferred Alternative minimizes impacts to the human and natural environments while meeting the project's purpose and need.

The Draft Environmental Impact Statement (DEIS) for the US 24 New Haven to Defiance project was approved by the Federal Highway Administration on August 19, 2003. Public hearings for the project and the DEIS were held on October 28, 29, and 30, 2003, with the official comment period ending on November 21, 2003.

Comments on this FEIS are due by **12/5/05** and should be sent to:

Mr. Kirk Slusher, P.E.,
Project Manager
Ohio Department of Transportation
1885 North McCullough Street
Lima, Ohio 45802

This document complies with § 5164(b) of the 1988 Omnibus Trade & competitiveness Act (Public Law 100-118)

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1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

United States Route 24 (US 24) is a major east-west transportation corridor through the Midwestern United States, linking Michigan and Colorado. The eastern portion of the corridor traverses northern Indiana and northwestern Ohio, and provides the most direct access between Fort Wayne, Indiana and Toledo, Ohio. US 24 also provides direct connections to I-69/I-469, I-80/I-90 and I-75, enabling the motoring public to reach destinations northward into the Great Lakes region and Canada as well as other large cities on the eastern seaboard. As a result of the direct linkage between the Fort Wayne, Indiana region and the Port of Toledo, US 24 has been nicknamed "Fort to Port" by local users and advocacy groups, such as the Fort to Port Organization.

The Ohio Department of Transportation (ODOT) and the Indiana Department of Transportation (INDOT), in cooperation with the Federal Highway Administration (FHWA) have undertaken a study of improvements to US 24 in northeast Indiana and northwest Ohio. The focus of this study is the approximately 64.5 kilometer (40-mile) segment of US 24 between New Haven, Indiana and Defiance, Ohio.

1.2 SUMMARY OF DRAFT ENVIRONMENTAL IMPACT STATEMENT

In accordance with 23 CFR 771.123 (Federal Transit Authority [FTA] and FHWA Environmental Impact Procedures), a "Draft Environmental Impact Statement (DEIS) shall be prepared when the Administration determines that the action is likely to cause significant impacts on the environment." On August 19, 2003, the FHWA approved the DEIS for the US 24 New Haven to Defiance project. A compact disc of the DEIS is included in this Final Environmental Impact Statement (FEIS) as an appendix. Following is a summary of each section of that DEIS. For more detail on the individual sections, see the DEIS.

The changes in the project since approval of the DEIS are presented in this FEIS. Specifically, Section 5.1 discusses changes to the Preferred Alternative alignment since the preliminary engineering development, which was presented in the DEIS. Section 5.2 discusses changes to calculated impacts because of either narrowing or expanding the potential area of impact presented in the DEIS. Section 5.2 also discusses any updated information that has been collected on threatened and endangered species in the project area since the approval of the DEIS.

1.2.1 PURPOSE AND NEED

The following is a summary of the project's Purpose and Need, as presented in the DEIS.

As a segment of the major east-west transportation corridor between Colorado and Michigan, US 24 between Fort Wayne, Indiana and Defiance, Ohio has experienced substantial traffic growth over the past several years, at a rate higher than normal for northwest Ohio and eastern Indiana. The major factors contributing to this growth include increased population, developing industry, and a greater reliance on intermodal transportation connections with the regional and national rail systems and the water-based shipping at the Port of Toledo.

US 24 is identified as a macro corridor in the *Access Ohio* plan. Macro corridors, are defined by ODOT as corridors of statewide importance upon which rests the economic vitality of Ohio. The US 24 corridor's importance was also nationally recognized when US 24 was identified as one of the 21 High Priority Corridors as part of the National Highway System (NHS) in the *Intermodal Surface Transportation Efficiency Act of 1991*.

The 64.5-kilometer (40-mile) segment of US 24 between New Haven, Indiana and Defiance, Ohio is a two-lane rural, winding arterial roadway as it follows the Maumee River. Frequent driveway cuts or access points for local residences, businesses, and other local roadway crossings are common. Sporadic development is directly adjacent to the roadway. The roadway has narrow, often discontinuous shoulders and numerous no-passing zones. The frequency of no-passing zones severely limits the flow of traffic and the capacity of the roadway.

Approximately 45 percent of the overall traffic on US 24 is trucks, and along some roadway segments, truck traffic is more than half of the total traffic. This high volume of trucks often results in platoons of trucks, three or more, making passing difficult and dangerous.

The facility does not meet current design criteria for travel lane widths, provision of shoulders, roadway curvature, sight distance, and travel speed. These characteristics contribute to increasing travel time delays, and a declining level of service along the roadway. The level of service (LOS) provided by US 24 in the year 2008 under the No Build scenario is a LOS E. This indicates the two-lane roadway does not have adequate capacity to meet anticipated future travel demand. If improvements are not made to US 24, the problems currently experienced on US 24 will only worsen if the operational characteristics of the roadway are not improved

The accident data for US 24 between New Haven and Defiance do not identify any intersections or roadway segments that qualify as high accident locations according to ODOT criteria. However, the severity of the accidents is an issue of concern. In examining specific statistics of accidents over a three year period, 60 percent of the total accidents involved heavy trucks and approximately 30 percent resulted in injuries or fatalities, including a collision between a car and a public bus that killed three people and injured nine. Many more accidents have been avoided in the recent past due to a concentrated effort by various policing agencies to enforcement of posted speed limits, combined with local users exercising extra caution. Additionally, school systems that previously included US 24 as part of their bus routing are searching for different alternatives to avoid heavy traffic volumes and numerous near collisions.

In summary, US 24 is a two-lane road that suffers from congestion and safety-related issues as a result of inadequate capacity to accommodate current traffic demand. The operational deficiencies of US 24 are due to a combination of the following factors:

- Its design features include unlimited access, minimal shoulder widths, and a curvilinear alignment requiring multiple speed reductions and limited passing opportunities.
- Its location attracts high speed through traffic by providing direct access between Detroit, Ontario, and Indianapolis, while the same time serving as the primary local access through the center of many small towns.
- The number and diversity of its users ranging from school buses to a vehicle mix with about 45 percent heavy trucks.

For US 24 to continue to support the growing transportation demands being placed upon it, the roadway needs improvements that will address the goals of the purpose and need. ODOT and INDOT, in cooperation with FHWA, are proposing to improve the operational characteristics of US 24 for both local and through traffic in the Fort to Port area. The purpose of this major transportation project is to:

- improve traffic flow and the level of service,
- reduce travel times between project termini,

- improve roadway safety,
- enhance the regional transportation network, and
- accommodate future economic growth in the region to enhance the competitiveness of local and regional businesses.

The US 24 New Haven to Defiance study area is approximately 1262.1 square kilometers (500 square miles) in size. Beginning 0.8 kilometers (0.5 miles) west of the I-469 bypass in New Haven, Indiana, the study area extends northeast to the four-lane section of US 24 at its intersection of Ohio State Route (SR) 15, just west of Defiance.

1.2.2 ALTERNATIVES

A broad range of modal alternatives were considered for the US 24 New Haven to Defiance project. These alternatives include:

- No Build,
- Transportation System Management (TSM),
- Transportation Demand Management (TDM),
- transit,
- rail freight, and
- highway.

The modal alternatives were evaluated on their ability to address the current and future transportation needs and problems identified in the US 24 New Haven to Defiance study area.

The No Build alternative consists of only minor, short-term safety and maintenance improvements to US 24 that maintain its continuing operation. The No Build alternative does not meet the transportation needs of the study area, but is retained as the baseline condition to measure the potential impacts of the other alternatives.

TSM and TDM alternatives are made up of relatively low cost, small scale improvements that are designed to address transportation problems in an area by using the existing roadways more efficiently. TSM improvements are effective in addressing localized traffic problems, such as increasing capacity at specific congested intersections. However, the benefits of such improvements over the length of a long corridor can be sporadic. TDM aims to reduce travel demand, by shifting trips away from travel by single occupant vehicles (SOV) to transit or car pools, or shifting trips out of the peak travel time period. The TSM and TDM strategies by themselves would not reduce travel demand to the degree required to offset the need for additional capacity nor would they adequately address the design or safety problems associated with US 24. Additionally, the TSM or TDM measures would not adequately address the predicted future growth in traffic and the declining level of service (LOS). TDM measures are not cost-effective in a rural setting and are not expected to have a large enough impact to have positive measurable effects on the operational characteristics of US 24. Additionally, TDM measures have limited applicability to truck traffic and would not impact the anticipated growth in truck traffic in the US 24 corridor.

The transit alternative would involve the establishment of new fixed-route transit service between Defiance and Fort Wayne that could accommodate commuters. This alternative is neither feasible nor cost-effective for a rural area with low population, housing, and employment densities. In addition, the transit alternative does not address the design deficiencies associated with US 24 and does not address truck traffic or the movement of freight through the study area.

The rail freight alternative would seek to improve and or increase the capacity and competitiveness of the existing rail freight lines in the study area while decreasing the amount of truck traffic on US 24. This would entail shifting goods that are currently transported in and through the study area from trucks to rail, thus reducing truck traffic on US 24. The freight rail alternative requires the construction of a direct rail line between Fort Wayne and Toledo. Though this alternative could alleviate some of the truck traffic on US 24, it would not address the access, design, and safety issues associated with the highway.

Highway alternatives include various strategies to improve existing US 24 that are more substantial than the TSM and TDM alternatives. Proposed highway improvements include:

- improving the two-lane facility by adding turn lanes, widening shoulders, and improving intersections,
- upgrading the two-lane facility to a four-lane, limited access expressway, including a bypass around Antwerp, and
- constructing a four-lane, limited access expressway on new alignment.

The highway alternatives provide the highest degree of flexibility in meeting all the transportation needs identified in the study area. The highway alternatives would increase capacity, improve the LOS, and allow higher volumes of traffic to more safely use the facility. The provision of modern transportation infrastructure would enhance the economic competitiveness of the area and would improve the marketability of key economic development sites. Based on the results of the purpose and need study and modal analysis, only the highway alternatives adequately address the transportation problems and needs associated with US 24. Therefore, only the highway alternatives were carried forward for further study in the in-depth analysis presented in the DEIS.

Within the study area, 14 preliminary corridors 609.6 meters (2,000 feet) in width were initially developed for the US 24 New Haven to Defiance project between the I-469/US 24 interchange in New Haven and the Ohio SR 15/US 24 intersection west of Defiance. The preliminary corridors were evaluated individually with regards to environmental features, public comments, agency comments, and consistency with local and regional planning goals and objectives. Five of the 14 preliminary corridors were selected for further research based on a process of elimination. These were Corridors 4, 7, 10, 13 and existing US 24. Corridor widths used for the alternative development studies varied from 152.4 meters (500 feet) for the existing US 24 Corridor and 609.6 to 1219.5 meters (2,000 to 4,000 feet) for Corridors 4, 7, 10, and 13.

Within Corridors 4, 7, 10 and 13, feasible highway alternatives approximately 91.5 meters (300 feet) in width were developed. A total of 26 feasible highway alternatives were studied for the project. These included 24 expressways on new alignment alternatives (Alternatives A through X), the improved two-lane alternative on existing US 24 (Alternative Y), and the four-lane expressway along existing US 24 (Alternative Z). Feasible Alternatives A through X were comprised of combinations of 20 segments that were developed within the corridors, resulting in 24 highway alternatives on new alignment. The Feasible Alternatives in Indiana were not designed as freeways, but as expressways.

In both Indiana and Ohio, Alternatives A through X (expressway on new alignment alternatives) are designed as four-lane, divided, limited access facilities. The expressways provide for two lanes of travel in each direction separated by a 25.0 meter (82 foot) wide grass median in Indiana and 18.30 meter (60 foot) wide grass median in Ohio. Access to the Feasible Alternatives is limited to one interchange at SR 424 and

several at-grade intersections located at state routes, frequently traveled roads, and roads that provide access across the Maumee River. The design of Alternatives A through X includes an expanded right-of-way footprint between I-469 and the Indiana/ Ohio State Line to allow for freeway development in Indiana. The design speed used for determining the horizontal and vertical alignments is 112.9 kilometers per hour (70 miles per hour).

Within the existing US 24 Corridor, a two-lane alternative (Alternative Y) and a four-lane alternative (Alternative Z) were developed. The design of Alternative Y (the two-lane alternative) improves the existing road by adding shoulders, improving intersections, and adding turning lanes. This highway alternative would have unlimited access along the route. The design speed used for determining the horizontal and vertical alignments is 88.7 kilometers per hour (55 miles per hour).

Alternative Z is a four-lane divided, limited access expressway that follows along the existing route of US 24. Existing US 24 is incorporated into this alternative where possible and also used as a frontage road in some areas. This highway provides for two lanes of travel in each direction divided by a 25.0-meter (82-foot) wide grass median in Indiana and an 18.3-meter (60-foot) wide grass median in Ohio and median barriers. Access to this alternative is provided by at-grade intersections. A design speed of 112.9 kilometers per hour (70 miles per hour) was used for determining the horizontal and vertical alignments.

The 26 Feasible Alternatives were analyzed in a three-step screening process. First, the alternatives were analyzed to determine if they met the established purpose and need of the project. In the second step of the screening analysis, the potential environmental impacts were assessed for each alternative. The third step of analysis involved a more detailed examination of the environmental impacts and the consideration of other information such as public and agency comments, constructability, and right-of-way issues. Through this three-step analysis, Alternative C was identified as the Preferred Alternative.

The identification of Alternative C as the Preferred Alternative was the focus of public meetings held on May 1, 2, and 3, 2001. Citizens and local public officials in the Defiance area requested that Alternative D be reconsidered as the Preferred Alternative. Alternative D follows the same route as Alternative C from the intersection with I-469 in Indiana to Defiance County, Ohio. In Defiance County, Alternative C follows Segments 14 and 19, while Alternative D follows Segments 15 and 18.

Alternative C was also presented to the US Army Corps of Engineers (USACE) and OEPA during a field review on May 10, 2001. The focus of this meeting was the Category 3 wetlands within Alternative Segments 14, 15, 18, and 19. During the agency field review, the OEPA recommended that Alternative D be selected as the Preferred Alternative to eliminate impacts to Wetland S-4, which is located in Segment 19 of Alternative C. S-4 is a high-quality, forested wetland located in the floodplain of a tributary to the Maumee River. In correspondence dated May 24, 2001, the OEPA suggested that construction of an embankment through Wetland R-1 located within Alternative D (Segment 18) would result in less overall wetland impacts than culverting Wetland S-4 in Alternative C.

As a result of public and agency input, it was determined that detailed environmental studies (i.e. archaeology surveys, wetlands delineations, and threatened and endangered species surveys) would be conducted on both Alternatives C and D. Following completion of wetlands delineations, additional engineering designs were developed with the intention of minimizing impacts on wetlands. In Paulding County, the Preferred Alternative was

shifted to the north between US 127 and C-224, which reduced impacts to Wetland NO-15 from 1.8 hectares (4.5 acres) to 1.0 hectares (2.5 acres), a 64 percent reduction. Within Segment 18 in Defiance County, design refinements reduced impacts to R-1, a Category 3 forested wetland. These engineering refinements resulted in the development of a 27th alternative – Alternative D-1, which minimizes impacts to Category 3 wetlands.

On February 14, 2002 a meeting was held with the USACE and OEPA to discuss wetland impacts resulting from Alternatives C and D-1. In comparison, overall wetland impacts associated with Alternative D-1 are greater than Alternative C. But Alternative D-1 will impact a smaller area of Category 3 wetlands than Alternative C. In addition, the land adjacent to Wetland R-1 could provide for several mitigation options such as restoration, preservation, and creation. The area adjacent to Wetland S-4 is limited for wetland mitigation options.

Following the February 14, 2002 meeting, the USACE and the OEPA provided written comments regarding the wetland impacts and mitigation options associated with Alternatives C and D. The USACE commented that Alternative D is the least damaging practical alternative and recommended the minimization alignment (Alternative D-1) as the Preferred Alternative. The USACE also stated that preservation of Wetlands RC-1 and R-1 combined with wetland creation would be acceptable for mitigation.

Based on public comments, the May 10, 2001 agency field review, the findings of the wetland delineation surveys, the February 14, 2002 agency meeting, and concurrence by the USACE and OEPA, Alternative D-1 was identified as the Preferred Alternative for the US 24 New Haven to Defiance project in May 2002.

Since the identification of Alternative D-1 as the Preferred Alternative, investigation into several design refinements were undertaken, which focused on:

- accommodation of the transportation needs of the Amish population residing in Allen County,
- identification of potential design changes for local road crossings to accommodate the transportation needs of farm operators affected by the Preferred Alternative,
- addition of service roads to provide access to properties landlocked by the Preferred Alternative,
- completion of detailed traffic analysis of operational characteristics at intersections and interchanges with crossroads,
- evaluation of options for median design,
- development of design refinements to minimize impacts on affected wetlands,
- development of interchange designs for SR 49 and US 127 crossings,
- evaluation of the potential use of the Maumee & Western Railroad right-of-way,
- inclusion of the Antwerp Bypass in the Preferred Alternative, and
- revisions to the design of the proposed interchange at SR 424 to avoid the displacement of residential housing in the Bohlman Trailer Park.

These investigations were undertaken in response to specific comments made by the public and/or resource agencies on the Preferred Alternative. The main objective of the investigations was to develop design refinements and mitigation strategies that result in the avoidance or minimization of impacts to sensitive resources.

The following design refinements were not analyzed in the DEIS:

- development of improvements to the I-469/US 24 and SR 15/18/US 24 interchanges,

- development of a connector road linking West High Street and SR 15/18,
- development of local roadway improvements, and
- development of a wetland mitigation plan.

The Preferred Alternative for the US 24 New Haven to Defiance project is Alternative D-1 Modified, resulting from design refinements, agency comments, public comments, and mitigation measures. Elements of Alternative D-1 Modified include Stage One and Two engineering design, proposed service roads, improvements to the I-469 and SR 15/18 interchanges, a connector road between West High Street and SR 15/18, improvements to local roads, and a wetland mitigation area. Alternative D-1 Modified is presented in Figure 1. Because of the elements of the Preferred Alternative, the impacts and costs associated with Alternative D-1 Modified, deviate from those of Alternative D-1. These deviations would be reflected in any of the Feasible Alternatives recommended as the Preferred Alternative and developed in accordance with INDOT's and ODOT's Project Development Processes. Features of Alternative D-1 Modified are summarized below:

- Preferred Alternative D-1 Modified will be constructed as a freeway between I-469 and the Indiana/Ohio State Line and as an expressway between the state line and SR 15/18 in Defiance. In Indiana, interchanges will be constructed at Ryan/Bruick Road, Webster Road and SR 101. In Ohio, interchanges will be constructed at SR 49, US 127, and SR 424, with at-grade intersections constructed at other key crossroads.
- The estimated construction cost for Preferred Alternative D-1 Modified is $280.7 million.
- Preferred Alternative D-1 Modified has 35 total stream crossings, impacting 8056 meters (26,425) feet of streams.
- Preferred Alternative D-1 Modified impacts a total of 9.6 hectares (23.85 acres) of wetlands.
- Preferred Alternative D-1 Modified affects 84.9 hectares (209.9 acres) of forest land.
- Preferred Alternative D-1 Modified displaces 36 residences and four businesses.
- Preferred Alternative D-1 Modified impacts 32.4 hectares (80.0 acres) of floodplain area.
- Preferred Alternative D-1 Modified utilizes existing transportation corridors for approximately 43 percent of the total length.
- Preferred Alternative D-1 Modified impacts 640.8 hectares (1,582.9 acres) of agricultural land involving nine farm residences, and eight agricultural districts.
- Preferred Alternative D-1 Modified results in 164.9 hectares (407.2 acres) of landlocked property.

1.2.3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provided an overview and description of the general setting of the US 24 New Haven to Defiance study area as well as detailed data describing the natural and man-made resources that could be potentially impacted by the Build and No Build alternatives.

The discussion for each impact category presented the subject, setting the stage with a discussion of the existing conditions found in the 1295 square kilometer (500 square mile) study area and feasible corridors. The discussion presented data starting from the westernmost county, Allen County, Indiana, and proceeded eastward through Paulding and Defiance counties in Ohio. Feasible corridors were generally 610 meters (2,000 feet) in width for new alignments. The feasible corridor width studied for existing US 24 was 152 meters (500 feet). Discussion of the methodologies, reference standards, regulations and resources used for the analysis followed the existing condition

discussions. Additionally, any avoidance, minimization, or enhancement efforts studied during the design process were described.

The project impact discussions referred only to those resources found within the rights-of-way identified for the alternatives. The rights-of-way for Alternatives A through X and Z were approximately 91 meters wide (300 feet) and the right-of-way for Alternative Y was approximately 13.41 meters (44 feet) in width. The impacts associated with each alternative served as a basis for comparison of the Build alternatives. A discussion of possible mitigation and mitigation techniques relative to the impact category followed the impact analysis and concluded the discussions.

Changes to project related impacts addressed in the Affected Environment and Environmental Consequences section of the July 2003 DEIS are discussed in Section 5.0 of this FEIS.

1.2.4 CONCLUSIONS AND RECOMMENDATIONS

In addition to summarizing the project impacts discussed throughout the Affected Environment and Consequences section, the DEIS provided a Preferred Alternative recommendation and discussed the proposed environmental commitments to be implemented.

Changes to the Preferred Alternative are discussed in Section 5.0 of this FEIS. The environmental commitments discussed in the DEIS and any new environmental commitments since approval of the DEIS are discussed in Section 6.0 of this FEIS.

1.2.5 COMMENTS AND COORDINATION

A public involvement program was developed and implemented for the US 24 project to include public participation along with federal, state and local agencies contributing throughout project development. A summary of public involvement and agency coordination activities throughout the development of the US 24 project was presented in the DEIS.

Section 2.0 of this FEIS presents public involvement opportunities available since August 2003. A series of public hearings were held on October 28, 29, and 30, 2003 to present the approved DEIS for comment. A public hearing summary is included in Appendix B of the FEIS. Agency coordination and correspondence since approval of the DEIS in August 2003 are documented in Section 3.0 and Appendix C of this FEIS.

2.0 PUBLIC INVOLVEMENT

2.0 PUBLIC INVOLVEMENT

This section discusses the public involvement opportunities available since the Draft Environmental Impact Statement (DEIS) was approved on August 19, 2003.

The following local agencies and organizations received copies of the DEIS for review, comment, and public availability.

- Allen County Department of Planning Services, Fort Wayne, Indiana
- Allen County Engineer, Fort Wayne, Indiana
- Allen County Fire Department, Fort Wayne, Indiana
- City of Fort Wayne, Fort Wayne, Indiana
- City of New Haven, New Haven, Indiana
- City of Woodburn, Woodburn, Indiana
- Jefferson Township, Allen County, Indiana
- Maumee Township, Allen County Indiana
- Maumee Township Volunteer Fire Department, City of Woodburn, Indiana
- Milan Township, Allen County, Indiana
- Milan Township Fire Department, Allen County, Indiana
- Northeastern Indiana Regional Coordinating Council, Fort Wayne, Indiana
- Antwerp Branch, Paulding County Carnegie Library, Antwerp, Ohio
- Carryall Township, Antwerp, Ohio
- Crane Township, Cecil, Ohio
- Emerald Township, Cecil, Ohio
- Harrison Township, Paulding County , Ohio
- Paulding County Engineer, Paulding, Ohio
- Payne Branch, Paulding County Carnegie Library, Payne, Ohio
- Village of Antwerp, Antwerp, Ohio
- Village of Cecil, Cecil, Ohio
- Village of Paulding, Paulding, Ohio
- City of Defiance, Defiance, Ohio
- Defiance County Engineer, Defiance, Ohio
- Defiance Public Library, Defiance, Ohio
- Defiance Township, Defiance, Ohio
- Delaware Township, Defiance, Ohio
- Maumee Valley Planning Organization, Defiance, Ohio
- Noble Township, Defiance, Ohio

On October 28, 29 and 30, 2003, the Ohio Department of Transportation (ODOT) and the Indiana Department of Transportation (INDOT) held a series of three public hearings to offer the general public an opportunity to comment on the DEIS for the US 24 New Haven to Defiance project. The project involves the proposed relocation, improvement and abandonment of portions of US 24 in Allen County, Indiana and Paulding and Defiance counties, Ohio. Also incorporated into the hearings was the removal of State Route Number US 24 from the portion of highway that is also numbered US 127 in Defiance County. The meetings were held from 5:30 to 8:00 PM. Approximately 400 people attended the three public hearings.

Legal advertisements for the public hearing were placed in the Journal Gazette and the News-Sentinel on October 12, 20, and 27, 2003, and in the Crescent News and Toledo Blade on October 14 and 21, 2003. These newspapers represent the widest readership within the vicinity of the project. The advertisements informed the public of three scheduled public hearings and of the availability of the DEIS for review and comment.

In addition to the legal advertisements, a newsletter and announcements of the public hearing were mailed to over 2,000 project stakeholders on October 17, 2003. Copies of the legal notices and announcements are found in Appendix B. Information about the public hearings was also posted on the project's website.

The Public Hearing Summary (Appendix B) documents the public hearing process and includes the following:

- history of the US 24 project,
- hearing legal notice, advertisements and announcements,
- hearing details (location and schedule of events), and
- hearing exhibits and handout materials.

The purpose of the public hearings was to give the public the opportunity to comment on the Preferred Alternative recommended in the DEIS, its impacts, and proposed mitigation strategies. The information presented and the format of each public hearing were the same at each location. An open house format began each meeting at which time the public was able to visit numerous "stations" of information. A formal presentation was given followed by a public comment session. After the presentation and comment session, the open house format resumed. All participants were encouraged to provide comments on the Preferred Alternative, its impacts, and proposed mitigation. Attendees were given the opportunity to provide written comments and verbal comments. A court reporter was present to record comments at the hearings. Comments were accepted until November 21, 2003. A total of 115 comments were received. Many of the comments addressed site-specific impacts of the Preferred Alternative, while others focused on general issues.

- West High Street Access: The vast majority of written comments received during the comment period focused on the access around West High Street in Defiance. Many of the comments were from residents in the area that supported Option 2. Option 2 involves grade separating the West High Street intersection with US 24 improving parts of the existing local roadways and constructing a new connector road to link West High Street with SR 15/18 (Ralston Avenue). Other individuals from the area indicated that they would prefer an interchange at US 24 and West High Street to encourage economic development opportunities in Defiance.
- Local Roadways: Some stated their concerns about the potential impacts to the local roadways as a result of the Preferred Alternative. A few individuals stated their desire to see access remain on all local roadways via additional overpasses or underpasses while others were concerned about traffic on specific roads such as Webster Road, Harper Road, and Bruick/Ryan Roads.
- Ecological Resources: Some individuals from Allen County were concerned about additional impacts to residential areas and farmland that would result from moving the alignment of the Preferred Alternative to avoid two large trees in the area.
- Farmlands: Several individuals expressed concern about impacts to farmlands. Farming concerns included impacts to drainage tiles, limiting access to fields and the loss of productivity.
- Project Schedule: A few individuals stated that construction should begin as quickly as possible because ongoing safety concerns are only expected to increase over time.

Table 2.1 summarizes the comments received from the October 2003 public hearings.

Since the October 2003 public hearings, ODOT has continued public involvement efforts for the project. The following summarizes continued public involvement activities undertaken since the approval of the DEIS.

- Toll Free Hotline remained open until January 2005.
- The www.us24.org website continues to be updated and will be maintained through construction.
- The fifth newsletter was published and circulated to over 1,800 individuals, October 2003.
- At the request of local citizens, ODOT held a special outreach meeting on November 17, 2003, to discuss the four alternatives developed for the West High Street/Switzer Road area. At the meeting, ODOT representatives presented the four alternatives and answered questions regarding design and traffic impacts. Many citizens voiced their opinions regarding the alternatives, traffic, and potential development in the area. The comments received at the meeting assisted ODOT in developing an alternative for access to US 24 at West High Street/Switzer Road that was acceptable to the majority of local citizens, officials, and stakeholders.
- On January 8, 2004, ODOT met with local officials, stakeholders and concerned citizens to discuss the alternatives developed for West High Street/Switzer Road. Option 2 was identified as the preferred alternative by ODOT. The discussion focused on the location of a connector road, which would link West High Street with SR 15/18. ODOT agreed to develop Option 2 in accordance with recommendations received from the stakeholders, public officials, and concerned citizens.
- On April 1, 2004, ODOT met with local officials and representatives from Defiance Regional Medical Center to discuss details of the design and location of the connector road between West High Street and SR 15/18.
- On September 9, 2004, ODOT met with affected property owners in Paulding County to discuss acquisition.
- On October 21, 2004, ODOT met with affected property owners in Paulding County to discuss acquisition.
- On November 10, 2004, ODOT met with affected property owners in Defiance County to discuss acquisition.
- On December 9, 2004, ODOT met with affected property owners in Defiance County to discuss acquisition.
- On January 20, 2005, ODOT met with affected property owners in Paulding and Defiance counties to discuss acquisition.
- On May 26, 2005, ODOT met with residents of the Bohlman Trailer Park to discuss noise mitigation measures.
- On August 3, 2005, INDOT met with local elected officials and economic development officials of the Fort Wayne District to discuss the importance of US 24 to the region.

TABLE 2.1
PUBLIC COMMENTS FROM THE PUBLIC HEARINGS

Commenter	Comment	Response
Representative Steve Buehrer (October 2003) Stan Guilliam on behalf of Lynn Lantz (October 2003) Darrell Handy (October 2003) Commissioners Thomas Kime, Otto Nicely, and Richard Cromwell (November 2003) James Roach (November 2003) Stephen Boomer (November 2003) Bill Mack (November 2003) Jerry Hayes (November 2003) Web and Scott Olsen (October 2003) Casey Wertz (November 2003) Jim Hitchcock Elias Samaan (October 2003) Deborah Hasselswerth (October 2003) Bob Simpson (October 2003) Gail Olson (October 2003) Steven Graf (October 2003 and November 2003) Gary Butler (October 2003) John Horns (October 2003) Mary Sebring (October 2003) George Masterson (October 2003) Stan Guilliam (October 2003) Gaylon Davis (October 2003 and November 2003) Jerry Hayes (October 2003) Bill Koester (October 2003) Rich Cromwell (October 2003) Jerry Monim (October 2003) Joe Eureste (October 2003) Ted Penner (October 2003) Koester Corporation (November 2003) Mark Hench (October 2003) Mayor Frederick Schultz (October 2003 and November 2003) Gaylon Davis (November 2003) Mayor-Elect Bob Armstrong (November 2003) Charles Swisher (November 2003) Warren Schlatter (October 2003)	Supports Option 3 which is an interchange at US 24 and West High Street.	An interchange will not be constructed at US 24 and Switzer Road/West High Street. Option 2 with modifications was selected as the preferred alternative. A connector road will link West High Street with SR 15/18.

TABLE 2.1 (CONTINUED)
PUBLIC COMMENTS FROM THE PUBLIC HEARINGS

Commenter	Comment	Response
Michael Fronk (October 2003) Mary Fronk (October 2003) Jane and Joseph Clemens (October 2003) Rebecca Hoschak (October 2003) David Hoschak (October 2003) Gertrude Hoschak (October 2003) Robert Hoschak (October 2003) Frances Imber (October 2003) Donald Hindy (October 2003) Timothy A Hogan (October 2003) Timothy R.T. Hogan (October 2003) Fred and Lisa Squires (October 2003) Julia Squires (October 2003) John Squires (October 2003) Fred Squires (October 2003) Eric Squires (October 2003) Gary Smith (October 2003) Jacki Wells (October 2003) Elizabeth Hogan (October 2003) Patsy and Edward Osborn (October 2003 and November 2003) Terri Leonard (October 2003) Joyce Herr (October 2003) Jody Smith (October 2003 and November 2003) Victor and Ruth Relue (October 2003) Mary Ann Hall (October 2003 and November 2003) Mark Snyder (October 2003) R.S. Sabo (October 2003) Darlene Sabo (October 2003) Ilene Spacht (October 2003) John Spacht (October 2003) Dianna Lynn Snyder (October 2003) Nelson Smith (October 2003 and November 2003) Marvin and Maxine Thieroff (October 2003 and November 2003) Naomi Blosser (October 2003) Gale Davis (November 2003) Diane Davis (November 2003) Tammy Imber (November 2003) Mary Ann and Dennis Smith (October 2003 and November 2003) Kelly Smith Masterson (October 2003) Kim Rhodes (October 2003) Debra Smith (October 2003)	Opposed to an interchange at West High Street and supports Option 2.	An interchange will not be constructed at US 24 and West High Street. Option 2 with modifications was selected as the preferred alternative. A connector road will link West High Street and SR 15/18.

TABLE 2.1 (CONTINUED)
PUBLIC COMMENTS FROM THE PUBLIC HEARINGS

Commenter	Comment	Response
Robert and Irene Scrantlen (October 2003) Mahlon and Jean Hall (October 2003) David and Nancy Bok (October 2003) Lisa Smith (October 2003) Veronica Matvey (October 2003) Robin Smith (October 2003) Virginia Smith (October 2003) Michael and Tammy Imber (October 2003) Diane Hall (October 2003) Ruth Kaufman (October 2003) Douglas Kaufman (October 2003) Tim Clevenger (October 2003) Jenny Wedekind (October 2003) Robert Layman (October 2003) Connie Stover (October 2003) Gerald Otte (October 2003) W.S. Duerk (October 2003) Staci Kaufman (October 2003)	Opposed to an interchange at West High Street and supports Option 2.	An interchange will not be constructed at US 24 and West High Street. Option 2 with modifications was selected as the preferred alternative. A connector road will link West High Street and SR 15/18.
Avery Troy Zeller (October 2003) Justin Niles (October 2003) James and Martha Long (October 2003) Norma Pinney (October 2003)	Noted that parcel information was incorrect on hearing displays.	Following the public hearings, parcel information was corrected.
James and Martha Long (October 2003)	Inquired about access onto their property on Bremer Road.	Access to Bremer Road will remain available to their property.
Betty Akers (October 2003) Mr. and Mrs. John Fortman (November 2003)	Unsatisfied with proposed access road on their property.	The interchange at Ryan/Bruick Road will eliminate the existing access to the Akers' property. A new access road will be provided off Bremer Road for the Akers. This access road will affect a small portion of the Fortman property.
David Bidlack (October 2003)	Unsatisfied with current alignment on his property.	Less than 0.2 acres will be affected by relocated C-206. ODOT will minimize impacts to this property during final design.
Dan Froelich (October 2003)	Indicated that taking a portion of his land would reduce the number of horses his farm could support.	Comment noted.
John Fortmen (October 2003)	Suggested leaving US 24 as is and eliminating the toll from I-80 to encourage trucks to use I-80.	This alternative was studied and determined not to be feasible.
Gary Schaaf (October 2003) Robert Hadley (October 2003)	Suggested making the alignment in Indiana parallel the railroad corridor.	This alignment was studied in the preliminary design phase and determined not to be feasible because it is located too far to the south.

TABLE 2.1 (CONTINUED)
PUBLIC COMMENTS FROM THE PUBLIC HEARINGS

Commenter	Comment	Response
Jan and Lynn Ehle (October 2003)	Suggested a realignment between Berthaud and Rousey roads to minimze the number of landlocked parcels.	The Preferred Alternative D-1 Modified was developed with consideration of a wide range of impacts and is considered to be the most balanced solution to avoid or minimize project impacts.
Joyce Schaaf (October 2003)	Suggested relocating the alignment south to reduce the number of landlocked parcels.	Southern alignments were studied during the project development process and eliminated from further consideration. The Preferred Alternative D-1 Modified was developed with consideration of a wide range of impacts and is considered to be the most balanced solution to avoid or minimize project impacts.
Gary Wellman (October 2003)	Indicated satisfaction with removing trees from his property.	Comment noted.
Donn Werling (October 2003)	Suggested shifting the alignment to avoid the historic oak trees in Allen County.	INDOT has investigated several options which avoid the oak tree. In the detailed design phase, INDOT will continue to study measures to minimize impacts to the trees.
Raymond Schaper (October 2003)	Suggested moving the alignment southeast to avoid his drainage tiles and to minimize impacts to his fields.	The Preferred Alternative D-1 Modified was developed with consideration of a wide range of impacts and is considered to be the most balanced solution to avoid or minimize project impacts. Impacts to drainage tiles will be mitigated during construction.
Robert Schaper (November 2003)	Suggested moving the alignment east to maintain proper drainage; and inquired about overpass or underpass heights for farm equipment.	The Preferred Alternative D-1 Modified was developed with consideration of a wide range of impacts and is considered to be the most balanced solution to avoid or minimize project impacts. Bridge structures are typically 17 feet in height. In Indiana overpasses or underpasses will be located at Doyle, Sampson, Woodburn, Bull Rapids, and State Line roads.
Jon Hoeppner (October 2003)	Recommended that dry hydrants should be installed during construction.	The determination to install dry hydrants is made by local officials and not ODOT or INDOT.
Karl Hockemeyer (October 2003)	Suggested that existing US 24 remain open after construction.	Existing US 24 will remain open as a local road.
Steven Schrenk (October 2003) Karen Stir (November 2003) Sharon Waterman (November 2003) Dennis and Jan Huguenard (November 2003) Carol Burke (October 2003) Mr. Stern (October 2003) Roland Yoder (October 2003) Faye Roemke (October 2003)	Suggested not rerouting the alternative to avoid trees.	In the detailed design phase, INDOT will study measures to minimize impacts on the two large oak trees within the right-of-way limits of the new highway.

TABLE 2.1 (CONTINUED)
PUBLIC COMMENTS FROM THE PUBLIC HEARINGS

Commenter	Comment	Response
Steven Schrenk (October 2003)	Preferred US 24/I-469 Alternative 12 interchange; suggested leaving CR 180 open for local traffic.	Based on engineering, traffic, costs, environmental studies, and public involvement, a modified version of Alternative 13 was selected as the preferred interchange alternative. C-180 is a two-lane road that runs in the east-west direction. C-180 provides the same function as C-176 but does not meet ODOT's current design standards for local roads. Therefore, C-180 will be closed as a result of the new highway and C-176 will remain open.
James Weaver (October 2003)	Indicated that project should be completed to provide economic development opportunities for the area.	Comment noted.
Scott Krieg (October 2003) Joel Tye (October 2003) Dan Gray (October 2003) Ruth Yarb (October 2003) Elias Samaan (October 2003) Brian Bergsma (October 2003) Representative Steve Buehrer (October 2003) Norma Pinney (October 2003)	Indicated that the project should be completed as quickly as possible.	The anticipated completion of the environmental phase of the project is 2005; construction will begin in 2006.
John Marcellus (October 2003) James Hitchcock (October 2003)	Indicated that US 24 is unsafe and construction should begin.	Construction is scheduled to begin in 2006.
John Horn (undated letter)	Supported working with ODOT to achieve a solution to the US 24 and West High Street access problem.	ODOT has coordinated with the public on an alternative that will provide access to West High Street from US 24 via a connector road.
John and Sandra Miller (October 2003)	Concerned that the new US 24 would limit local access and increase existing roadway drainage problems; inquired about the plans for Doyle and Bruick roads.	Local access is provided along the new highway in Ohio, but not Indiana. The access features of the Preferred Alternative D-1 Modified have been developed in close coordination with state, county, and local officials as well as local EMTs. Doyle Road will remain open with an overpass and an interchange will be constructed at Ryan/Bruick Road.
Karen Stir (November 2003)	Opposed interchange at Bruick and Ryan roads and instead favored an overpass.	An interchange will be constructed at Ryan/Bruick Road. The access features of the Preferred Alternative D-1 Modified have been developed in close coordination with state, county, and local officials as well as local EMTs.
Steven Schrenk (November 2003)	Suggested not closing CR 69 and CR 180.	The access features of the Preferred Alternative D-1 Modified have been developed in close coordination with state, county, and local officials as well as local EMTs. Due to the minimal traffic volumes on C-69, the road will be closed. Access to properties along C-69 will be provided by the Antwerp Bypass Connector. C-180 is a two-lane road that runs in the east-west direction. C-180 provides the same function as C-176 but does not meet ODOT's current design standards for local roads. Therefore, C-180 will be closed as a result of the new highway and C-176 will remain open.

TABLE 2.1 (CONTINUED)
PUBLIC COMMENTS FROM THE PUBLIC HEARINGS

Commenter	Comment	Response
Keith Derck (October 2003)	Concerned that closing CR 180 would increase emergency response time.	The access features of the Preferred Alternative D-1 Modified have been developed in close coordination with state, county, and local officials as well as local EMTs. C-180 provides the same function as C-176 but does not meet ODOT's current design standards for local roads. Therefore C-180 will be closed as a result of the new highway and C-176 will remain open.
James Sherwood (October 2003)	Concerned that eliminating access to I-469 at existing US 24 would increase fire service response time.	Access will remain at I-469 and will be improved under the Preferred Alternative D-1 Modified.
Mike Koeneman (October 2003) Jon Koeneman (October 2003) Linda Koeneman (October 2003)	Concerned about deliveries to their businesses if Berthaud Road is closed.	Berthaud Road will remain closed but access will be provided via Ryan and Webster roads.
Tom Tracey (October 2003) Carl Ehinger (October 2003)	Preferred an overpass at Harper Road instead of closure.	Construction of the Preferred Alternative D-1 Modified will result in the closure of Harper Road because of its close proximity to the I-469 interchange. The western terminus of Harper Road is directly south of the I-469 interchange ramp to US 24.
James Hirschy (October 2003)	Suggested an at-grade crossing at US 24 and Rousey Road so local road can remain open.	Due to minimal traffic volumes Rousey Road will be closed due to construction of the new US 24 highway.
Robert Simpson (November 2003)	Requested that all local roads remain open.	US 24 in Indiana is designed as a freeway with full access control. Access to local roads will be provided via interchanges at Ryan/Bruick Road, Webster Road, and SR 101. The access features of the Preferred Alternative D-1 Modified have been developed in close coordination with state, county, and local officials as well as local EMTs and are acceptable to these stakeholders.
Paul Melin (October 2003)	Concerned trucks will use existing US 24 as an overnight resting area.	Comment noted. US 24 will remain open as a local roadway.
Lynn Werling (October 2003)	Suggested that a 90-degree turn from Ryan Road to Bruick Road could be problematic for large trucks.	INDOT will study this intersection in the detailed design phase.
Dan Avery (November 2003)	Suggested realigning Webster Road to eliminate the existing three-way stop and the 90-degree turn.	INDOT will study this intersection in the detailed design phase.
Bruce Goebel (October 2003)	Suggested that impacts to homes and communities should be a greater priority than construction costs.	Avoidance or minimization of impacts to residential development and communities was considered throughout the project development process and documented in the DEIS. The Preferred Alternative D-1 Modified was developed with consideration paid to a wide range of impacts and is considered to be the most balanced solution to avoid or minimize project impacts.

TABLE 2.1 (CONTINUED)
PUBLIC COMMENTS FROM THE PUBLIC HEARINGS

Commenter	Comment	Response
Carolyn Langdon (November 2003) Sally Skillen (November 2003) David Nice (November 2003)	Suggested that property takes from their farms would permanently reduce productivity, efficiency and marketability of their land.	The project's impacts to farmlands are recognized as important in this rural area. The Preferred Alternative D-1 Modified has been developed with strong consideration paid to minimizing impacts to farms. Because of the rural nature of the project area, it was not possible to avoid all farm impacts.
Samuel Schlatter (October 2003)	Requested additional overpasses between Antwerp and Krouse roads in Defiance.	Between Antwerp and Krouse Road only eight roads are closed. Access is provided at 16 roads between Antwerp and Krouse Road. The access features of the Preferred Alternative D-1 Modified have been developed in close coordination with state, county, and local officials as well as local EMTs.
James Passwater (October 2003)	Suggested that the impacts to the natural environment should be balanced with safety.	The Preferred Alternative D-1 Modified was developed with consideration paid to a wide range of impacts and is considered to be the most balanced solution to avoid or minimize project impacts.
Ken Poling (October 2003)	Requested copies of the US 24/I-469 options.	Copies of the US 24/I-469 feasible interchange alternatives were provided to Mr. Poling.
Staci Kaufman (October 2003)	Inquired as to whether ODOT accepts private donations to build projects.	ODOT does not accept private donations to build projects.
Carl Gallup (October 2003)	Inquired if the barn on parcel 208 would be taken.	On parcel 208 the house and small out buidling will be displaced but the barn will remain on the property.
Norma Pinney (October 2003)	Concerned about the impacts of Doyle Road from the project.	Doyle Road will remain open and an overpass will be constructed over the new highway.

3.0 AGENCY COORDINATION

3.0 AGENCY COORDINATION

3.1 ACTIVITIES COMPLETED FOR REVIEW OF THE DEIS

The majority of this project has been completed following the Ohio Department of Transportation's (ODOT's) Nine-Step Transportation Development Process for agency concurrence points. Three of the four Agency Concurrence Points in the Nine-Step Manual have been completed. In 2004, ODOT initiated a new Major Project Development Process, which modifies the fourth concurrence point from the Nine-Step Transportation Development Process and adds a fifth Concurrence Point. Concurrence Point #4 in the 2004 ODOT Project Development Process represents the circulation of the Draft Environmental Impact Statement (DEIS) to agencies and solicitation of comments on the Preferred Alternative. Concurrence Point #4 has been completed for the US 24 project. Concurrence Point #5 will be fulfilled by the circulation of the Final Environmental Impact Statement (FEIS) to the agencies and the public for the purpose of explaining how any comments on the DEIS were addressed. The Preferred Alternative, with modifications, is the Preferred Alternative D-1 Modified presented in this FEIS.

Agency Coordination for Concurrence Points #1 and #2 were conducted simultaneously. These concurrence points represent the completion of initial project planning and programming efforts, development of the project purpose and need, and initiation of the environmental scoping process. These concurrence points also represent the first consultation step in the National Environmental Policy Act (NEPA)/404 Permit Process, as defined in *NEPA/404 Process for Transportation Projects* (Federal Highway Administration [FHWA], US Army Corps of Engineers [USACE], US Environmental Protection Agency [USEPA], and US Fish and Wildlife Service [USFWS]). This concurrence point also includes coordination with the Ohio Environmental Protection Agency (OEPA) (relative to Section 401 of the Clean Water Act) and the Ohio Department of Natural Resources (ODNR). Concurrence Point #3 represents the circulation of the Preliminary Draft Environmental Impact Statement (PDEIS) to agencies, which presents the Feasible Alternatives. State and federal agencies were asked to review the Feasible Alternatives and their associated impacts presented in the *US 24 New Haven to Defiance Preliminary Draft Environmental Impact Statement*, and to provide a recommendation for a Preferred Alternative.

Concurrence Point #4 – On October 3, 2003 a notice of availability (NOA) of the DEIS was published in the *Federal Register*, initiating a 45-day comment period. A copy of the NOA is provided in Appendix B. The approved DEIS was circulated to federal, state and local agencies. The agencies were requested to concur on the recommendation of the Preferred Alternative as presented in the DEIS, its impacts and proposed mitigation. The following nine agencies submitted comments on the Preferred Alternative as presented in the DEIS:

- US Department of Commerce, National Oceanic and Atmospheric Administration,
- US Department of Health and Human Services-Centers for Disease Control and Prevention,
- US Department of Housing and Urban Development,
- US Department of the Interior,
- US Environmental Protection Agency, Region 5,
- Ohio Department of Natural Resources,
- Ohio Environmental Protection Agency, Division of Surface Water,
- Indiana Department of Environmental Management,
- Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
- Indiana Department of Natural Resources, Division of Water, and
- Northeastern Indiana Regional Coordinating Council.

A summary of the agency comments received is provided in Table 3.1 and copies of the correspondence are provided in Appendix C.

TABLE 3.1
CONCURRENCE POINT #4 AGENCY COMMENTS ON DEIS PREFERRED ALTERNATIVE

Agency US Department of Commerce, National Oceanic and Atmospheric Administration (December 3, 2003)	
Comment	**Response**
If there are any planned activities which will disturb or destroy the National Geodetic Survey's horizontal and vertical geodetic control monuments, the National Ocean Service (NOS) requires not less than 90 days' notification in advance of such activities in order to plan for their relocation. NOS recommends that funding for this project include the cost of any relocation(s) required.	If control monuments are affected by construction of the proposed highway, Indiana Department of Transportation (INDOT) and/or ODOT will coordinate with NOS and will fund their relocation.

Agency US Department of Health and Human Services, Centers for Disease Control and Prevention (CDC) (November 3, 2003)	
Comment	**Response**
The CDC has reviewed this document for potential adverse health and safety effects on human populations. Overall, we agree that the proposed project will improve roadway safety, enhance the regional transportation network, and improve levels of service between New Haven, Indiana and Defiance, Ohio. The project will result in a more efficient and safer roadway that meets current design standards and should have a positive effect with the improvements that are proposed and the mitigation measures planned.	Comment noted.
The Centers for Disease Control and Prevention noted that no well head protection plans have been endorsed by the Ohio Environmental Protection Agency for the US 24 study in Paulding county, Ohio and no well head protection plans have been submitted for Defiance County, Ohio. Additionally, well head protection plans for the Allen County portion of the US 24 Study area have not been submitted to the Indiana Department of Natural Resources. The FEIS should include these plans.	Comment noted. Wellhead protection plans have not been endorsed by the IDEM for portions of the study area in Allen County, Indiana, and OEPA for Paulding and Defiance counties, Ohio.
In similar projects, experienced Environmental Inspectors are assigned to monitor construction activities and ensure that all appropriate construction activities are in compliance with applicable federal, regional, state, and local environmental permits and approvals. Please clarify how environmental inspections and construction monitoring will be accomplished.	In ODOT's and INDOT's project Project Development Process, environmental monitoring is an integral part of the construction activities. Environmental monitoring will be conducted through construction and after construction for the US 24 project in accordance with ODOT's *Construction Materials Specifications Handbook* (2005) and INDOT's *Construction Activity Environmental Manual* (2002). INDOT's and ODOT's Engineers are responsible for ensuring that the contractors comply with environmental regulations and commitments detailed in their construction specifications such as sections 105.16 (Borrow and Waste Areas) and 107.19 (Environmental Protection) of ODOT's *Construction Materials Specifications Handbook* (2005).
The DEIS states that a Storm Water Pollution Plan will be prepared. However, the CDC believes that the FEIS should address spill potential during construction with a Spill Prevention and Control Plan. The plan should include, but not be limited to: precautionary measures to prevent spills; sources of spills, such as equipment failure or malfunction; standard operating procedures in case of a spill and appropriate training for all construction personnel.	Section 3.6 of the DEIS discusses construction impacts including the potential for spills. A Spill Prevention Control and Countermeasure Plan (SPCCP) will be prepared prior to construction and implemented during construction. The plan will follow USEPA Oil Planning and Response guidelines and include prevention control measures, sources of spills, standard operating procedures in case of spills, and training for all construction personnel. The SPCCP will be made available at the project office.
The FEIS should contain a statement of compliance with appropriate criteria and guidelines to ensure safety and health for both workers and the general public.	Section 3.6 of the DEIS addresses health and safety considerations.

TABLE 3.1 (CONTINUED)
CONCURRENCE POINT #4 AGENCY COMMENTS ON DEIS PREFERRED ALTERNATIVE

Agency US Department of Housing and Urban Development, Ohio State Office (November 24, 2003)	
Comment	**Response**
The US Department of Housing and Urban Development (HUD) has determined that the project does not present any special interests or concerns to HUD.	Comment noted.

Agency US Department of the Interior, Office of the Secretary (December 4, 2003)	
Comment	**Response**
The Draft EIS and Section 4(f) Evaluation conclude that only two resources meet the criteria for Section 4(f) resources, the Maumee River Public Fishing Area and Riverside Park. The Department, however, believes that the Maumee State Scenic and Recreational River also meets the criteria as a Section 4(f) resource. The Department notes that in the letter from ODNR dated June 18, 2001, the ODNR was willing to "exempt" the project from Section 4(f) review. Unfortunately, the ODNR does not have the authority to "exempt" a resource from review, only to determine that the resource is "not significant". Absent a determination from the ODNR that the Maumee River is not a significant resource, it must be included in the Section 4(f) Evaluation. Since all of the alternatives cross the river, complete avoidance may not be possible. Accordingly, if a determination that there is no feasible and prudent alternative to the use of land from the property is made, the action shall include all possible planning to minimize harm to the property resulting from such use.	The FHWA has thoroughly investigated the recreational status of the Maumee River in relation to the US 24 project. In addition, FHWA conducted multiple interviews with ODNR officials. Through these efforts it was determined that the nearest recreational area on the Maumee River is located three miles downstream of the existing US 24 bridge. Any relationship between the recreational status of the Maumee River and the existing river crossing is the convenience of the latter as a familiar landmark along the Maumee River. The bridge does not demarcate a specific point in the river whose primary function is recreation, but rather serves merely as a point of general reference. Based on FHWA's coordination with ODNR and ODOT, review of the applicable documentation, and FHWA's knowledge of the project, FHWA has determined that Section 4(f) is not applicable to the Maumee River in the vicinity of the existing US 24 bridge. Correspondence regarding Section 4(f) is provided in Appendix C.
The Department notes that the preferred alternative (D-1) will impact another Section 4(f) resource, the Meyer/Gallmeyer Farm. A determination that there are no feasible and prudent alternatives to the use of land from this historic property was presented in Appendix 4 of the review documents. To support this determination, the Section 4(f) Evaluation presents comparative information on the impacts associated with all of the alternatives, including those not selected as the preferred (e.g., alternatives E, F, G and H), concluding that none of these alternatives are feasible or prudent. The documentation does not demonstrate that these alternatives meet what is known as the Overton Park criteria (*Citizens to Preserve Overton Park v. Volpe,* 401 US 402 [1972]) which establishes that Section 4(f) lands are "...not to be lost unless there are truly unusual factors present...or...the cost of community disruption resulting from alternative routes reaches extraordinary magnitudes." Those thresholds of impact for the selection of this segment are not demonstrated here. In addition, the four other alternatives E, F, G and H, are argued to have impacts on productive farmlands and on woodlots although the preferred alternative D-1 is quite comparable in the amount of impacted farmlands and woodlots for the entire project. Alternative D-1 does have consistently less impacts on forested wetlands over the entire project length, but these impacts on the other alternatives could be mitigated to reduce or minimize some of these impacts. For these reasons, the DOI cannot concur with FHWA that there are no feasible and prudent alternatives to the proposal as presented, that would result in impacts to Section 4(f) properties. We also cannot concur that all possible planning needed to minimize potential harm to these resources has been employed.	The National Register of Historic Places boundary for the Meyer/ Gallmeyer Farm was reassessed and revised by the FHWA, INDOT and Indiana Division of Historic Preservation and Archaeology (DHPA) in February 2005. It was determined that the historic boundary should only include the land immediately surrounding the farm house and associated outbuildings and not the entire 31.1 hectares (76.8 acres) of the farm. Therefore, there no longer is a Section 4(f) impact on the Meyer/Gallmeyer Farm.

TABLE 3.1 (CONTINUED)
CONCURRENCE POINT #4 AGENCY COMMENTS ON DEIS PREFERRED ALTERNATIVE

Agency US Department of the Interior, Office of the Secretary (continued) (December 4, 2003)	
Comment	**Response**
We encourage ODOT to minimize impacts to upland forested habitat areas by implementing, to the extent feasible, such measures as reducing the median width and limiting the cleared right-of-way to only what is necessary to facilitate construction. We also recommend that the ODOT take opportunities to replace the project-caused loss of the 68.7 acres of woodland habitat, where feasible, to develop meaningful forest habitat over time. We recommend the planting of native trees in blocks of assorted varieties on "odd areas" along the rights-of-way, as buffers around preserved and mitigation wetlands, and adjacent to stream corridors within and near the project area.	During detailed design, impacts to forested habitat will be minimized to the extent possible. ODOT will look for opportunities to plant trees in areas that will not compromise highway maintenance activities and driver safety. As part of project mitigation, ODOT is proposing to purchase a woodlot approximately 53.8 hectares (133 acres) in size. A portion of the woodlot is a Category 3 forested wetland and Stevens Ditch. Adjacent to the woodlot a 10.53- hectare (26-acre) wetland will be restored and planted with trees and shrubs.
We recommend modifications to the Ohio portion of the project to further avoid and minimize wetland (and specifically forested wetland) impacts. Specific wetlands of concern include NO-15, W-4, R-4, R-1(A), and RC-1, due to the proposed amount of impact and significance of the ecological community. We understand that, due to the physical constraints in the study area, some impacts to these resources cannot be completely avoided. We encourage minimization of impacts to these areas by including such measures as reducing the median width; limiting the cleared right-of-way to only what is necessary to facilitate construction; and utilizing bridges over significant habitat areas, where feasible and appropriate.	During detailed design, these impacts will be minimized to the extent possible. As part of project mitigation, ODOT is proposing to purchase a woodlot approximately 53.8 hectares (133 acres) in size. A portion of the woodlot is a Category 3 forested wetland and Stevens Ditch.
The FWS believes that in some instances, such as this project, further analysis of potential impacts to the Indiana bat is necessary before determining whether abiding by the tree cutting guidelines alone will adequately avoid and minimize impacts. Currently, the letter of agreement is being revised to more specifically outline when adherence to tree cutting restrictions would be sufficient to avoid impacts to the bat, and when further studies (such as habitat suitability evaluation and/or mist net survey) may be necessary. For this specific project, the FWS wants to gather more information to determine the quantity and quality of Indiana bat habitat among the potentially impacted woodlots.	A Biological Assessment was prepared for the project and Section 7 consultation initiated on May 18, 2005. The USFWS issued a Biological Opinion on the construction, operation, and maintenance of the US 24 New Haven, Indiana to Defiance, Ohio project for the Indiana bat on September 30, 2005.

Agency US Environmental Protection Agency, Region 5 (November 20, 2003)	
Comment	**Response**
USEPA commends the Federal Highway Administration (FHWA), INDOT and ODOT for their attention to minimizing impacts to wetlands as much as possible and for working extensively with affected citizens and communities.	Comment noted.
Based on our review of the information provided in the DEIS, we have rated the present DEIS as EC-2. The "EC" means that we have environmental concerns with the proposed action, and the "2" means that additional information needs to be provided in the Final Environmental Impact Statement (FEIS).	Comment noted.
Please clarify why Alternative D was reconsidered over the previously-selected Alternative C.	This decision is explained in detail in Chapter 2 of the DEIS and Section 1.2.2 of this FEIS. The decision was based on agency field reviews, meetings and comments; findings of the wetland delineation survey; public comments; and concurrence by USACE and OEPA.
Please describe wetlands mitigation more completely in the FEIS.	Wetland mitigation is discussed in Sections 3.2.1 and 6.3 of this FEIS.

TABLE 3.1 (CONTINUED)
CONCURRENCE POINT #4 AGENCY COMMENTS ON DEIS PREFERRED ALTERNATIVE

Agency US Environmental Protection Agency, Region 5 (continued) (November 20, 2003)	
Comment	**Response**
Please discuss stormwater runoff management in the FEIS. We would expect that FHWA, ODOT and INDOT will utilize BMPs to ensure that the stormwater runoff does not adversely impact any wetlands or waterbodies.	Stormwater management is discussed throughout Section 3 of the DEIS. BMPs will be used by INDOT and ODOT for temporary and permanent stormwater management.
The FEIS should include additional information in its noise analysis and address abatement.	Section 5.2.22 of this FEIS discusses the additional noise studies that were conducted for the Preferred Alternative D-1 Modified. Noise abatement will be provided for the Bohlman Trailer Park. Noise abatement is discussed in Section 5.2.22 and Section 6.3 of this FEIS.
Delineated Wellhead Protection Areas should be identified on relevant maps. We recommend the FEIS include protective measures for these areas as well.	There are no wellhead protection areas within the study area. Wellhead protection is discussed in Section 3.1.2 of the DEIS.

Agency Ohio Department of Natural Resources (November 14, 2003)	
Comment	**Response**
The description of corridor geology in Section 3.1.1 of the DEIS does not provide a complete overview of geologic conditions in the study area. A description of all major, unconsolidated surficial-material units (as can be distinguished using water-well logs, existing engineering borings, etc.) from the surface down to bedrock is necessary to more fully characterize glacial and recent alluvial sediments in the project area. In addition, there is no description or discussion in this section of bedrock geology underlying the glacial drift.	Since the circulation of the DEIS and designation of the Preferred Alternative D-1 Modified, soil borings have been undertaken through the Stage One Engineering process. The findings are documented in reports available from ODOT.
The description of ground-water geology in Section 3.1.2 uses bedrock stratigraphic nomenclature that is very badly out of date.	Comment noted. Since the circulation of the DEIS and designation of the Preferred Alternative D-1 Modified, soil borings have been undertaken through the Stage One Engineering process. The findings are documented in reports available from ODOT.

Agency Ohio Environmental Protection Agency, Division of Surface Water (November 12, 2003)	
Comment	**Response**
We believe Preferred Alternative D-1 warrants further consideration as a viable alternative. We would like to see further refinements of the Preferred Alternative to minimize habitat fragmentation and impacts to wooded habitat and wetlands scattered within the project boundary.	The DEIS Preferred Alternative D-1, with modifications, is the Preferred Alternative D-1 Modified. The modifications include reduced impacts to wetlands. To mitigate impacts, ODOT is proposing to purchase a Category 3 forested wetland in Ohio for preservation. Further refinements will occur in the final design stage to minimize impacts to natural resources.
We encourage ODOT to consider methods to reduce or avoid direct and secondary impacts to the linear swales/ditches and associated/ adjacent wetlands and riparian vegetation (e.g., RC-14, RC-2, RC-5, RC-1[a]) running along railroad and road corridors. The impacts could disrupt amphibian populations and preclude their migration between adjacent wooded habitats.	During the final engineering design, such impacts will be minimized to the extent possible.
If Wetland RC-2 is impacted by Alternative D-1, could this potentially affect the hydrology of Wetland R-4? If the hydrology of Wetland R-4 is disturbed, will the hydrological connection be reestablished to this wetland?	The Preferred Alternative D-1 Modified will impact 0.01 hectares (0.035 acres) of Wetland RC-2, which will not affect the hydrology of Wetland R-4.

TABLE 3.1 (CONTINUED)
CONCURRENCE POINT #4 AGENCY COMMENTS ON DEIS PREFERRED ALTERNATIVE

Agency Ohio Environmental Protection Agency, Division of Surface Water (continued) (November 12, 2003)	
Comment	**Response**
Page 3-32 states that approximately 75.4 acres and 20 individual woodlots will be impacted by Preferred Alternative D-1. Would it be possible to elaborate on these impacts in the context of habitat fragmentation in a format similar to that described in Pages III-54 to III-61 in the HOC/ATH PDEIS (HOC/ATH-33-17.00/0.00, PID 14040)? We are primarily interested in the extent and significance of habitat fragmentation from a cumulative perspective, and its influence on wildlife and community dynamics (e.g., interior forested/wooded community). If such an analysis is conducted, would it be possible to provide a discussion on the significance of "edge effects" and its influence on the propagation of invasive species?	The landscape of the US 24 project is predominantly agricultural and is already severely fragmented. The landscape of the HOC/ATH-33-17.00/0.00, PID 14040 is situated partially within the Wayne National Forest and is predominantly forested. Habitat fragmentation was analyzed in the Biological Assessment prepared for the US 24 project.
Will Preferred Alternative D-1 directly impact remnants of the Wabash and Erie Canal near Antwerp and CR-180? Are there any efforts you are aware of to protect or restore this feature?	The Preferred Alternative D-1 Modified will directly impact the Wabash and Erie Canal where it crosses it along CR 180 east of Antwerp. This location was reported as an archaeological site (33-PA-153) in the Phase I archaeology investigations for the project. The investigations found a remnant of the canal prism which is now used to drain the adjacent farmland. Also, most of this section of the canal has been disturbed by the construction of C-180, culverts, and drainage tile. It was determined that this site did not meet the eligibility criteria for the NRHP because it had been subjected to disturbance and other, better preserved sections of the canal survive in the vicinity.
Both the Wetland R-1 complex and Wetland S-4, collectively, may provide water quality improvements to the Maumee River. In addition, Stevens Ditch, in Paulding and Defiance counties, may be an important source of hydrology for these wetlands. We believe it is important to maintain the integrity of these wetlands and Stevens Ditch, to the best extent practicable. Do you believe this is a valid observation? Please explain.	The integrity of wetlands will be maintained to the extent possible. The wetland mitigation plan for the project includes the purchase of a 53.8-hectare (133-acre) woodlot containing a Cateogry 3 forested wetland and Stevens Ditch. Additionally, a 10.53-hectare (26-acre) will be restored adjacent to this woodlot.
We would like to make you aware that the Black Swamp Conservancy is developing plans to restore a parcel of the original Great Black Swamp in Marie Delarme Creek near Antwerp, Ohio. The contact person on this project, and similar efforts in the area, is Tim Schetter, Executive Director.	Comment noted. Additonal correspondence with the Black Swamp Conservancy is in Appendix C.
We find your tentative mitigation proposal to acquire and preserve Wetlands R-1, RC-1, S-4, and associated buffer habitats, appropriate and encourage further consideration of this action.	Comment noted.
Under Section 4.2 (Design Refinements), ODOT is considering the evaluation of the potential use of the Maumee & Western Railroad right-of-way. Could you elaborate on what ODOT is considering as potential use applications for the right-of-way?	This issue is explained in Section 2.6.7 of the DEIS. Based on input from the Ohio Rail Development Commission (ORDC), conversion of the railroad right-of-way for highway use is not feasible. ODOT consequently removed this option from further consideration.

Agency Indiana Department of Environmental Management (October 31, 2003)	
Comment	**Response**
Generally, the Indiana Department of Environmental Management (IDEM) believes that the impact of transportation projects on water quality (streams and wetlands) should be minimized. Therefore, we are pleased that alternatives C, D, and D-1, all of which focus on avoiding wetlands, will be strongly considered during the selection of a preferred alternative for this project.	Comment Noted.
Ensure that no wetlands are disturbed without the proper permit.	All required permits will be secured prior to project construction.

TABLE 3.1 (CONTINUED)
CONCURRENCE POINT #4 AGENCY COMMENTS ON DEIS PREFERRED ALTERNATIVE

Agency Indiana Department of Environmental Management (continued) (October 31, 2003)	
Comment	**Response**
A valid jurisdictional wetlands determination can only be made by the Corps of Engineers, using the 1987 Wetlands Delineation Manual.	March 30 and August 3, 2004 field reviews were held with the USACE to identify jurisdiction wetlands in Ohio. INDOT will ensure that jurisdictional determinations will also be made in Indiana.
IDEM recommends that, to the extent possible, impacts to wetlands and other resources simply be avoided.	Impacts will be avoided to the extent possible, and minimized or mitigated when avoidance is not possible. The cutting of riparian vegetation will be mitigated to the extent possible.
In the event a Section 404 wetlands permit is required from the Corps of Engineers, you also must obtain a Section 401 Water Quality Certification from the IDEM Office of Water Quality. If your project will involve over a 0.5 acre of wetland impact, steam relocation, or other large-scale alterations to waterbodies such as the creation of a dam or a water diversion, you should seek additional input from Section 401 Water Quality Certification staff. For projects involving construction activity that results in the disturbance of five or more acres of total land area, contact the Office of Water Quality – Permits Branch regarding the need for a Rule 5 Storm Water Permit. For projects involving work within floodways of waterbodies, contact the Department of Natural Resources – Division of Water regarding the need for permits. For projects involving impacts to fish and botanical resources, contact the Department of Natural Resources – Division of Fish and Wildlife for additional project input. For projects involving water main construction, water main extensions, and new public water supplies, contact the Office of Water Quality-Drinking Water Branch regarding the need for permits. For projects involving effluent discharges to water of the State of Indiana, contact the Office of Water Quality – Permits Branch regarding the need for a National Pollutant Discharge Elimination System (NPDES) permit. For projects involving the construction of wastewater facilities and sewer lines, contact the Office of Water Quality – Permits Branch regarding the need for permits. If your project involves the construction of a new source of air emissions or the modification of an existing source of air emissions or air pollution control equipment, it will need to be reviewed by the IDEM Office of Air Quality (OAQ).	Comments noted. The project will be coordinated, as applicable, with the appropriate IDEM Departments and the USACE.
The physical disturbance of the stream and riparian vegetation, especially large trees overhanging any affected waterbodies should be limited to only that which is absolutely necessary to complete the project. The shade provided by the large overhanging trees helps maintain proper stream temperatures and dissolved oxygen for aquatic life.	Comment noted.
IDEM recommends that appropriate structures and techniques be utilized both during the construction phase, and after completion of the project, to minimize soil erosion.	The project will be constructed in accordance with ODOT's *Construction and Material Specifications* (2005) and INDOT's *Construction Activity Environmental Manual* (2002). INDOT's and ODOT's Engineers are responsible for ensuring that the contractors comply with environmental regulations and commitments detailed in their construction specifications such as sections 105.16 (Borrow and Waste Areas) and 107.19 (Environmental Protection) of ODOT's *Construction Materials Specifications Handbook* (2005).
Regarding open burning, and disposing of organic debris generated by land clearing activities; some types of open burning are allowed under specific conditions. You also can seek an open burning variance from IDEM. However, IDEM generally recommends that you take vegetative wastes to a registered yard waste composting facility or that the waste be chipped or shredded with composting on site (you must register with IDEM if more than 2,000 pounds is to be composted). You also may bury any vegetative wastes (such as leaves, twigs, branches, limbs, tree trunks and stumps) onsite, although burying large quantities of such material can lead to subsidence problems.	The project will be coordinated with IDEM and OEPA in the construction phase. All applicable regulations, laws, and ordinances will be adhered to during construction.

TABLE 3.1 (CONTINUED)
CONCURRENCE POINT #4 AGENCY COMMENTS ON DEIS PREFERRED ALTERNATIVE

Agency Indiana Department of Environmental Management (continued) (October 31, 2003)	
Comment	**Response**
Reasonable precautions must be taken to minimize fugitive dust emissions from construction and demolition activities. Dirt tracked onto paved roads from unpaved areas should be minimized.	The contractor will be required to adhere strictly to dust control measures as outlined in the lasted edition of the INDOT *Standard Specifications* and ODOT *Construction and Material Specifications*. Measures to be implemented are discussed in Section 3.6 of the DEIS.
If construction or demolition is conducted in a wooded area where blackbirds have roosted or abandoned buildings or building sections in which pigeons or bats have roosted for 3-5 years, precautionary measures should be taken to avoid an outbreak of histoplasmosis.	Comment noted. All necessary safeguards to protect employees and the public will be taken.
Ensure that asphalt paving plants are permitted and operate properly. The use of cutback asphalt, or asphalt emulsion containing more than seven percent (7%) oil distillate, is prohibited during the months of April through October.	Comment noted.
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 there are any asbestos disposal issues related to the project, contact the Industrial Waste section of the Office of Land Quality for information regarding the management of asbestos wastes.	Comment noted.
In all cases where a demolition will occur, even if no asbestos is found, the owner or operator must still notify IDEM ten working days prior to the demolition.	Comment noted. The contractor will notify IDEM at least 10 days prior to demolition of structures.
With respect to lead-based paint removal, IDEM encourages all efforts to minimize human exposure to lead-based paint chips and dust.	Testing will be done prior to demolition. Remediation will be completed in accordance with applicable laws, ordinances and regulations.
In order to maintain compliance with all applicable laws regarding contamination and/or proper waste disposal, IDEM recommends that: 1). If the site is found to contain any areas used to dispose of solid or hazardous waste, you need to contact the Office of Land Quality (OLQ). 2.) If any contaminated soils are discovered during this project, they may be subject to disposal as either special or hazardous waste. Please contact OLQ for information on proper disposal procedures. 3. If PCBs are subsequently found at this site, please contact the Industrial Waste Section of OLQ for information regarding management of any PCB wastes.	Comment noted. Coordination with OLQ will occur as required.
The IDEM Office of Land Quality reserves the right to provide additional comments, or to undertake other appropriate actions, if additional information becomes available that reveals potential waste disposal or contamination problems at the site.	Comment noted.
Should you need to obtain any environmental permits in association with this proposed project, please be mindful that IC 13-15-8 requires that you notify all adjoining property owners and/or occupants within ten days of your submittal of each permit application.	Comment noted.

Agency Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology (November 13, 2003)	
Comment	**Response**
Thank you for providing the Indiana SHPO an opportunity to comment on the environmental assessment. Based upon the information provided, and as long as archaeological concerns are addressed as per the document, we do not have any additional comments.	Comment noted.

TABLE 3.1 (CONTINUED)
CONCURRENCE POINT #4 AGENCY COMMENTS ON DEIS PREFERRED ALTERNATIVE

Agency: Indiana Department of Natural Resources, Division of Water (October 14, 2003)	
Comment	**Response**
The review of the US 24 project is in process. Please send any future Environmental Review requests to Christie Kiefer, Environmental Coordinator, and include three copies.	Comment noted.

Agency: Northeastern Indiana Regional Coordinating Council (Fort Wayne, Indiana MPO) (November 24, 2003)	
Comment	**Response**
A concern has arisen over the alignment of Webster Road in Allen County, Indiana north of the selected route for the US 24 "Fort to Port" Project. The current alignment of Webster Road at its transition to Woodburn Road consists of a 90-degree angle. This transition occurs approximately 3,200 feet north of the planned interchange of US 24 and Webster Road. The interchange will increase the volume of traffic on Webster Road and the existing alignment will not be conducive to safe and efficient traffic flow.	INDOT will investigate this issue further during the design phase of the project.

3.2 SUMMARY OF AGENCY COORDINATION SINCE APPROVAL OF THE DEIS, AUGUST 2003

Additional studies and agency coordination continued after approval of the DEIS for streams and wetlands, scenic rivers, threatened and endangered species, cultural resources, and Section 4(f) resources. The following summarizes the activities and coordination completed for these resources.

3.2.1 STREAMS AND WETLANDS

Stream surveys and wetland delineations were conducted in the expanded right-of-way areas for the Preferred Alternative D-1 Modified in 2004. The results of the 2004 stream surveys and wetlands delineations are presented in the *Addendum to the Ecological Survey Reports and Wetlands Delineation Study for Allen County, Indiana and Defiance and Paulding Counties, Ohio* (October 2004).

On March 30 and August 3, 2004, field reviews of the streams and wetlands in Ohio were conducted by the USACE and OEPA. The purpose of the field reviews was to make jurisdictional determinations on the streams and wetlands affected by the Preferred Alternative D-1 Modified in Ohio. Following the field reviews, the OEPA and USACE issued jurisdictional determinations for the streams and wetlands in Paulding and Defiance counties, Ohio. Jurisdictional determination correspondence from the OPEA and USACE is provided in Appendix C.

Jurisdictional determinations have not been completed for streams and wetlands in Indiana. They will be completed during the design phase of project development in Indiana.

The construction of the Preferred Alternative D-1 Modified will result in unavoidable stream and wetland encroachments. A total of 8056 meters (26,425 feet) of stream and 9.6 hectares (23.85 acres) of wetlands will be impacted. The Preferred Alternative D-1 Modified in Allen County, Indiana impacts 5634 meters (18,481 feet) of stream channel and 0.7 hectares (1.8 acres) of wetlands. The Preferred Alternative D-1 Modified in Paulding and Defiance counties, Ohio impacts 2422 meters (7,944 feet) of stream channel and 8.9 hectares (22.05 acres) of wetlands.

ODOT prepared and submitted a Section 404 permit application, a Section 401 Water Quality Certification application, and an Isolated Wetland permit application to the USACE and OEPA in June 2005. INDOT will prepare waterway permit applications and mitigation measures after jurisdictional determinations are made by the USACE during the final design phase of the project development process.

Mitigation measures presented by ODOT in the permit applications for stream and wetland impacts include conservation easements, creation, and preservation. ODOT has identified a potential stream and mitigation site in Defiance County. The property is located south of the existing US 24/SR 424 intersection, east of Krouse Road and north of the Maumee & Western Railroad (Figure 1). This site is 64.4 hectares (159 acres) in size and offers the following:

- preservation of 24.70 hectares (61 acres) of forested Category 3 wetlands and a 29.14-hectare (72-acre) mature forested, upland buffer;
- creation/restoration of 10.53 hectares (26 acres) of wetlands; and
- preservation of 1319.5 meters (4,328 feet) of undisturbed stream channel.

ODOT's stream mitigation also includes constructing 617.38 meters (2,025 feet) of natural stream channel with vegetative buffer onsite and a perpetual conservation easement along 1504 meters (4,932 feet) of the Maumee River.

3.2.2 SCENIC RIVERS

Throughout the development of the US 24 project, ODOT has coordinated with the ODNR regarding the effects that the proposed new highway will have on the Maumee River. The Maumee River is considered a State Scenic and Recreational River and a State Resource Water in Ohio. The scenic portion of the river starts at the Indiana/Ohio state line and proceeds east for a distance of approximately 69.4 kilometers (43 miles) to the US 24 Maumee River Crossing. The recreational portion of the river is 85.5 kilometers (53 miles) long and begins at the US 24 river crossing at Defiance and continues east to the SR 20/25 bridge at Perrysburg and Maumee, Ohio. The relationship between the recreational status of the Maumee River and the existing US 24 river crossing is the convenience of the bridge as a landmark along the Maumee River. The bridge does not demarcate a specific point in the river whose primary function is recreation, but rather serves merely as a point of general reference.

On March 24, 2004, ODOT and ODNR representatives held a field review to discuss the proposed design and construction of the new US 24 bridge over the Maumee River. Following the field review, ODNR provided comments on the proposed crossing, which are summarized in Table 3.2.

At the request of ODNR, ODOT investigated several bridge alternatives for the Maumee River. Through a comparative analysis, the bridge alternatives were reduced to two possible options: a three-span girder superstructure on new concrete substructures and a four-span prestressed concrete I-beam superstructure on concrete substructures. The four-span bridge design option was ODOT's preferred option. The two alternatives were provided to ODNR for review and comment in August 2004.

The ODNR provided comments on the four-span bridge option in September 2004. In an email to ODOT, the ODNR stated that "...we have decided to allow ODOT to pursue the preferred option even though it is our policy not to have bridge piers in the center of a river channel. There were several reasons for our decision: the cost increase for a three-span as opposed to a four-span structure; the size of the structure considering the width of the river and the high/steep slopes of the riverbank, and the fact that there will be instream work no matter what structure is going to be built."

TABLE 3.2
AGENCY COMMENTS ON THE MAUMEE STATE SCENIC AND RECREATIONAL RIVER

Agency Ohio Department of Natural Resources (March 25, 2004)	
Comment	**Response**
The Preferred Alternative, D-1, will be located far enough south of the Maumee River that there will be little or no impact to the river. However, I am submitting comments concerning the new Maumee River bridge crossing west of Defiance. The bridge crossing shall use the existing right-of-way.	Comment noted.
A sediment and erosion control plan shall be developed for the site and implemented before earthwork commences. Particular attention shall be given to any drainage ways, ditches and streams that could convey sediment-laden water directly to the Maumee River. Properly installed (framed and entrenched) sediment fence shall be utilized around the work site perimeter and storm water inlets. Appropriately designed rock-check dams and other erosion controls shall be utilized in ditches and drainage ways. All controls shall be properly maintained until final site stabilization is achieved. All sediment and erosion controls shall be removed upon stabilization of the project area with vegetation. Straw bales shall not be permitted as a form of erosion control. All denuded areas, including ditches, culverts and river/stream banks, shall be permanently seeded and mulched (or fiber mat) immediately upon completion of earthwork or temporarily seeded and mulched (or fiber mat) within seven days if the area is to remain idle for more than thirty days. Access roads constructed on slopes shall be graveled to prevent any erosion from occurring.	A sediment and erosion control plan will be developed for the site and implemented before construction begins. In addition, all denuded areas, including ditches, culverts and river/stream banks, will be permanently seeded and mulched (or fiber mat) upon completion of earthwork or temporarily seeded and mulched (or fiber mat).
Idle equipment, petrochemicals and toxic/hazardous materials shall not be stored in the floodplain or near any drainage ways, ditches or streams. Petrochemicals and toxic/hazardous materials shall not be discharged into the Maumee River, its floodplain or any drainage ways, ditches or streams. Refueling of equipment shall not occur in the floodplain or near any drainage ways, ditches or streams. A spill containment and cleanup plan shall be generated prior to the start of the project.	The project will be constructed in accordance with ODOT's *Construction and Material Specifications* (2005) and INDOT's *Construction Activity Environmental Manual* (2002). INDOT's and ODOT's Engineers are responsible for ensuring that the contractors comply with environmental regulations and commitments detailed in their construction specifications such as sections 105.16 (Borrow and Waste Areas) and 107.19 (Environmental Protection) of ODOT's *Construction Materials Specifications Handbook* (2005). A Spill Prevention Control and Countermeasure Plan (SPCCP) will be prepared prior to construction and implemented during construction. The plan will follow USEPA Oil Planning and Response guidelines and include prevention control measures, sources of spills, standard operating procedures in case of spills, and training for all construction personnel. The SPCCP will be made available at the project office.
All components of the existing structure (piers, abutments, etc.) shall be completely removed. Piers shall be removed down to the same elevation as the surrounding riverbed. Every effort shall be made to keep deck material and other debris out of the river during removal. Asphalt deck material shall be removed before any portion of the bridge is removed. If any material falls into the water, it shall be removed immediately. All debris, excess fill material and material excavated from the river bottom shall be disposed of at an approved upland site (above 100 year flood elevations). Disposal in wetlands, floodplains or within 1,000 feet of the Maumee River is prohibited.	Construction debris will be removed in accordance with ODNR recommendations.
All in-stream work shall be conducted during low flow period (August 1 through October 31). Any disturbed areas in the stream bottom shall be returned to pre-construction contours. Stream bottom elevations shall be determined before in-stream work commences to ensure that all fill material and debris is completely removed before construction is completed.	In accordance with ODNR correspondence dated March 24, 2005, instream work will not be conducted between March 15th and June 30th. Disturbed areas in the river bottom will be returned to pre-construction contours.

TABLE 3.2 (CONTINUED)
AGENCY COMMENTS ON THE MAUMEE STATE SCENIC AND RECREATIONAL RIVER

Agency Ohio Department of Natural Resources (continued) (March 25, 2004)	
Comment	**Response**
Rip-rap used around piers and abutments shall be kept to the minimum amount needed to prevent scour and shall consist of clean rock only (free of any toxic or fine material). All fill material used as rip rap, work platforms or cofferdams shall be a minimum of three inches in diameter and be washed to remove fine particulate matter (clay, silt, sand and soil). Work platforms shall be kept to the absolute minimum size needed to facilitate in-stream work. In-stream work shall be conducted through the use of water diversions not requiring the placement of earthen fill (sheet piling, membrane dams, etc.) wherever possible. Any fill shall be completely removed from the streambed as soon as possible after its purpose has been served. If feasible, the use of Aqua Barriers and barges is recommended.	The use of riprap and fill for bridge construction will be used in accordance with ODNR's recommendations.
If dewatering is necessary to facilitate in-stream work, all wastewater shall be pumped onto a vegetated area a sufficient distance from the Maumee River to allow for complete infiltration. No wastewater of any kind shall be discharged directly into the Maumee River or any other drainage ways, ditches or streams. All storm water drainage shall be directed onto a vegetated area to allow for complete infiltration. If discharge to a vegetated area is not feasible, then wastewater shall be discharged into a sediment filter bag or into a temporary detention/ retention pond.	During construction, wastewater will not be discharged into the Maumee River or other watercourses. Storm water will be controlled using BMPs.
All stream bank vegetation shall be left undisturbed to the maximum extent possible. Areas where vegetation is removed shall be re-vegetated with native tree species. Any disturbed stream banks shall be returned to previously existing contours and elevations. A native tree species list will be provided by the NW Ohio Scenic River Manager. Trees shall be one inch in diameter and balled/ burlap nursery stock. After a full growing season for the trees, any stakes and guide wires shall be removed and properly disposed of. Any trees that die during the first growing season shall be replaced. Cutting or clearing of any riparian vegetation within 1000 feet of the Maumee River beyond the existing right-of-way shall be prohibited, however vertical trimming is permitted where necessary. Care shall be taken not to girdle or scuff tree trunks or damage any standing trees.	All stream bank vegetation will be left undisturbed to the maximum extent possible. Areas where vegetation is removed will be re-vegetated with native tree species to the specifications requested by ODNR. Disturbed stream banks will be returned to previously existing contours and elevations.
If painting, sand or water blasting any portion of the bridge is necessary then appropriate aprons shall be utilized to provide for complete containment of all paint debris particles and other debris. Appropriate aprons shall be utilized to provide for complete containment of all paint and/or sealant over-spray. Any such debris shall be removed immediately from 1000 feet of the Maumee River and disposed of at an approved upland site (above 100 year flood elevations). Disposal in wetlands, floodplains or within 1000 feet of the Maumee River is prohibited.	Aprons will be used for any painting, sanding or water blasting on the US 24 bridges to contain debris and overspray.
Robert Vargo, NW Ohio Scenic River manager, shall be invited to a pre-construction meeting with the contractor present. He shall be notified of the start date, completion date, be allowed to conduct a final inspection before the project closes and receive a final plan set for review. Periodic inspections of the project shall take place to ensure Scenic River requirements are being met. The Scenic Rivers Act, O.R.C. 1517.16, requires the ODNR Director or his representative to approve any public project. Such approval shall be granted after a review of the final plan set by Scenic Rivers staff.	ODOT will continue to coordinate with ODNR about the Maumee River bridges through completion of the project.
The cooperation of the ODOT District 1 is greatly appreciated for their part in preserving the integrity of the Maumee State Scenic River. Signs stating "Maumee State Scenic River" shall be provided and installed at the approaches of both bridges.	As requested, ODOT will install signs stating "Maumee State Scenic River" at the approaches of both bridges.

TABLE 3.2 (CONTINUED)
AGENCY COMMENTS ON THE MAUMEE STATE SCENIC AND RECREATIONAL RIVER

Agency Ohio Department of Natural Resources (March 24, 2005)	
Comment	**Response**
Scenic Rivers staff has reviewed ODOT's request for using only the Division of Wildlife exclusionary dates for the Maumee River crossing. We concur based on the following – this portion of the Maumee River State Scenic River is impounded due to Independence Dam, and this impounded area is lacking in good in-stream habitat for any sensitive species.	ODOT will use the exclusionary dates of March 15th through June 30th for in-stream construction activities of the Maumee River crossing.

ODOT has coordinated with ODNR on the construction schedule for the Maumee River crossing. ODNR typically requires that in-stream construction activities only be performed in Scenic Rivers during low flow periods, which are usually three months in duration. ODOT was concerned that in-stream construction activities for the Maumee River bridges could not be completed in a three month period. ODOT requested that only ODNR Division of Wildlife's fish spawning exclusionary dates be applied to the project. ODNR concurred with this request in correspondence dated March 24, 2005 (Table 3.2). No in-stream work for the bridges will be conducted within the Maumee River between March 15th and June 30th.

3.2.3 THREATENED AND ENDANGERED SPECIES

Comments on the Preferred Alternative and DEIS received from the USFWS requested additional information on project impacts to threatened and endangered species, specifically the Indiana bat. In response to the USFWS comments received during the Concurrence Point #3 coordination, ODOT documented project impacts to threatened and endangered species in the *Biological Assessment of Federally Listed Species for the Ohio Department of Transportation's US 24 New Haven, Indiana to Defiance, Ohio (ALL [Indiana]/PAU/DEF [Ohio]-24-0.00 PID 18904)* (April 29, 2005). Section 7 Consultation of the Endangered Species Act was initiated on May 18, 2005. The USFWS issued a Biological Opinion on the construction, operation, and maintenance of the US 24 project for the Indiana bat on September 30, 2005.

A field review of Indiana bat habitat within the US 24 project area was held on August 8, 2005 and attended by representatives from the USFWS and ODOT. The purpose of the field review was to familiarize USFWS staff with the affected woodlots. A general habitat assessment was conducted in several woodlots along the Preferred Alternative. The data collected during the field review was used to develop the Biological Opinion.

3.2.4 CULTURAL RESOURCES

Phase I historic architecture and Phase I archaeological surveys were conducted in the expanded right-of-way areas for the Preferred Alternative D-1 Modified, which included the I-469 interchange study area. The results of the Phase I surveys are documented in the following reports:

- *Addendum Report: Phase IA Archaeological Reconaissance of the US 24 Improvements in Adams, Jefferson and Milan Townships, Milan County,Indiana: I-469/US 24 Interchange* (November 2003).
- *Addendum Report: Phase Ia Archaeological Reconnaissance of the US 24 Improvements in Adams, Jefferson, and Milan Townships, Allen county, Indiana* (July 2004).
- *Addendum of the Phase I Cultural Resource Survey Report of the PAU/DEF-24-0.00/0.00 PID 18904 Improvements in Noble, Delaware and Defiance*

Townships, Defiance County, and Emerald, Crane, Carryall, and Harrison Townships, Paulding County, Ohio (October 2004).

The reports were submitted to the Indiana Division of Historic Preservation (DHPA) and Archaeology and the Ohio Historic Preservation Office for review and concurrence. The agencies concurred with the findings of the technical reports. Copies of the agency comment letters are in Appendix C.

Gronauer Lock

The Gronauer Lock Site 12AL 1674 is located within the right-of-way of the existing I-469/US 24 interchange (Figure 2). During the construction of the existing I-469/US 24 interchange in June 1991, the Gronauer Lock was discovered. The equivalent of Phase II evaluative testing, Phase III data recovery, and evaluative testing were performed on the Gronauer Lock in 1991. Testing indicated that the lock was eligible for listing on the National Register of Historic Places (NRHP). A mitigation plan was developed and approved by the DHPA in 1992. A memorandum of agreement was prepared and data recovery was conducted resulting in almost complete exposure of the lock in 1992. A Historic American Engineering Record (HAER) document was completed and the majority of the lock was removed for preservation off-site.

The DHPA was contacted in March 2003, regarding the NRHP eligibility status of the Gronauer Lock and whether further additional archaeological work was required on the Gronauer Lock for the US 24 project. On May 16, 2003, the DHPA responded with a letter stating that the unexcavated portion of the Gronauer Lock can yield additional information in regards to the important historic structure. As such, the remaining portion of the lock should be recorded in plan and profile views, by a qualified archaeologist. The DHPA requested that a plan for the proposed archaeological documentation should be submitted for review and comment prior to implementation.

The archaeological surveys and mitigation completed in the early 1990's determined that the significance of the Gronauer Lock resides in its information potential and remaining elements of the canal lock do not merit preservation in place. Based on all existing information, it was determined by the DHPA that the Gronauer Lock (12AL 1674) is eligible for listing on the NRHP under Criterion D (Information Potential) since it has or had important information which contributes to our understanding of human history.

The FHWA Indiana Division and the Indiana State Historic Preservation Officer (SHPO) prepared a Programmatic Agreement for the Gronauer Lock in October 2005. The FHWA invited the Advisory Council on Historic Preservation (ACHP) to participate in the development of the Programmatic Agreement. The ACHP declined to participate in development of the Programmatic Agreement. The purpose of the Programmatic Agreement was to phase the effect determination for the Gronauer Lock and any subsequent data recovery requirements since the engineering design for the I-469/US 24 interchange has not advanced beyond the preliminary phase and the boundaries of the Gronauer Lock site are unknown. The Programmatic Agreement identified the actions FHWA and INDOT will take to satisfy FHWA's Section 106 responsibilities. The following are stipulations specified in the Programmatic Agreement:

- Prior to completing the final project design in Indiana, the INDOT will complete the appropriate archaeological investigations to determine the boundaries of the Gronauer Lock. INDOT will coordinate the archaeological investigations with the Indiana SHPO. A research plan detailing the methodology for defining the boundaries of the site shall be submitted to the Indiana SHPO for review and comment.

- The INDOT will make a reasonable effort to avoid the Gronauer Lock site during design and construction. If the site cannot be avoided, FHWA will apply the Criteria of Adverse effect in accordance with 36 CFR 800.5.

- If the FHWA determines, in consultation with the Indiana SHPO, that the project will have an adverse effect on the Gronauer Lock site, then INDOT will develop plans for Phase II and/or Phase III archaeological investigations in consultation with the Indiana SHPO and submit such plans to the FHWA and Indiana SHPO for their review and comment. The INDOT shall submit alternative mitigation plan to the FHWA and Indiana SHPO for their review and comment, if appropriate. That review period will be 30-days. If archaeological resources are identified which are eligible under Criteria other than or in addition to Criterion D, FHWA shall comply with 36 CFR 800.6.

- A draft report(s) of the archaeological investigations and updated Indiana state site form shall be submitted to the FHWA and Indiana SHPO for review and comment. All final reports of the archaeological investigations will be completed within one year of the completion of field work. The Indiana SHPO will be given 30-days to review and comment on all submissions.

- INDOT shall ensure that all archaeological work carried out pursuant to this Programmatic Agreement is carried out by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualification Standards* (48 FR 44738-9), and that all historic preservation work is carried out by or under the direct supervision of a person or persons meeting, at a minimum the *Secretary of the Interior's Professional Qualification Standards for Architectural Historian Professionals* (48 FR 44738-9).

- If any unanticipated discoveries of historic properties, sites, artifacts, or human remains are encountered during the implementation of this undertaking, FHWA shall comply with 36 CFR 800.13 and Indiana Code (14-21-1-27 and 14-21-1-29) by informing the Indiana Department of Natural Resources of such discoveries within two business days and, if applicable, federally recognized tribal organizations that attach religious and/or cultural significance to the affected property; and by developing and implementing actions that take into account the views of the Indiana SHPO and, if applicable, federally recognized tribal organizations.

The Programmatic Agreement was signed by INDOT, the Indiana SHPO, and FHWA Indiana Division and executed on October 13, 2005. The Programmatic Agreement was filed with the ACHP in October 2005. The Programmatic Agreement is in Appendix C.

Niemeyer Farm

The Niemeyer Farm is located in the northwest quadrant of the existing I-469/US 24 interchange. The site was determined to be eligible for the NRHP. As a result of the proposed improvements to the existing I-469/US 24 interchange, an effects determination was made for the Niemeyer Farm by applying the Criteria of Effect in accordance with the requirements of the National Historic Preservation Act. A letter documenting effects to the Niemeyer Farm was coordinated with the DHPA in July of 2004. The DHPA concurred with the finding of No Effect for the Niemeyer Farm.

Meyer/Gallmeyer Farm

The Meyer/Gallmeyer Farm located at 11231 East US 24 in Allen County is eligible for the NRHP. Initial surveys conducted for this site determined that the historic boundary

of the property was defined as the tax/legal parcel of 31.1 hectares (76.8 acres), which is the original farm tract. The right-of-way for the preferred Alternative D-1 Modified directly impacted the Meyer/Gallmeyer Farm. The highway alignment required acquisition of 1.2 hectares (3.0 acres) of land from within the historic boundary. An Effects Determination was coordinated with the DHPA. The DHPA concurred with the finding of No Adverse Effect for the Meyer/Gallmeyer Farm.

The historic boundary for the Meyer/Gallmeyer Farm was reevaluated by FHWA, INDOT, and DHPA in February 2005. The reevalution determined that the historic boundary should be revised to include only the farm house, out buildings and land immediately surrounding those structures. As a result of the revised historic boundary, the Preferred Alternative D-1 Modified does not directly impact the Meyer/Gallmeyer Farm. Copies of the agency coordination letters regarding the revised historic boundary of the Meyer/ Gallmeyer Farm are provided in Appendix C.

3.2.5 SECTION 4(f) RESOURCES

Maumee River

Coordination between the FHWA and ODNR concerning the applicability of Section 4(f) to the Maumee State Scenic and Recreational River has been conducted for the project. Through this agency coordination, it was determined that the nearest recreational area on the Maumee River is located 4.8 kilometers (3.0 miles) downstream from the existing US 24 bridge. The relationship between the recreational status of the Maumee River and the existing US 24 river crossing is the convenience of the bridge as a landmark along the Maumee River. The bridge does not demarcate a specific point in the river whose primary function is recreation, but rather serves merely as a point of general reference. Based on coordination with ODNR, FHWA has determined that Section 4(f) is not applicable to the Maumee River in the vicinity of the existing US 24 bridge. Correspondence regarding Section 4(f) applicability to the Maumee River is provided in Appendix C.

Gronauer Lock

The Gronauer Lock (12AL 1674) was partially excavated and portions of the original structure were removed as a part of efforts to mitigate adverse effects associated with construction of the existing I-469/US 24 interchange in 1992. Through coordination with the DHPA, it was determined that the significance of this property resides in its information potential and remaining elements of the canal lock do not merit preservation in place. Based on all existing information, it was determined that the Gronauer Lock is eligible for listing on the NRHP under Criterion D (Information Potential) since it has or had important information which contributes to our understanding of human history. Therefore, FHWA has determined that Section 4(f) is not applicable to the Gronauer Lock. Copies of the agency coordination letters regarding the Gronauer Lock are provided in Appendix C.

Meyer/Gallmeyer Farm

The historic boundary for the Meyer/Gallmeyer Farm, an NRHP eligible property, was reevaluated by FHWA, INDOT, and DHPA in February 2005. Initial surveys conducted for this site determined that the historic boundary of the property was defined as the tax/legal parcel of 31.1 hectares (76.8 acres), which is the original farm tract. The right-of-way for the preferred Alternative D-1 Modified directly impacted the historic boundary of the Meyer/Gallmeyer Farm. The highway alignment required acquisition of 1.2 hectares (3.0 acres) of land from within the historic boundary. An Effects Determination was coordinated with the DHPA. The DHPA concurred with the finding of No Adverse Effect for the Meyer/Gallmeyer Farm. The reevalution determined that the historic boundary should be revised to include only the farm house, out buildings and land immediately surrounding those structures. As a result of the revised historic

boundary, the Preferred Alternative D-1 Modified does not directly impact the historic boundary of the Meyer/Gallmeyer Farm. Copies of the agency coordination letters regarding the revised historic boundary of the Meyer/Gallmeyer Farm are provided in Appendix C.

4.0 PROJECT STATUS

4.0 PROJECT STATUS

The Federal Highway Administration (FHWA) approved the Draft Environmental Impact Statement (DEIS) on August 19, 2003. Notice of the DEIS's availability was published in the *Federal Register* on October 3, 2003. The DEIS was available to the public hearings on October 28, 29, and 30, 2003. The public and government agencies were given official opportunity to comment on the DEIS until November 21, 2003.

4.1 DESIGN CHANGES TO THE PREFERRED ALTERNATIVE

Following the public hearings, the Ohio Department of Transportation (ODOT) and Indiana Department of Transportation (INDOT) continued to make refinements to the Preferred Alternative. In 2004 ODOT initiated Stage One and Stage Two engineering design for the Preferred Alternative in Ohio. Elements of Stage One and Two engineering include detailed drainage design, maintenance of traffic plan, preliminary utility plan, bridge design (i.e. type, size and location), right-of-way limits, flood hazard evaluation, soil borings, roadway plan development and design. As a result of the engineering refinements, the right-of-way limits for Alternative D-1 were revised in Ohio. In some areas the right-of-way limits were expanded to accommodate drainage features and in other areas, the right-of-way limits were reduced to minimize impacts. The primary factor affecting revisions to the right-of-way limits was the detailed drainage design, which included long drainage ditches to channel storm water runoff and the implementation of Best Management Practices (BMP's) for improving the quality of water runoff.

Using public input from the hearings, ODOT and INDOT selected the preferred options for the I-469/US 24 interchange and access at West High Street and Switzer Road. These additions were incorporated into the right-of-way limits of the Preferred Alternative.

Currently, the Preferred Alternative for the US 24 project is Alternative D-1 with modifications resulting from design refinements, agency comments, public comments, and mitigation measures. Elements of the Alternative D-1 modifications include Stage One and Two engineering design, proposed service roads, improvements to the I-469 and SR 15/18 interchanges, a connector road between West High Street and SR 15/18, improvements to local roads, and a wetland mitigation area. Section 5.0 addresses the changes in the Preferred Alternative since the public hearings. The Preferred Alternative (Alternative D-1 Modified) is a four-lane divided highway.

4.2 ENVIRONMENTAL STUDIES

Environmental studies and agency coordination for the US 24 project are complete with the exception of a jurisdictional wetlands determination in Indiana. Jurisdictional determinations for wetlands in Indiana from the US Army Corps of Engineers will be obtained during the final design phase.

Comments on the Preferred Alternative and DEIS received from the US Fish and Wildlife Service (USFWS) requested additional information on project impacts to threatened and endangered species, specifically the Indiana bat. In response to the USFWS, ODOT prepared a Biological Assessment (BA) and initiated Section 7 Consultation of the Endangered Species Act on May 18, 2005. The USFWS issued a Biological Opinion on the construction, operation, and maintenance of the US 24 project for the Indiana bat on September 30, 2005.

Section 4(f) and Section 106 coordination was conducted for the Gronauer Lock (12AL 1674) in September and October 2005. The Indiana Division of Historic Preservation

and Archaeology (DHPA) determined that the Gronauer Lock is eligible for listing on the National Register of Historic Preservation (NRHP) under Criterion D (Information Potential) since it has or had important information which contributes to our understanding of human history and remaining elements of the canal lock do not merit preservation in place. Therefore, FHWA determined that Section 4(f) is not applicable to the Gronauer Lock.

The FHWA Indiana Division and the Indiana State Historic Preservation Officer (SHPO) prepared a Programmatic Agreement for the Gronauer Lock in October 2005. The FHWA invited the Advisory Council on Historic Preservation (ACHP) to participate in the development of the Programmatic Agreement. The ACHP declined to participate in development of the Programmatic Agreement. The purpose of the Programmatic Agreement was to phase the effect determination for the Gronauer Lock and any subsequent data recovery requirements since the engineering design for the I-469/US 24 interchange has not advanced beyond the preliminary phase and the boundaries of the Gronauer Lock site are unknown. The Programmatic Agreement identified the actions FHWA and INDOT will take to satisfy FHWA's Section 106 responsibilities. The Programmatic Agreement was signed by INDOT, the Indiana SHPO, and FHWA Indiana Division and executed on October 13, 2005. The Programmatic Agreement was filed with the ACHP in October 2005. The Programmatic Agreement is in Appendix C.

4.3 FINAL DESIGN, RIGHT-OF-WAY ACQUISITION AND CONSTRUCTION

The US 24 New Haven to Defiance Project has been identified as a Tier One project under ODOT's 2006-2011 Major New Construction Program and 123 million dollars have been allocated for construction. The INDOT Planning Oversight Committee is currently reviewing the US 24 project for inclusion in the state's 10 year construction plan.

Comments on the Preferred Alternative and DEIS received from the USFWS requested additional information on project impacts to threatened and endangered species, specifically the Indiana bat. In response to the USFWS, ODOT prepared a BA and initiated Section 7 Consultation of the Endangered Species Act. The BA and Section 7 Consultation have extended the schedule for the environmental phase of the project. Because of the purpose and need for the project, ODOT decided to not delay the overall project schedule and moved forward with final design and right-of-way acquisition activities at its own risk. These activities will not impact or influence the National Environmental Policy Act (NEPA) decisions.

The 60.8-kilometer (37.7-mile) Preferred Alternative was divided into several design sections for final design, right-of-way acquisition, and construction. Each of the sections has its own schedule for these final stages of the project development process. Final design for the Preferred Alternative began in 2004.

The first section scheduled for right-of-way acquisition and construction in Ohio is between SR 424 and SR 15/18. ODOT initiated the right-of-way acquisition process for this section in January 2004. Construction of this section is scheduled for spring 2006. Construction for the two sections between the Indiana/Ohio state line and SR 424 is scheduled for spring 2007.

INDOT will not begin right-of-way acquisition until 2007 and construction until 2008. The section of highway from SR 101 to the Indiana/Ohio state line will be the first section of the new highway constructed in Indiana.

4.4 PROJECT SCHEDULE

In order to maintain the project schedule, some project design tasks have run concurrently with environmental studies. This approach has increased the quality of data used for determining impacts as well as compressed the development schedule. The project schedule since January 2004 is summarized in Table 4.1.

TABLE 4.1
PROJECT SCHEDULE

Activity	Date
Begin property acquisition in Defiance County, Ohio	January 2004
Begin Stage I engineering design in Ohio	February 2004
Begin environmental studies on Stage I engineering right-of-way	May 2004
Begin Stage II engineering design in Ohio	July 2004
Begin property acquisition in Paulding County, Ohio	October 2004
Prepare Biological Assessment for threatened and endangered species	September 2004
Begin final design in Indiana	November 2004
Coordinate Biological Assessment with USFWS	May 2005
Obtain Biological Opinion from USFWS	September 2005
Final Environmental Impact Statement approval and Record of Decision by FHWA	Fall 2005
Begin construction between SR 424 and SR 15 in Defiance County, Ohio	April 2006
Begin property acquisition in Indiana	January 2007
Begin construction between IN/OH state line and SR 424	April 2007
Complete construction between SR 424 and SR 15 in Defiance County, Ohio	November 2007
Begin construction in Indiana	April 2008
Complete construction between IN/OH state line and SR 424	November 2009
Complete construction in Indiana	November 2014

5.0 PROJECT CHANGES

5.0 PROJECT CHANGES

In May 2002, the Ohio Department of Transportation (ODOT) and the Indiana Department of Transportation (INDOT) announced that Alternative D-1 had been selected as the Preferred Alternative for the US 24 New Haven to Defiance project. The Preferred Alternative was presented in the Draft Environmental Impact Statement (DEIS) and at the public hearings held in October 2003. Following the public hearings, the project continued to move forward in ODOT's and INDOT's project development processes, which resulted in changes to Alternative D-1. This section summarizes project changes that have occurred since the approval of the DEIS and the public hearings.

5.1 DESIGN CHANGES

Since the public hearings held in October 2003, design refinements to the proposed highway alignment have been made in Ohio and Indiana. The modifications to Alternative D-1 resulted from design refinements, agency comments, public comments, and mitigation measures. Elements of the Alternative D-1 modifications include Stage One and Two engineering design, proposed service roads, improvements to the I-469 and SR 15/18 interchanges, a connector road between West High Street and SR 15/18, improvements to local roads, and a wetland mitigation area.

Engineering Design

In 2004, ODOT initiated Stage One and Stage Two engineering design for Alternative D-1 in Ohio. Elements of Stage One and Two engineering include detailed drainage design, maintenance of traffic plan, utility plan, bridge design (i.e. type, size and location), right-of-way limits, flood hazard evaluation, soil borings, and roadway plan development and design. As a result of the detailed engineering, the right-of-way limits for Alternative D-1 were revised in Ohio. In some areas the right-of-way limits were expanded to accommodate drainage features and in other areas, the right-of-way limits were reduced to minimize impacts. The primary factor affecting revisions to the right-of-way limits was the detailed drainage design, which included long drainage ditches to channel storm water runoff and the implementation of Best Management Practices (BMP's) for improving the quality of the water runoff.

In Indiana, the proposed highway was developed to a preliminary engineering level of detail. Detailed design studies were initiated by INDOT in 2004 for the 17.7 kilometer (11 mile) section of new highway in Allen County.

Service Roads

Based on the Service Road Study and engineering design refinements, there are 13 service roads that are justified for construction. The 13 service roads consist of two lanes and range from 2.7 to 3.7 meters (nine to 12 feet) in width. These roads will provide access to 106.9 hectares (264.1 acres) of land. Six of the service roads are in Allen County and will provide access to 45 hectares (112.5 acres). Three service roads are proposed in Paulding County, which will provide access to 33.9 hectares (83.7 acres). Two service roads are proposed in Defiance County, which will provide access to 27.5 hectares (67.9 acres).

I-469/US 24 Interchange Improvements

The existing interchange at I-469 and US 24 in Allen County, Indiana will be upgraded. Improvements to the I-469/US 24 interchange include a directional fly-over ramp to provide access from westbound US 24 to southbound I-469 and a new diagonal ramp from northbound I-469 to eastbound US 24. Figure 2 shows the proposed improvements to the I-469/US 24 interchange.

SR 15/18/US 24 Interchange Improvements
The existing interchange at SR 15/18 and US 24 in Defiance County, Ohio will also be upgraded. The improvements involve lowering the profile of the US 24 mainline to increase the bridge clearance, adding turn lanes on exit ramps, and widening SR 15/18 to include a third lane in the vicinity of the interchange. Figure 3 shows the proposed improvements to the SR 15/18/US 24 interchange.

West High Street/Switzer Road Access
In response to public comments, a connector road will be constructed to link West High Street with SR 15/18. Construction of the Preferred Alternative D-1 Modified will eliminate access to US 24 at West High Street/Switzer Road. As a result, vehicles will no longer be able to directly access West High Street or Switzer Road via US 24. Access to US 24 will still be provided at the existing SR 15/18 (Ralston Avenue) interchange. The connector road will provide an alternate route for traffic going to and from US 24 via SR 15/18 without traveling through the Harding Street residential area. Figure 3 shows the proposed connector road which links West High Street with SR 15/18.

Local Road Improvements
Twenty local roads which intersect the proposed highway will be improved. These roads are Doyle Road, Bruick Road, Webster Road, Bull Rapids Road, SR 101, State Line Road, SR 49, C-43, T-51, C-176, T-61, C-206, US 127, C-232, C-8, SR 424, Switzer Road, West High Street, SR 15/18, and Harding Street. Improvements to these local roads include widening, realignment, and adding turn lanes and shoulders. Additionally, T-139 is being cut-off from US 24 with a cul-de-sac on the north and a connection to T-236 on the south side of US 24.

Stream and Wetland Mitigation
In Defiance County, Ohio, 64.4 hectares (159 acres) of land adjacent to the proposed highway will be purchased for stream and wetland mitigation. Approximately 10.5 hectares (26 acres) of this land is an agricultural field where a compensatory wetland will be created. The remaining 53.8 hectares (133 acres) is a woodlot which contains a Category 3 forested wetland and several small unnamed tributaries. This woodlot will be purchased for wetland and stream preservation.

Impacts and Costs
Because of the elements of Alternative D-1 Modified (i.e. Stage One and Two engineering design, proposed service roads, improvements to the I-469 and SR 15/18 interchanges, a connector road between West High Street and SR 15/18, improvements to local roads, and a wetland mitigation area) the impacts and costs associated with the Preferred Alternative deviate from those of Alternative D-1. These deviations would be reflected in any of the Feasible Alternatives recommended as the Preferred Alternative and developed in accordance with INDOT's and ODOT's Project Development Processes.

5.1.1 I-469/US 24 INTERCHANGE

In 2002, INDOT recommended that the existing I-469/US 24 interchange should be upgraded to function as a system interchange with free flowing traffic movements. The existing I-469/US 24 interchange is a partial cloverleaf with loop ramps located directly to the northeast and southwest of the I-469 mainline. Based on the operational analysis of the interchange, as presented in the I-469 and US 24 Interchange Engineer's Report (October 2004), the capacity analysis indicates that all existing intersections, mainlines, and ramps will operate at Level of Service (LOS) D or higher in the peak hour in 2008.

Nineteen conceptual alternatives were developed and evaluated for the I-469/US 24 interchange. The evaluation is documented in a separate report entitled *I-469 and US 24 Interchange: Conceptual Alternatives Summary* (May 2003). Through a two-step screening process, three Feasible Alternatives were selected for further study. Feasible Alternatives 12, 13, and 14 were developed to preliminary engineering details. In addition, a traffic analysis of the Feasible Alternatives was conducted based on the procedures of the Highway Capacity Manual (HCM 2000). Environmental analyses conducted on the three Feasible Alternatives included noise studies, ecological impacts, land use impacts, and community impacts. The evaluation of the three Feasible Alternatives is presented in a separate report entitled *I-469 and US 24 Interchange Feasible Alternatives Analysis* (January 2004).

The two basic differences between the three Feasible Alternatives are the configuration of the southbound I-469 to westbound US 24 movement and the configuration of the eastbound US 24 to northbound I-469 movement. The three Feasible Interchange Alternatives were presented at the US 24 public hearings for review and comment. During the three-week comment period that followed the hearings, a comment was received that recommended Alternative 13 with modifications as the preferred interchange alternative. The comment noted that the left turn movement of Alternative 13 presents a safety concern in the high-speed area of the interchange. The left turn movement could be eliminated by adding the southbound I-469 ramp to westbound Rose Avenue from Alternative 14. By adding the additional ramp to Alternative 13, the need for left turning movements within the interchange would be eliminated.

Based on engineering, traffic, costs, environmental studies, and public involvement, a modified version of Alternative 13 was selected as the preferred alternative for reconstruction of the I-469 and US 24 interchange. The preferred alternative identified as Alternative 13 modified is a blend of Alternatives 13 and 14. In general, the design of Alternative 13 is the base configuration with the addition of a southbound diagonal off-ramp located in close proximity to the I-469 mainline in the northwest quadrant.

Southbound vehicles on I-469 would exit I-469 north of US 24 on the new diagonal ramp that would intersect US 24 on the north side at what is anticipated to be an unsignalized intersection. The intersection of US 24 and the southbound ramps would be eliminated, as southbound vehicles from I-469 would no longer turn across US 24 to reach westbound US 24. Westbound vehicles would exit US 24 on the right side east of I-469 and travel along a directional fly-over ramp over I-469. The fly-over would merge with the southbound I-469 diagonal ramp from eastbound US 24, and then merge onto the southbound I-469 mainline.

Access from eastbound US 24 to northbound I-469 will also be changed. The existing signalized intersection of US 24 and the northbound I-469 ramps will be eliminated. Eastbound vehicles intending on traveling north on I-469 will diverge from eastbound US 24 to a collector/distributor roadway. The collector/distributor roadway will also carry traffic exiting southbound I-469 that is traveling to eastbound US 24. Eastbound vehicles traveling to northbound I-469 will weave across the traffic exiting southbound I-469 traveling to eastbound US 24. After completing the weaving maneuver, the eastbound vehicles then enter a loop ramp traveling to northbound I-469. The loop ramp enters another collector/distributor roadway traveling parallel to I-469. The collector/distributor roadway also serves I-469 travelers to westbound US 24 loop ramp. Eastbound US 24 to northbound I-469 drivers weave with the northbound I-469 to westbound US 24 drivers. After the weaving movement, westbound US 24 to northbound I-469 travelers will enter the northbound collector/distributor roadway. The northbound collector/distributor roadway merges with northbound I-469 north of the interchange.

The access from westbound US 24 to northbound I-469 will be made on a new diagonal ramp that enters onto the northbound collector/distributor roadway and then merges with northbound I-469 north of the interchange.

Access from eastbound US 24 to southbound I-469 will also be made on a new diagonal ramp that would merge with the westbound US 24 to southbound I-469 fly-over ramp.

The access from northbound I-469 to eastbound US 24 also is changed. Northbound vehicles on I-469 will exit I-469 south of US 24 onto a northbound collector/distributor roadway and then onto a new diagonal ramp. The ramp then merges with the southbound I-469 ramp (headed for eastbound US 24) on collector/distributor roadway which merges with eastbound US 24 east of I-469.

The northbound I-469 ramp to westbound US 24, as well as the southbound ramp to eastbound US 24, would remain as loop ramps in their present locations. The southbound I-469 to eastbound US 24 loop ramp will be modified to connect to a new collector/distributor roadway parallel to US 24, which would merge with eastbound US 24 east of I-469. The northbound I-469 to westbound US 24 loop ramp will be modified to connect to a new collector/distributor roadway traveling parallel to I-469 prior to entering the loop configuration.

The advantages of Alternative 13 modified are the fly-over ramp and the more direct diagonal ramp from I-469 northbound to US 24 eastbound. By providing the new fly-over ramp from US 24 westbound to I-469 southbound along with the diagonal ramp from I-469 northbound to US 24 eastbound, the two major traffic movements of the interchange are improved.

A disadvantage is that the weaving movement on northbound I-469 requires a collector/distributor roadway, necessitating the northbound I-469 bridge to be widened or a parallel structure installed next to it.

Traffic analyses conducted on Alternative 13 modified indicate that all traffic movements of this alternative would operate at LOS C or better in the design year 2028.

5.1.2 WEST HIGH STREET/SWITZER ROAD

With the DEIS Preferred Alternative, the existing intersection of US 24 and West High Street/Switzer Road would be replaced with a grade-separated crossing carrying US 24 over the local roadway. Vehicles that now use the intersection would be routed onto other routes. The closure of the intersection is an issue of controversy for the city of Defiance. Several residents and public officials have requested that an interchange be constructed at this location. Proponents of the interchange have identified specific concerns with additional traffic, including heavy truck traffic, being forced to travel through residential areas located along Ralston Avenue (SR 15/18) and Harding Street to access industrial development located along West High Street.

Based on traffic impact analyses completed for the DEIS Preferred Alternative, the two most likely detour routes that could be used to access US 24 if the intersection at West High Street/Switzer Road were to be replaced with a grade-separated crossing would be SR 15/18 (Ralston Avenue)/Haller Street/Switzer Road and SR 15/18 (Ralston Avenue)/Harding Street/West High Street. It is anticipated that the impact of the re-routed traffic will consist of approximately 100 vehicles during the afternoon peak hour, the majority of which will be cars. Based on findings documented in the *City of Defiance Ohio Traffic Study: Assessment of Traffic Impacts Due to the Proposed Grade Separation of US 24 and West High Street* (February 2003), the area will experience capacity problems from the increase in background traffic as well as future traffic generated by

planned developments within the area. These capacity problems will occur with or without construction of the highway.

A special public meeting was held on July 8, 2003 to discuss the results of the February 2003 City of Defiance, Ohio Traffic Study Traffic. Representatives from the city of Defiance, Defiance County and ODOT attended the meeting. Existing and future development and traffic in the area surrounding the US 24 and West High Street/Switzer Road were discussed. Possible alternatives to an interchange at US 24 and West High Street/Switzer Road were presented and discussed. As a result of the meeting, ODOT agreed to study four alternatives, which would mitigate secondary traffic impacts. Conceptual designs, preliminary costs, and environmental impacts were developed for the four options. The four options, described below, are discussed in detail in a separate report entitled *West High Street/Switzer Road Access Study* (November 2003).

- Option 1: Construction of improvements to local roadways, specifically West High Street, Harding Street, and SR 15/18.
- Option 2: Construction of the grade-separated crossing at West High Street/ Switzer Road; improvements to local roadways, specifically West High Street and a hospital access road; and construction of a connector road between SR 15/18 and West High Street.
- Option 3: Construction of a full-diamond interchange at West High Street/Switzer Road including the realignment of West High Street/Switzer Road, Haller Road, and the existing State Service Road.
- Option 4: Construction of a stretched-diamond interchange at West High Street/ Switzer Road and SR 15/18 including the realignment of Haller Road, and the existing State Service Road.

ODOT presented the four alternatives at the October 2003 public hearings. At the request of local citizens, ODOT held a special outreach meeting on November 17, 2003, to discuss the four alternatives developed for West High Street/Switzer Road area. At the meeting, ODOT representatives presented the four alternatives and answered questions regarding design and traffic impacts. Many citizens voiced their opinions regarding the alternatives, traffic, and potential development in the area. The comments received at the meeting assisted ODOT in developing an alternative for access to US 24 at West High Street/Switzer Road that was acceptable to the majority of local citizens, officials, and stakeholders.

ODOT met with local officials, stakeholders and concerned citizens to discuss the alternatives developed for West High Street/Switzer Road on January 8, 2004. Option 2 was identified as the preferred alternative by ODOT. The discussion focused on the location of a connector road, which would link West High Street with SR 15/18. ODOT agreed to develop Option 2 in accordance with recommendations received from the stakeholders, public officials, and concerned citizens. Based on the public comments, potential environmental impacts, and engineering constraints, ODOT is proposing to construct option 2 with modifications. Option 2 with modifications consists of a connector road between SR 15/18 and West High Street. The recommendation is based on the following factors:

- The connector road gives reasonable access to US 24 for existing businesses and provides an effective alternative to the use of adjacent residential streets,
- The connector road is the least costly of the four alternatives (estimated costs range from $3.5 million to $11.9 million for the original options),
- A connector road does not require residential acquisitions (Options 3 and 4 would result in three residential displacements), and
- The connector road provides improved access to vacant land proposed for development.

5.1.3 US 24/SR 15/ 18 INTERCHANGE

The traffic impact analysis completed for the West High Street/Switzer Road area indicated that the access ramps for the US 24/SR 15/18 interchange currently operate at a LOS C/D in the afternoon peak hour, which will degrade to a LOS F by 2028, with or without the proposed improvements to US 24. As a result, ODOT evaluated operational and geometric improvements for the interchange as noted in *US 24/SR 15/18 Interchange: Traffic Capacity Analysis Report* (March 2004). Based on engineering and traffic studies, the following improvements to the interchange are proposed as part of the Preferred Alternative D-1 Modified:

- signalize the SR 15/18/US 24 eastbound ramp and westbound ramp intersections,
- construct a left-turn lane on SR 15/18 for northbound traffic accessing westbound US 24,
- construct a left-turn lane on SR 15/18 for southbound traffic accessing eastbound US 24,
- widen the SR 15/18 bridge over US 24 to thee lanes in width to provide for the left turn lanes, and
- relocate the US 24 eastbound and westbound ramp intersections at SR 15/18 reducing the distance between the ramps from 247 meters (810 feet) to 182.9 meters (600 feet).

5.2 PROJECT RELATED CHANGES/ IMPACTS

The project related changes and impacts discussions focus on the resources within the right-of-way limits of the highway. Because of the elements of Alternative D-1 Modified (i.e. Stage One and Two engineering design, proposed service roads, improvements to the I-469 and SR 15/18 interchanges, a connector road between West High Street and SR 15/18, improvements to local roads, and a wetland mitigation area) the impacts and costs associated with the Preferred Alternative D-1 Modified deviate from those of Alternative D-1. Table 5.1 presents a summary of the impacts and costs associated with Alternative D-1 from the DEIS and Preferred Alternative D-1 Modified. The deviations would be reflected in any of the Feasible Alternatives recommended as the Preferred Alternative and developed in accordance with INDOT's and ODOT's project development processes. The following discussions include only those resources where there have been changes in the impacts since the DEIS.

5.2.1 WETLANDS

Wetland delineations were conducted within the proposed right-of-way for the Preferred Alternative D-1 Modified to determine specific wetland impacts. In Allen County, the Preferred Alternative D-1 Modified impacts seven wetlands and a total of 0.7 hectares (1.8 acres). In Paulding and Defiance counties, the Preferred Alternative D-1 Modified impacts 30 wetlands and a total of 8.9 hectares (22.05 acres). A summary of wetland impacts is presented in Table 5.1.

On March 30 and August 3, 2004 field reviews of the wetlands in Ohio were conducted by the US Army Corps of Engineers (USACE) and Ohio Environmental Protection Agency (OEPA). The purpose of the field reviews was to make jurisdictional determinations of the wetlands within the right-of-way limits of the Preferred Alternative D-1 Modified in Ohio. Jurisdictional determinations have not been completed for wetlands in Indiana. They will be completed during the final design stage prior to submitting waterway permit applications to the resource agencies.

TABLE 5.1
SUMMARY OF IMPACTS

Issue/Concern	Alternative D-1 From DEIS 2003	Alternative D-1 Modified Total	Alternative D-1 Modified Indiana	Alternative D-1 Modified Ohio
Engineering				
Length (miles)	36.4	37.7	11	26.7
Estimated Freeway/Expressway Combination Construction Cost	$204,971,652	$280,666,964	$103,295,800	$177,371,164
Total Estimated Right-of-Way Costs	$16,731,214	$26,225,000	$5,969,500	$20,255,500
Roadway Right-of-Way Cost (Including Damages for Landlocked Parcels)	$14,806,465	$24,715,000	$4,936,000	$19,779,000
Relocation Costs	$1,728,500	$1,510,000	$1,033,500	$476,500
Total Freeway/Expressway Combination Cost	$221,702,015	$269,960,800	$109,265,300	$160,695,500
Major Utility Conflicts	3	4	2	2
Traffic				
Average Daily Traffic, 2008 (vehicles per day)	7,731-10,705	7,731-10,705	7,731-10,705	7,750-10,460
Average Daily Traffic, 2028 (vehicles per day)	11,196-16,732	12,890-16,920	12,890-16,920	13,020-16,532
Level of Service (year 2008)	A	A	A	A
Level of Service (year 2028)	A	A	A	A
Travel Time in Minutes, 2008	34	35	10	25
Travel Time in Minutes, 2028	34	35	10	25
Vehicle Miles Traveled, 2008 (in millions)	121.6	124.5	38.1	86.4
Vehicle Miles Traveled, 2028 (in millions)	173.5	178.0	51.3	126.7
Local Roadways Closed/Severed (number)	15	16	5	11
Land Use				
Residential Use (acres)	57.9	72.0	44	28.0
Community / Public Use (acres)	10.3	28.5	0.5	28.0
Commercial Use (acres)	3.6	27.7	.05	27.2
Agricultural Use (acres)	1,428.8	1,582.9	535.2	1047.7
Displacements				
Landlocked Parcels (number) (no service roads provided)	41	38	15	23
Landlocked Parcels (acres) (no service roads provided)	444	407.2	203.5	203.7
Residential Properties: Total (number)	51	36	20	16
Residential Properties: Single Family Homes (number)	31	23	15	8
Residential Properties: Trailers (number)	10	4	0	4
Residential Properties: Farms (number)	10	9	5	4
Commercial Properties (number)	2	4	1	3
Industrial Properties (number)	0	0	0	0
Community Facilities (number)	0	1	1	0
Noise				
Category B Receptors Approaching or Exceeding FHWA Noise Abatement Criteria (number)	114	106	66	40
Category B Receptors Meeting Substantial Noise Increase Criteria (number)	47	52	4	48
Category B Receptors with Noise Impacts	139	138	69	69
Farmlands				
Farms Operations Affected (number)	213	214	103	111
Productive Farmland Affected (acres)	1,428.8	1,582.9	1,535.2	1,047.7
Affected Properties in Agricultural Districts (number)	6	8	0	8
Historic Resources				
Properties Listed on the National Register of Historic Places (number)	0	0	0	0
Properties Eligible for Listing on the National Register of Historic Places (number)	3	4	4	0
Section 4(f) Resources				
Historic Resources with Direct Impacts (number)	1	0	0	0
Historic Resources with Indirect Impacts (number)	0	0	0	0
Public Parks with Direct Impacts (number)	0	0	0	0
Public Parks with Indirect Impacts (number)	0	0	0	0

1:
2: 1+3?
3: 1
4: 3
15

TABLE 5.1 (CONTINUED)
SUMMARY OF IMPACTS

Issue/Concern	Alternative D-1 From DEIS 2003	Alternative D-1 Modified Total	Alternative D-1 Modified Indiana	Alternative D-1 Modified Ohio
Ecological Resources				
100-Year Floodplain Encroachments (acres)	69.2	80.0	60.0	20.0
Stream Crossings (number)	26	35	15	20
Total Length Stream Impacts (feet)	20,189	26,425	18,481	7,944
Total Length Culverted (feet)	3,958	3,453	1,048	2,405
Total Length Bridged (feet)	1,185	345	0	345
Total Length Relocated	Not listed	10,585	7,633	2,952
Additional Impact Length	14,071	12,042	9,800	2,242
Total Length of Impact to Limited Resource Water Streams QHEI<45 (feet)	17,513	19,612	17,221	2,391
Total Length of Impact to Warm Water Habitat Streams QHEI=45 to 60 (feet)	2,363	2,947	1,151	1,796
Total Length of Impact to Exceptional Warm Water Habitat Streams QHEI>60 (feet)	313	3,866	109	3,757
Total Acreage of Wetland Systems Affected	22.5	23.85	1.80	22.05
Affected Forested Category 1 Wetlands Systems (acres)	<0.1	0.00	0.00	0.00
Affected Forested Category 2 Wetlands Systems (acres)	11.0	9.61	0.98	8.63
Affected Forested Category 3 Wetlands Systems (acres)	2.3	3.25	0.30	2.95
Affected Non-Forested Category 1 Wetlands Systems (acres)	<0.1	0.15	0.04	0.11
Affected Non-Forested Category 2 Wetlands Systems (acres)	9.6	10.68	0.48	10.20
Affected Non-Forested Category 3 Wetlands Systems (acres)	0.0	0.16	0.00	0.16
Affected Forested Habitat (acres)	75.4	209.9*	6.0	203.9
Affected Woodlots (number)	20	22	5	17
Hazardous Materials				
Sites with Above Ground/ Underground Storage Tanks (number)	4	4	0	4
Sites with Past/Current Use of Hazardous Materials (number)	2	2	0	2
Past/Current Use for Solid Waste Disposal (number)	0	0	0	0
Sites with Other Hazardous Materials Concerns (number)	1	1	0	1

* Affected Forested Habitat acres includes 134 acres for stream and wetland mitigation. A total of 75.9 acres of forested habitat will be impacted by highway construction.

Wetlands Findings

This wetlands finding is presented in accordance with Executive Order 11990. The construction of the Preferred Alternative D-1 Modified will result in unavoidable wetland encroachments. Based on the Stage One and Two design analyses completed for the Preferred Alternative D-1 Modified in Ohio, impacts have been avoided or minimized to the extent practicable. The results are encroachment upon 9.6 hectares (23.85 acres) of wetlands. Additional avoidance and minimization efforts will be made during final design. A total of 28 alternatives, including the No Build were studied for the US 24 project. Discussions of these alternatives, identification of the Preferred Alternative and elimination of the others are presented in the DEIS. Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use.

5.2.2 STREAMS

The Preferred Alternative D-1 Modified results in 35 stream crossings, affecting 8056 meters (26,425 feet) of streams. The Preferred Alternative D-1 Modified crosses 15 streams and impacts 5634 meters (18,481 feet) in Allen County. The Preferred Alternative D-1 Modified crosses 11 streams at 20 locations and impacts 2422 meters (7,944 feet) in Paulding and Defiance counties. Impacts result from stream channel crossings (i.e. bridges or culverts), relocation of stream channels, and construction of drainage channel outfall structures. A summary of stream impacts is presented in Table 5.1.

The stream impact numbers for Paulding and Defiance counties are lower than those calculated for the Feasible Alternatives in the DEIS because they include only those streams in Ohio that are considered jurisdictional by the USACE. Jurisdictional stream determinations were conducted during the field reviews for wetlands on March 30 and August 3, 2004. Jurisdictional stream determinations have not been made in Indiana. They will be completed during the final design stage prior to submitting waterway permit applications to the resource agencies.

In general, the majority of stream impacted by the Preferred Alternative D-1 Modified are low quality streams. The habitat in all of the streams and rivers crossed by the Preferred Alternative D-1 Modified qualifies as warm water habitat.

5.2.3 FLOODPLAINS

The Preferred Alternative D-1 Modified encroaches upon 32.4 hectares (80.0 acres) of floodplains associated with Stevens Ditch, Maumee River, and Tiffin River. There are eight total floodplain encroachments comprised of one longitudinal encroachment (24.3 hectares [60.0 acres]) and seven perpendicular encroachments (8.1 hectares [20.0 acres]). Alternative D-1 Modified does not impact or interfere with floodplain management activities in Allen County, Indiana; or Paulding and Defiance counties, Ohio.

Floodplains Finding

The Floodplains Finding is presented in accordance with Executive Order 11988. The construction of the Preferred Alternative D-1 Modified will result in unavoidable floodplain encroachments. To the extent practicable, impacts to floodplains have been avoided or minimized. A total of 28 alternatives, including the No Build were studied for the US 24 project. Discussions of these alternatives, identification of the Preferred Alternative and elimination of the others are presented in the DEIS. Based on the consideration of impacts and the ability to address the purpose and need for the project, the Preferred Alternative D-1 Modified is the only reasonable and practicable alternative. The proposed action includes all practicable measures to minimize harm to floodplains which may result from such use. Construction of the Preferred Alternative D-1 Modified will conform to applicable state and local floodplain standards.

5.2.4 THREATENED AND ENDANGERED SPECIES

Comments on the Preferred Alternative and DEIS received from the US Fish and Wildlife Service (USFWS) requested additional information on project impacts to threatened and endangered species, specifically the Indiana bat. ODOT requested a species list for the development of a Biological Assessment (BA) for the US 24 project from the USFWS in September 2004. The USFWS offices in Indiana and Ohio provided a list of the following six species to be included in the BA. Four of the species are federally listed species and two of the species are federal candidate species.

- Indiana bat *(Myotis sodalit)* - federally listed
- Clubshell mussel *(Pleurobema clav)* - federally listed
- Bald eagle *(Haliaeetus leucocephalus)* - federally listed
- Copperbelly watersnake *(Nerodia erythrogaster neglecta)* - federally listed
- Eastern massasauga *(Sistrurus catenatus catenatus)* - federal candidate species
- Rayed bean mussel *(Villosa fabalis)* - federal candidate species

ODOT documented project impacts to the six species in the *Biological Assessment of Federally Listed Species for the Ohio Department of Transportation's US 24 New Haven, Indiana to Defiance, Ohio (ALL [Indiana]/PAU/DEF [Ohio]-24-0.00 PID 18904)* (April 29, 2005). Section 7 Consultation of the Endangered Species Act was initiated on May 18, 2005. A field review of Indiana bat habitat within the US 24 project area was held on

August 8, 2005 and attended by representatives from the USFWS and ODOT. The purpose of the field review was to familiarize USFWS staff with the affected woodlots. A general habitat assessment was conducted in several woodlots along the Preferred Alternative. The data collected during the field review was used to develop a Biological Opinion (BO). The USFWS issued a BO on the construction, operation, and maintenance of the US 24 project for the Indiana bat on September 30, 2005. The BO is located in Appendix C.

Indiana Bat *(Myotis sodalis)* - Federally Listed

The Indiana bat is listed as federally endangered. In Indiana and Ohio, the Indiana bat is listed as state endangered. This ranking signifies that the species is declining in its local range within each state, and is facing possible extirpation. The range of the Indiana bat includes Iowa, Missouri, Illinois, Indiana, Michigan, Ohio, Kentucky, Tennessee, North Carolina, West Virginia, Pennsylvania, New Jersey, New York, and Vermont. Indiana bat winter hibernacula (caves) and summer reproductive and nonreproductive individuals have been documented in Indiana and Ohio.

The literature review for the Indiana bat determined that the most recent documentation of the species occurrence in Allen, Paulding and Defiance counties was in 1976. One male and two pregnant female Indiana bats were captured within (48.4 kilometers) 30 miles of the city of Defiance, Ohio. There are no records of Indiana bat captures in Allen County or Defiance County.

The BA defined the Action Area for the Indiana bat as the area within four kilometers (2.5 miles) on either side of the construction right-of-way of the Preferred Alternative. Neither Indiana bat winter hibernacula (caves) nor individuals have been documented in the Action Area. Therefore, construction, operation, and maintenance activities will not affect individuals or habitat of the Indiana bat during winter hibernation, autumn swarming, or spring staging. However, suitable summer habitat is present and it is possible that Indiana bats could occur within in the Action Area. Therefore, it was assumed that Indiana bats may be subjected to direct and indirect effects from construction, operation, and maintenance of US 24, depending on the season and the action.

The BA presented several determinations of effect for the Indiana bat based on direct and indirect impacts. The BA presented a collective determination of *May Affect - Is Likely to Adversely Affect* for all impacts. This determination is based on the combination of loss of suitable habitat from within the construction right-of-way of the Preferred Alternative and areas of secondary impact.

The USFWS redefined the Action Area of the Indiana bat in the BO. According to the USFWS the Action Area is a linear corridor measuring 2103.7 meters (6,900 feet) wide and 60.8 kilometers (37.7 miles) long, with 1.6-kilometer (one-mile) radius circles of impact at each of the five westernmost interchanges. The USFWS concurred that the US 24 project *Is Likely to Adversely Affect* the Indiana bat. The USFWS assessed the direct, indirect, and cumulative impacts of the project on the Indiana bat and determined that the US 24 project, as proposed, is not likely to jeopardize the continued existence of the Indiana bat, and is not likely to destroy or adversely modify designated Indiana bat critical habitat. The USFWS concluded that the overall US 24 project will not contribute a measurable decrease in reproduction or numbers of the Indiana bat at the local level.

Associated with the BO is an Incidental Take Permit. Incidental take is defined as "...take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." The USFWS anticipates that incidental take of Indiana bats will occur

in the form of harm through habitat loss, and death and injury during tree clearing operations within secondary development areas at three interchanges. The USFWS anticipates that three maternity colonies of Indiana bats, and 14 male or non-reproductively active female Indiana bats occupy the action area and may be impacted as a result of the US 24 project. Collectively, the effects of the US 24 project, as described in the BO are expected to result in behavioral or physiological effects that impair essential behavioral patterns. According to the USFWS, death, decreased fitness, and reduced reproductive success of a few individual bats are reasonably certain to occur. The USFWS believes that no more than 10 Indiana bats will be incidentally taken over the term of the US 24 project. The USFWS anticipates that incidental take of Indiana bats will be difficult to detect for the following reasons:

- the species is highly motile,
- the species occurs in habitat (e.g., trees) that makes detection difficult, and
- finding dead or moribund bats is unlikely due to a small body size and the likely scavenging of specimens by predators.

However, the USFWS believes the level of take of the Indiana bat can be monitored by tracking the level of habitat destruction and modification. Specifically, if the current anticipated level of habitat loss is exceeded, the level of incidental take is expected to increase as well. The following indicators will serve as notice that more than 10 individuals may be taken:

- any additional tree clearing occurs outside the right-of-way corridor as described in the BO,
- any additional impacts to wetlands within the road right-of-way occur, beyond those described in the BO, or
- any additional stream impacts occur within the road right-of-way beyond those described in the BO.

Clubshell Mussel *(Pleurobema clav)* - Federally Listed

The clubshell mussel is listed as federally threatened. The clubshell mussel is listed as state endangered in Indiana and Ohio. This ranking signifies that the species is declining in its local range within each state, and is facing possible extirpation.

Historically, the clubshell mussel was once distributed across nine states, including Indiana and Ohio. Shells and subfossil shells have been documented in Allen County, Indiana and Paulding and Defiance counties, Ohio. An extant population of the clubshell mussel is located in the St. Joseph River in Allen County. A mussel survey for the US 24 project was conducted in 1999 at 15 stream crossing locations. A total of nine subfossil shells were found at four sites within the Maumee and Tiffin rivers. No live clubshell mussels were found during the survey.

The BA defined the Action Area for the clubshell mussel as the direct footprint of any in-stream construction within the right-of-way of the Preferred Alternative. In direct impact buffer zones extend 100 meters (328 feet) upstream and 500 meters (1,640 feet) downstream of the crossings. There are no known clubshell mussel populations located within the Action Area. However, the presence of subfossil shells in the Maumee and Tiffin rivers indicate that potentially suitable habitat may be present in these areas. Recolonization of the area by the clubshell is unlikely, but it is possible that downstream movement of individuals could occur or that a host fish may transport juvenile mussels into the Action Areas. Therefore, the BA determined that a *May Affect; Not Likely To Adversely Affect* determination is appropriate for the clubshell during construction, operation, and maintenance of the US 24 project. The USFWS determined that the US 24 project will have *No Effect* on the clubshell mussel.

Bald Eagle *(Haliaeetus leucocephalus)* - Federally Listed
The bald eagle is listed as federally threatened. The bald eagle is listed as state endangered in Indiana and Ohio. This ranking signifies that the species is declining in its local range within each state, and is facing possible extirpation.

The North American range of the bald eagle is from Alaska and northern Canada to the southern United States and Mexico including Baja California, south Texas, and Florida. Growing summer and winter bald eagle populations are found in both Indiana and Ohio.

Neither nesting nor wintering bald eagles have been reported in Allen County, Indiana. Several unconfirmed records indicate that bald eagles are occasional transients during migration in northern Indiana. The number of winter bald eagle sightings is increasing in northwest Ohio along major rivers and the shores of Lake Erie. Bald eagles are known to winter along the Maumee River in both Defiance and Paulding counties. According to the ODNR, three bald eagles in Defiance County and one in Paulding County were recorded in January 2004.

The BA defines the Action Areas for the bald eagle according to seasonal needs. The project Action Area for summer nesting is 0.8 kilometers (0.5 miles) on either side of the construction right-of-way limits of the Preferred Alternative. The Action Area for winter roost sites is 0.4 kilometers (0.25 miles) on either side of the construction right-of-way limits of the Preferred Alternative. No summer nesting or winter roosting bald eagles have been documented in the Action Areas.

Since there are no known summer or winter populations of eagles in the Action Areas, the potential for vehicular strikes, ingestion of contaminants, and loss of a forage base from erosion are all very small, and potential impacts are unlikely to occur for the Preferred Alternative. The BA determined that a *May Affect; Not Likely to Adversely Affect* determination is appropriate for the bald eagle during construction, operation, and maintenance of US 24.

The USFWS concurred with *Not Likely to Adversely Effect* determination based on the following:

- suitable habitat for this species may occur in the action area, but there are no summering or wintering populations of bald eagles, and only rare occurrences of transient bald eagles,
- although transient bald eagles could potentially be affected by vehicular strikes, it would not reach the extent of take, as the maximum estimate of 0.00001 deaths per year, per lane mile in Ohio, and
- the potential for water quality degradation from contaminants or sedimentation to impact the bald eagle through decreased or contaminated food sources will be mediated by erosion control methods, and thus, no detectable reduction or contamination of food will occur. Therefore, the possibility of an impact occurring to the bald eagle from an accidental spill is not quantifiable or predictable.

Based on this information, the USFWS determined that the potential adverse affects to the bald eagle from the US 24 project, as proposed, are insignificant and discountable.

Copperbelly Watersnake *(Nerodia erythrogaster neglecta)* - Federally Listed
The copperbelly watersnake is listed as federally threatened. In both Indiana and Ohio, the copperbelly watersnake is listed as state endangered. This ranking signifies that the subspecies is declining in its local range within each state, and is facing possible extirpation from these states.

The largest population concentration of the copperbelly watersnake is centered near the confluence of the Ohio and Wabash rivers in the tristate region of Kentucky, Illinois, and Indiana. Small disjunct populations are present in areas of south-central Indiana, central Ohio, and northern Tennessee. Northern populations of the copperbelly watersnake are within the Great Lakes basin, in the tristate area of Ohio, Indiana, and Michigan~~5~~. The copperbelly watersnake has not been documented in Allen County, Indiana, or Defiance and Paulding counties, Ohio.

The BA defines the Action Area for the copperbelly watersnake as the construction right-of-way and areas of secondary development, and a 0.48-kilometer (0.3-mile) buffer that encompasses both. There are no copperbelly watersnakes or suitable habitat found in the Action Area. Therefore, no direct or indirect effects from the Preferred Alternative are anticipated on extant populations of the species. The BA determined that a *No Effect* determination is appropriate for the copperbelly watersnake during construction, operation, and maintenance of US 24. The USFWS agreed with the determination that the US 24 project will have *No Effect* on the copperbelly watersnake.

Eastern Massasauga *(Sistrurus catenatus catenatus)* - Federal Candidate Species
The eastern massasauga is currently proposed for listing under the Endangered Species Act. Indiana and Ohio, the massasauga is listed as endangered, a ranking that signifies the subspecies is declining in its range in each state and is facing possible extirpation.

The range of the eastern massasauga extends from western New York, northwestern Pennsylvania, and southern Ontario into eastern Iowa and northeastern Missouri. This species was once common across its range, but has declined drastically since the mid-1970s. Populations in northern Indiana have declined drastically. The USFWS lists the following 13 counties as the total distribution of eastern massasauga in Indiana: Allen, Carroll, Elkhart, Kusciusko, La Porte, Lagrange, Marshall, Noble, Porter, Pulaski, St. Joseph, Steuben, and Tippecanoe .

In Ohio, the eastern massasauga was common in former glaciated areas across the state. Many of populations in northwestern counties are believed to have severely declined~~s~~, for no individuals have been found in the region within the last several years. The USFWS lists the following 34 counties as the total distribution of eastern massasauga in Ohio: Ashtabula, Champaign, Clark, Clinton, Columbiana, Crawford, Cuyahoga, Defiance, Erie, Fairfield, Fayette, Franklin, Fulton, Greene, Hardin, Huron, Licking, Logan, Lorain, Lucas, Marion, Medina, Montgomery, Ottawa, Paulding, Portage, Preble, Sandusky, Seneca, Stark, Trumbull, Warren, Wayne, and Wyandot.

The eastern massasauga hs been documented in Allen County, Indiana, and Defiance and Paulding counties, Ohio. The closest known occurrence of the eastern massasauga to the US 24 project was recorded in 1994. One individual was found west of Fort Wayne, Allen County, Indiana, at least 16 kilometers (10 miles) from the Action Area. Recent surveys for the eastern massasauga in Defiance and Paulding counties failed to document the presence of the species.

The BA defines the Action Area for the eastern massasauga as a 1.6-kilometer (1.0-mile) buffer around the construction right-of-way and areas of secondary development. Although potential habitat does exist, there are no records of the eastern massasauga within or near the Action Area. Therefore, no direct or indirect effects from the Preferred Alternative are anticipated on extant populations of the species.

A species effects determination is not provided in the BA for the eastern massasauga, because it is not listed by the USFWS at this time. The USFWS determined that the US 24 project will have *No Effect* on the eastern massasauga.

Rayed Bean Mussel *(Villosa fabalis)* - Federal Candidate Species
The rayed bean mussel is currently proposed for listing under the Endangered Species Act. In Ohio, the rayed bean is listed as endangered. In Indiana, the rayed bean is listed as a species of special concern.

The occurrence of subfossil shells from the Ohio River and its tributaries suggest a historically broad distribution for the rayed bean. It occurred in 109 streams in 10 states throughout the upper and lower Great Lakes drainage system, including the St. Lawrence River and throughout most of the Ohio and Tennessee River systems. Populations of the ray bean in Ohio are known to inhabit Fish Creek (Williams County), Auglaize River (Auglaize County), Ottawa River (Putnam County), and Blanchard River (Hardin and Hancock counties). Populations of the ray bean in Indiana are found in the St. Joseph River (Allen and DeKalb counties).

The BA defines the Action Area for the rayed bean mussel as the the direct footprint of any in-stream construction within the right-of-way of the Preferred Alternative. There are no known rayed bean mussel populations located within the Action Area. Therefore, no direct or indirect effects from the Preferred Alternative are anticipated on populations of the species.

A species effects determination is not provided in the BA for the rayed bean mussel, because it is not listed by the USFWS at this time. The USFWS determined that the US 24 project will have *No Effect* on the rayed bean mussel.

5.2.5 FARMLANDS

The Preferred Alternative D-1 Modified will result in the conversion of 640.5 hectares (1,582.9 acres) of farmland and impact 214 different farms operations. These impacts include eight properties within agricultural districts totaling 72.1 hectares (178.1 acres). In addition, the Preferred Alternative D-1 Modified will result in the landlocking of approximately 164.9 hectares (407.2 acres) of land.

Two individual Farmland Conversion Impact Rating (FCIR) forms (AD-1006) were generated for the Preferred Alternative D-1 Modified. One form was completed for Allen County, Indiana and one form was completed for both Paulding and Defiance counties, Ohio. An additional form was completed for the I-469/US 24 interchange area because it encompasses land not previously evaluated for the Feasible Alternatives analysis. Copies of the completed FCIR forms are provided in Appendix D. The FCIR scores for the Preferred Alternative D-1 Modified are 178 for the mainline and 187 for the I-469 interchange in Allen County. The FCIR score for the Preferred Alternative D-1 Modified is 166 in Paulding and Defiance counties.

A field tile survey was conducted in Paulding and Defiance counties during 2004 for the Preferred Alternative D-1 Modified. Property owners, farm managers, and local contractors specializing in the installation of drainage systems were interviewed in order to obtain information on the field tile systems located within the right-of-way limits of the Preferred Alternative D-1 Modified. In addition, field investigations were conducted with property owners and farm managers. The findings of the survey determined that the Preferred Alternative D-1 Modified will impact only the field tile drainage systems located within the right-of-way limits and positive drainage of adjacent fields will be maintained.

5.2.6 MUNICIPAL/ INDUSTRIAL/ HAZARDOUS WASTE

Phase I Environmental Site Assessments (ESA) were conducted on eight properties located within or near the Preferred Alternative D-1 Modified. Four of the eight sites were recommended for Phase II ESAs:

- Ohio State Highway Patrol Post,
- ODOT Defiance County Garage,
- Mark Moats Ford, and
- an abandoned house at 6545 Township Road 69.

Phase II ESAs were conducted on three of the four sites. It was determined that a Phase II ESA investigation would not be conducted at the Ohio State Highway Patrol Post since the potential for encountering contamination is minimal.

The results of the Phase II ESA investigations determined that for all three sites, the soils do not reveal the presence of volatile organic compounds, semi-volatile organic compounds, or metals in excess of the OEPA's *Voluntary Action Program Single Parameter Commercial and Industrial Use Direct Contact Standards* (Effective October 21, 2002). In addition, groundwater was not encountered during the soil borings and site soils were identified as low permeability clay and silty clay. Closure of underground and aboveground storage tanks on the three properties will be conducted as necessary in accordance with applicable regulations. The storage drums found on the property located at 6545 Township Road 69 will be disposed of properly.

5.2.7 ENVIRONMENTAL PERMITS

The specific permits required for this project are:

- USFWS Incidental Take Permit,
- USACE Section 404 Individual Permit,
- OEPA Section 401 Water Quality Certification,
- OEPA Isolated Wetlands Permit,
- Level Two Pre-Activity Notification (PAN),
- Indiana Department of Environmental Management (IDEM) Section 401 Water Quality Certification,
- National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Construction Activities, and
- Indiana Department of Natural Resources (IDNR) construction in a floodway.

The USACE will issue two Section 404 permits for the Preferred Alternative D-1 Modified because the project is divided between two USACE regions. The Ohio section will be permitted by the USACE Buffalo District and the Indiana section will be permitted by the USACE Detroit District. Wetland impacts in Ohio and Indiana will be permitted separately. The USACE Buffalo District confirmed jurisdictional waters in the State of Ohio during field meetings on March 30, and August 3, 2004. A jurisdictional determination has not been completed in Indiana.

The Section 401 permits will also be permitted separately. The OEPA will permit all water resource impacts within Ohio and the IDEM will permit all water resource impacts within Indiana.

A National Pollutant Discharge Elimination System permit is mandated by Section 401 of the Clean Water Act for the discharge of pollution from a point source into surface waters for disposal purposes. Best Management Practices (BMPs) will be used in all cases where impacts occur.

A Coast Guard permit is not required for this project.

5.2.8 LAND USE AND DEVELOPMENT TRENDS

Within the right-of-way of the Preferred Alternative D-1 Modified, the amount of land to be converted to transportation use is 815.8 hectares (2,015 acres). The land use with

the greatest conversion from existing conditions is agricultural land. Approximately 640.5 hectares (1,582.9 acres) of land currently used for agricultural activities will be converted to right-of-way for US 24. Residential land uses account for 29.1 hectares (72 acres) of land that will be acquired for right-of-way. Other land uses to be converted to transportation use include commercial (11.2 hectares [27.7 acres]) and community/ public use (11.5 hectares [28.5 acres]). The latter category is related to displacement of the AEP Station in Allen County and right-of-way acquisition of land for the SR 424 interchange from the Ohio State Highway Patrol Facility and ODOT's District 1 Garage.

The Preferred Alternative D-1 Modified requires right-of-way from a number of areas proposed for development. In Allen County, the Preferred Alternative D-1 Modified requires 2.0 hectares (4.8 acres) of land from the New Haven Industrial site. It also requires 9.0 hectares (22.2 acres) of land from the nearby Canal Place Economic Development Area.

The Preferred Alternative D-1 Modified in Paulding County will take 2.2 hectares (5.4 acres) from the Antwerp Industrial Park. Access to the Antwerp Industrial Park will be improved by the provision of an at-grade intersection where the Preferred Alternative D-1 Modified meets T-51 and C-176, just to the east of the development site. The new Antwerp Local Schools complex and its associated traffic was taken into account in the design criteria for the Preferred Alternative D-1 Modified. In response to comments received from Paulding County officials, the crossing at C-43 has been redesigned as a grade-separated crossing over US 24 to separate school traffic from traffic traveling US 24. No land will be taken from the school complex for the Preferred Alternative D-1 Modified.

The Preferred Alternative D-1 Modified in Defiance County, requires land from five development sites. There is a 0.1-hectare (0.4-acre) impact on the Defiance Regional Medical Center property, a 2.9-hectare (6.8-acre) impact on the Fox Run Executive Park, a 0.6-hectare (1.5-acre) impact on the Maumee River Crossing residential development (part of the Smith Zachrich Development Site), a 1.3-hectare (3.3-acre) impact on the Olson Enterprise Park, and a 1.9-hectare (4.6-acre) impact on the Enterprise Industrial Park.

The Preferred Alternative D-1 Modified landlocks 38 properties, requiring the acquisition of more land than is needed for construction. The 38 affected properties total 164.9 hectares (407.2 acres).

5.2.9 POPULATION/ HOUSING

The Preferred Alternative D-1 Modified has the potential to displace 36 residences, of which 23 are single family homes, four are mobile homes, and nine are single-family residences located on actively farmed properties. Based on the analysis of available replacement properties, there is an adequate number of available "Decent, Safe and Sanitary" housing units throughout the study area to absorb the displaced residents. Also, there is a sufficient number of vacant lots available for new construction and relocation of mobile homes. The majority of displaced residents should be able to stay in the area near shopping, schools, churches and other community facilities, if they choose. There appear to be no identifiable, unusual conditions in need of special relocation advisory services.

5.2.10 ENVIRONMENTAL JUSTICE

Environmental Justice populations affected by the Preferred Alternative D-1 Modified include minority and low income residents. All of the municipalities in Paulding and Defiance counties are considered to be minority communities because they have a higher percentage of residents who reported their race as Hispanic/Latino or American

Indian/Alaska Native than reported statewide. Low income communities include the Village of Cecil, the Brentwood Motor Home Court in Emerald Township, an unnamed subdivision near Riverside Cemetery in the Village of Antwerp, the Bohlman Trailer Park in Defiance Township, and the Rolling Meadows Mobile Home Park in Noble Township.

The Preferred Alternative D-1 Modified minimizes the potential for disproportionate impacts on the Hispanic population and is located on the same alignment as existing US 24 within Noble Township, except for the improved SR 15/18 interchange and West High Street connector. The connector would largely be built on undeveloped land that is part of the Defience Regional Medical Center development site. Improvements to the SR 15/18 interchange will impact the Rolling Meadows Mobile Home Park. The driveway to the property will be relocated to a safer distance away from the interchange.

The Preferred Alternative D-1 Modified avoids the unnamed subdivision in the Village of Antwerp, the Brentwoood Court Mobile Home Park, the Bohlman Trailer Park, and the Rolling Meadows Mobile Home Park. While a regional transportation facility will not be located within the immediate vicinity of these neighborhoods, the new facility will be accessible via the local road system. The changes in travel patterns do not result in disproportionate impacts to the neighborhoods.

In accordance with ODOT's policy on Environmental Justice, ODOT investigated potential design options for the SR 424 interchange to avoid impacts on the Bohlman Trailer Park. Based on the evaluation of conceptual interchange options, the eastbound exit and westbound entrance ramps for the SR 424 interchange were shifted to the west to avoid the acquisition of property from the Bohlman Trailer Park and the displacements of mobile homes.

The Bohlman Trailer Park will experience an increase in traffic generated noise levels as a result of the Preferred Alternative D-1 Modified. Future traffic generated noise is predicted to exceed FHWA NAC for residential uses (Activity Category B). In accordance with ODOT's noise policies, the feasibility of noise abatement has been considered for the Bohlman Trailer Park. A noise wall will be constructed between the SR 424 interchange ramp and the trailer park to mitigate the increase in noise levels.

Additionally, the Preferred Alternative as originally presented to the public in June 2002, would result in the closure of both C-206 and C-216 near the village of Cecil. This road closure would affect direct east-west access through this low income community. Based on input from the public and local agencies, C-206 will be realigned to intersect with C-87 maintaining one of the two east-west routes serving Cecil. C-216 will be closed. Additionally, east-west access through the village will be improved by the new highway which traverses the southern perimeter of the village. Therefore, the Preferred Alternative D-1 Modified will not result in disproportionate impacts to low income persons and families residing in Cecil.

5.2.11 COMMUNITY COHESION/ NEIGHBORHOOD IMPACTS

Community cohesion is defined as the connections between and within communities that are essential for serving the needs of the residents (FHWA, 1991). Development of the Preferred Alternative D-1 Modified was completed with an objective of minimizing impacts to businesses, residences, community facilities, and the local road network. Impacts to community cohesiveness are presented in Table 5.2.

The city of New Haven and Jefferson Township will not be affected by the new highway as the Preferred Alternative D-1 Modified abuts the US 24 Corridor within these two communities. Within Milan and Maumee townships, the Preferred Alternative D-1 Modified follows the US 24 Corridor to Berthaud Road where it deviates from the existing

TABLE 5.2
IMPACTS TO COMMUNITIES/NEIGHBORHOODS

Affected Area	Description of Impact
New Haven, Allen County	No change (US 24 on existing alignment).
Jefferson Township, Allen County	No change (US 24 on existing alignment, widening to the south of US 24).
Georgian Park Subdivision, Jefferson Township, Allen County	US 24 on existing alignment, widening to the south of US 24.
Havenwood Forest Subdivision, Milan Township, Allen County	US 24 relocated on new alignment to the south of the development.
Gar Creek Berthaud/Gar Creek Roads, Milan Township, Allen County	Access affected due to closure of Berthaud Road at US 24.
Milan Township, Allen County	US 24 on existing alignment between Doyle Road and Berthaud Road, widening to the south of US 24. From Berthaud Road to Maumee Township, US 24 on new alignment through rural area.
Edgerton Addition Subdivision, City of Woodburn, Allen County	US 24 relocated to the north of Woodburn.
City of Woodburn, Allen County	US 24 relocated just to the north of Woodburn. Improved access to city and Woodburn Industrial Park.
Maumee Township, Allen County	US 24 on new alignment through rural area.
Harrison Township, Paulding County	US 24 located on new alignment through rural area along northwest edge of township.
Jarrett Wood Subdivision, US 24, Carryall Township, Paulding County	US 24 relocated on new alignment to the south of the development.
Village of Antwerp, Paulding County	US 24 relocated away from commercial district just beyond southern village boundary. The crossing at C-43 is grade separated to provide safe access to Antwerp School complex.
Unnamed Mobile Home Park, US 24/T-43 Village of Antwerp, Paulding County	US 24 relocated away from development.
Carryall Township, Paulding County	US 24 relocated on new alignment to southern section of township through rural area.
Crane Township, Paulding County	US 24 on new alignment through rural area bisecting township. US 24 parallels Maumee & Western Railroad between T-77 and C-87.
Newman's Rolling Acres No. 2 Subdivision Fort Wayne/Riverside Drives Crane Township, Paulding County	US 24 relocated on new alignment to the south of the development.
Village of Cecil, Paulding County	US 24 relocated on new alignment through southern portion of the village. C-206 is re-aligned to intersect with C-87. C-216 is closed to through traffic.

TABLE 5.2 (CONTINUED)
IMPACTS TO COMMUNITIES/NEIGHBORHOODS

Affected Area	Description of Impact
Emerald Township, Paulding County	US 24 on new alignment through rural development bisecting northern portion of township. US 24 parallels Maumee & Western Railroad between Crane Township and Defiance County.
Brentwood Mobile Home Court, US 24/C-232, Emerald Township, Paulding County	US 24 relocated on new alignment to the south of the development.
Delaware Township, Defiance County	US 24 on new alignment through rural development in very southeastern portion of the township. C-8 re-aligned to intersect with C-143. US 24 parallels Maumee & Western Railroad between Paulding County and Defiance Township.
Defiance Township, Defiance County	US 24 on new alignment through rural area between Delaware Township and city of Defiance (C-146). US 24 parallels Maumee & Western Railroad between Delaware Township and the city of Defiance. Interchange at SR 424.
Bohlman Trailer Park, US 24/SR 424, Defiance Township, Defiance County	SR 424 interchange ramps abut western boundary of neighborhood.
Noble Township, Defiance County	US 24 on existing alignment. SR 15/18 Interchange improved. New connector road constructed between SR 15/18 and West High Street.
Noble Heights Subdivision, Noble Township, Defiance County	US 24 on new alignment west of SR 424. SR 424 intersection upgrade as interchange. SR 15/18 interchange improved. New connector road constructed between SR 15/18 and West High Street.
City of Defiance, Defiance County	US 24 on new alignment west of SR 424. SR 424 intersection improved as interchange. SR 15/18 interchange improved. New connector roadway constructed between West High Street and SR 15/18.

alignment. This will minimize the barrier effect of the new facility. The alignment stays to the north of the Gar Creek neighborhoood, minimizing effects on the neighborhood.

In the vicinity of Woodburn, the Preferred Alternative D-1 Modified passes to the north of the city. Based on comments received from public and local officials, a northern route is preferred to a southern route to minimize impacts to the local roadway system serving Woodburn.

The Preferred Alternative D-1 Modified in Paulding County passes to the south of the village of Antwerp, which is consistent with goals specified in the *Paulding County Comprehensive Plan*. Within the village of Antwerp, the crossing at C-43 will be constructed as a grade-separated crossing to minimize impacts on local traffic movements, particularly traffic that will be generated by the new Antwerp Schools complex on C-43.

The Preferred Alternative D-1 Modified also passes to the south of the village of Cecil. The design of the Preferred Alternative D-1 Modified proposes an at-grade intersection at the crossings of C-206 and closure at C-216. These are the only east-west routes providing direct access to the village. C-206 will be re-aligned to intersect with C-87.

Between the village of Cecil in Paulding County and Krouse Road in Defiance County, the Preferred Alternative D-1 Modified parallels the Maumee & Western Railroad corridor to the north, minimizing impacts on communities and neighborhoods. From Ashwood Road to the junction of US 24/SR 424, the Preferred Alternative D-1 Modified traverses an area that is now targeted for economic development by the county, thereby minimizing impacts to communities and neighborhoods in this area.

Within Defiance Township, the Preferred Alternative D-1 Modified avoids the displacement of mobile homes in the Bohlman Trailer Park. The Preferred Alternative D-1 Modified will result in an increase in traffic generated noise at the trailer park. Future traffic generated noise is predicted to exceed FHWA Noise Abatement Criteria (NAC) for residential uses.

The Preferred Alternative D-1 Modified, unlike the Feasible Alternatives, includes improvements to the SR 15/18-US 24 interchange in Defiance County. These improvements will impact the Rolling Meadows Mobile Home Park located off SR 15 just north of US 24 in Defiance County. The driveway to the property will be relocated to a safer distance away from the interchange

In the city of Defiance, the existing intersection of US 24 and West High Street /Switzer Road will be closed as a result of the construction of the Preferred Alternative D-1 Modified and the existing at-grade intersection will be replaced with an overpass. West High Street and Switzer Road will remain open to traffic with an overpass constructed over West High Street/Switzer to carry the new highway over it. A connector road will be constructed between West High Street and SR 15/18 in Defiance County to provide access to the existing industrial area.

The traffic impact analysis completed for the West High Street/Switzer Road area indicated that the access ramps for the US 24/SR 15/18 interchange currently operate at a LOS C/D in the afternoon peak hour, which will degrade to a LOS F by 2028 with or without the proposed improvements to US 24. ODOT evaluated operational and geometric improvements for the interchange as documented in *US 24/SR 15-18 Interchange: Traffic Capacity Analysis Report* (March 2004). Based the study, the following improvements to the interchange are proposed as part of the Preferred Alternative D-1 Modified:

- signalize the US 24-SR 15/18 eastbound ramp and westbound ramp intersections,
- construct a left turn lane on SR 15/18 for northbound traffic accessing westbound US 24,
- construct a left turn lane on SR 15/18 for southbound traffic accessing eastbound US 24,
- widen to SR 15/18 bridge over US 24 to thee lanes in width to provide for the left turn lanes, and
- relocate the US 24 eastbound and westbound ramp intersections at SR 15/18 reducing the distance between the ramps from 247 meters (810 feet) to 182.9 meters (600 feet).

5.2.12 COMMUNITY FACILITIES AND SERVICES

Since the DEIS was completed, two new community facilities were constructed in close proximity to the Preferred Alternative D-1 Modified. The Defiance Regional Medical Center recently opened on a site located at the intersection of US 24 and West High Street. The Antwerp Local Schools recently constructed a new K-12 complex, located on the southwest side of the village on C-43. Table 5.3 summarizes the impacts of the Preferred Alternative D-1 Modified on community facilities and services.

TABLE 5.3
SUMMARY OF PREFERRED ALTERNATIVE D-1 MODIFIED IMPACTS TO COMMUNITY FACILITIES AND SERVICES

Type of Facility	Facility & Location	Description of Impact
Medical/ Health Care	Defiance Regional Medical Center West High Street City of Defiance, Defiance County	Improved access. Traffic operations on local roadways are improved. SR 15/18 interchange improved. New connector road constructed between SR 15/18 and West High Street.
Police/Fire	Village of Antwerp Volunteer Fire Department US 24 Village of Antwerp, Paulding County	US 24 relocated south of Antwerp. C-43 constructed as grade-separated crossing.
	Village of Cecil Fire Department C-105 Village of Cecil, Paulding County	C-216 is closed.
	Ohio State Highway Patrol, Defiance Post US 24 Defiance Township, Defiance County	Direct impact (right-of-way acquisition) associated with US 24/SR 424 interchange. Does not affect buildings or access.
Schools	Woodlan High School Woodburn Road Milan Township, Allen County	Primary access routes to Woodlan School are grade-separated.
	Antwerp Local School C-43 Village of Antwerp, Ohio	Grade-separated crossing at C-43 (primary access route).
Churches	St. Paul Lutheran Church Berthaud Road Milan Township, Allen County	Access affected due to closure of Berthaud Road at US 24. Increased noise levels.
	Kingdom Hall of Jehovah's Witnesses US 24 Carryall Township, Paulding County	Access changed by relocation of US 24. Decreased noise levels.
	Mount Calvary Church US 24 Village of Antwerp, Paulding County	Access changed by relocation of US 24. Decreased noise levels.
	First Presbyterian Church US 24 /SR 49 Village of Antwerp, Paulding County	Access changed by relocation of US 24. Decreased noise levels.
Cemeteries	St. Paul Lutheran Church Cemetery Berthaud Road Milan Township, Allen County	Access affected due to closure of Berthaud Road at US 24. Increased noise levels.
	Riverside Cemetery US 24 Village of Antwerp, Paulding County	Decrease in noise levels. Changes in access (US 24 relocated to south of Antwerp).
	Lutheran Cemetery C-206/C-87 Crane Township, Paulding County	Location based on literature review and public comment; presence could not be verified by fieldviews.
Government	Crane Township Hall C-105 Village of Cecil, Paulding County	C-216 is closed.
	Village of Cecil Post Office C-105 Village of Cecil, Paulding County	C-216 is closed.
	ODOT Defiance County Garage US 24 /SR 424 City of Defiance, Defiance County	Acquisition of 3.1 hectares (7.7 acres). Salt storage and brine mixing facilities affected. Function of site retained through on-site replacement of affected facilities.
Public Utilities	AEP Substation Harper Road New Haven, Allen County	Displaced.
	Philadelphia Power Substation US 24 Crane Township Paulding County	Crossing of pipelines requiring reconstruction within the right-of-way.

TABLE 5.3 (CONTINUED)
SUMMARY OF PREFERRED ALTERNATIVE D-1 MODIFIED IMPACTS TO COMMUNITY FACILITIES AND SERVICES

Type of Facility	Facility & Location	Description of Impact
Public Utilities (continued)	ANR Pipeline City of Defiance and Noble Township Defiance County	Perpendicular crossing of the pipeline requiring reconstruction within the right-of-way.
	Panhandle Eastern Pipeline Company Defiance No. 1 M&R Station & Natural Gas Pipeline US 24, Defiance Township Defiance County	All Alternatives cross pipeline. Crossing of the pipeline requiring reconstruction within the right-of-way.
Railroads	Maumee & Western Railroad Various crossings in Paulding and Defiance counties	Grade-separated crossing between US 127 and C-115.
	CSX Transportation Crossing at US 24 near Ashwood Road, Delaware Township Defiance County	Grade-separated crossing to carry highway over railroad.
	Norfolk Southern Railroad spur to BF Goodrich Crossing, Allen County	Grade-separated crossing to carry highway over railroad.
Other	Cecil Community Grange C-105 Village of Cecil, Paulding County	C-216 is closed.

The Preferred Alternative D-1 Modified will displace the AEP substation at Harper Road as well as affect the associated transmission line spanning US 24. The Preferred Alternative D-1 Modified also impacts pipelines owned and operated by the ANR Pipeline and Panhandle Eastern Pipeline companies.

The Ohio State Highway Patrol Post located just east of the US 24/SR 424 intersection in Defiance will be affected by minor right-of-way acquisition; however, the function of the facility will not be permanently affected by the Preferred Alternative D-1 Modified.

There is the potential for unmarked graves associated with the Lutheran Cemetery to be located within close proximity to the right-of-way of the Preferred Alternative D-1 Modified.

The ODOT Defiance County Garage will be affected by construction of the US 24/SR 424 interchange for the Preferred Alternative D-1 Modified. The eastbound entrance and exit ramps at the SR 424 interchange were shifted to the west to avoid the displacement of residences located in the Bohlman Trailer Park. As a result, the salt storage and brine mixing facilities at ODOT's Defiance County Garage will be affected. The facilities will be replaced on-site, thereby retaining the function of the property.

The Preferred Alternative D-1 Modified crosses the Maumee & Western Railroad as well as the CSXT corridor. All railroad crossings will be grade separated. Overpasses will be constructed to carry the Preferred Alternative D-1 Modified over the Maumee & Western and CSXT rail lines. This will enhance safety as well as eliminate time delays for US 24 travelers who must stop for crossing trains. Access to other community facilities will be changed through road closures and other changes in the local road network.

Through coordination with local municipal officials, concerns have been raised on the need to minimize conflicts between US 24 mainline traffic and traffic associated with school trips. In particular, these comments have focused on two schools – Woodlan High School in Allen County and the new Antwerp Local Schools complex in Paulding

County. In response to the comments received from local officials, the Woodburn Road crossing has been revised from an at-grade intersection to a grade-separated crossing for Preferred Alternative D-1 Modified, minimizing the conflicts between automobiles, busses, and pedestrians traveling to and from Woodlan High School and US 24 mainline traffic. Similarly, the crossing at C-43 has been changed from an at-grade intersection to a grade-separated crossing for the Preferred Alternative D-1 Modified to minimize conflicts between school-related traffic traveling to and from the Antwerp Local School complex recently constructed east of C-43 and US 24 mainline traffic.

5.2.13 PARKS/ RECREATION LAND/ NATURAL AND WILDLIFE AREAS/ SECTION 4(F) AND 6(F) RESOURCES

The Preferred Alternative D-1 Modified does not impact any parklands or recreational resources that qualify for Section 4(f) protection.

The Maumee River is a State Scenic and Recreational River. The scenic portion of the river starts at the Indiana/Ohio state line and proceeds east for a distance of approximately 69.4 kilometers (43 miles) to the US 24 Maumee River crossing. The recreational portion of the river 85.5 kilometers (53 miles) long and begins at the US 24 river crossing at Defiance and continues east to the SR 20/25 bridge at Perrysburg and Maumee, Ohio. Reconstruction of the existing US 24 crossing over the Maumee River, including the construction of a new parallel structure adjacent to the existing structure, is required for the Preferred Alternative D-1 Modified.

Coordination between the FHWA and the Ohio Department of Natural Resources (ODNR) concerning the applicability of Section 4(f) to the Maumee State Scenic and Recreational River has been conducted for the project. Through this agency coordination, it was determined that the nearest recreational area on the Maumee River is located 4.8 kilometers (3.0 miles) downstream from the existing US 24 bridge. The relationship between the recreational status of the Maumee River and the existing US 24 river crossing is the convenience of the bridge as a landmark along the Maumee River. The bridge does not demarcate a specific point in the river whose primary function is recreation, but rather serves merely as a point of general reference. Based on coordination with ODNR, FHWA has determined that Section 4(f) is not applicable to the Maumee River in the vicinity of the existing US 24 bridge. Correspondence regarding Section 4(f) applicability to the Maumee River is provided in Appendix C.

5.2.14 ECONOMY AND EMPLOYMENT

The Preferred Alternative D-1 Modified will result in impacts to the agricultural industry, which include displacement of nine farms. Additionally, 214 farming operations will be affected by the Preferred Alternative D-1 Modified.

Four businesses will be displaced by the Preferred Alternative D-1 Modified:

- Sid's Dog and Cat Grooming,
- Paul E. Daeger Excavating,
- Stykemain Enterprises, LLC, and
- CCCS Insurance Agency, Inc.

The impacts of the Preferred Alternative D-1 Modified on industrial entities operating within the study area are mixed. Table 5.4 summarizes the impacts of the Preferred Alternative D-1 Modified on local industrial entities. Overall, the Preferred Alternative D-1 Modified will have a positive effect on eight industrial entities, a negative effect on eight entities, and no effect on four. The entities that will be positively affected include an unnamed quarry and an unnamed cement plant, both operating in Crane Township; Defiance Woodworking Machine; Koester Corporation; Northwest Controls, Olson Electric; Olson Cold Storage; and Defiance Regional Medical Center. The potential positive

TABLE 5.4
SUMMARY OF IMPACTS ON LOCAL INDUSTRIAL ENTITIES

Industrial Entity	Description of Impacts
Pacesetter Finishing Casad Industrial Park Edgerton Road Jefferson Township, Allen County	No change.
Superior Aluminum Casad Industrial Park Jefferson Township, Allen County	No change.
Kwik Lok Edgerton and Ryan Roads Jefferson Township, Allen County	No change.
Webster Lumber Edgerton Road Jefferson Township, Allen County	No change.
Hanson Quarry US 24 Milan Township, Allen County	Decreased access. Closest access route is Sampson Road (US 24 approximately five kilometers [3.1 miles]).
Uniroyal Goodrich – Fort Wayne Plant US 24 Milan Township, Allen County	Decreased access. Closest access route is Sampson Road (US 24 approximately 4.03 kilometers [2.5 miles]).
Antwerp Tool and Die US 24 Village of Antwerp, Paulding County	Decreased access. US 24 located approximately 1737.8 meters (5,700 feet) south.
K&L Tools US 24 Village of Antwerp, Paulding County	Decreased access. US 24 located approximately 1737.8 meters (5,700 feet) south.
Steve Reiff, Inc. US 24 Village of Antwerp, Paulding County	Decreased access. US 24 located approximately 1737.8 meters (5,700 feet) south.
Dana Boston Weatherhead US 24 Village of Antwerp, Paulding County	Decreased access. US 24 located approximately 1737.8 meters (5,700 feet) south.
Spec-Temp, Inc. US 24 Village of Antwerp, Paulding County	Decreased access. US 24 approximately 1737.8 meters (5,700 feet) south.
Quarry Crane Township, Paulding County	Improved access. US 24 located 1097.6 meters (3,600 feet) north; existing US 24 is 4054.9 meters (13,300 feet) north.
Cement Plant Crane Township, Paulding County	Improved access. US 24 located 1097.7 meters (3,600 feet) north; existing US 24 is 4054.9 meters (13,300 feet) north.
Defiance Woodworking Machine SR 424 City of Defiance, Defiance County	Direct access to regional highway system via interchange at SR 424. Interchange is approximately 1067.1 meters (3,500 feet) from entrance. Site is bisected by alternative between Krouse and Keller roads affecting area not programmed for development. High visibility from US 24.
Koester Corporation Fox Run Executive Park West High Street Noble Township, Defiance County	Improved access. New connector road between SR 15/18 and West High Street. SR 15/18 interchange improved.
Northwest Controls Fox Run Executive Park West High Street Noble Township, Defiance County	Improved access. New connector road between SR 15/18 and West High Street. SR 15/18 interchange improved.

TABLE 5.4 (CONTINUED)
SUMMARY OF IMPACTS ON LOCAL INDUSTRIAL ENTITIES

Industrial Entity	Description of Impacts
Olson Electric Olson Industrial Park City of Defiance, Defiance County	Improved access. New connector road between SR 15/18 and West High Street. SR 15/18 interchange improved.
Olson Cold Storage Olson Industrial Park City of Defiance, Defiance County	Improved access. New connector road between SR 15/18 and West High Street. SR 15/18 interchange improved.
Defiance Regional Medical Center City of Defiance, Defiance County	Improved access. New connector road between SR 15/18 and West High Street. SR 15/18 interchange improved.

effects are associated with improved access and/or visibility associated with US 24. Entities potentially experiencing a negative effect include Hanson Quarry, Uniroyal Goodrich, Midwest Tile and Concrete, Antwerp Tool and Die, K&L Tools, Steve Reiff, Inc., Dana Boston Weatherhead, and Spec-Temp, Inc. The potential negative effects are associated with decreased access as US 24 would be relocated away from the operating sites. The four entities with no change are Pacesetter Finishing, Superior Aluminum, Kwik Lok, and Webster Lumber.

Relative to economic development sites, the Preferred Alternative D-1 Modified will have a positive effect on four economic development sites and no effect on four development sites. Table 5.5 summarizes the impacts of the Preferred Alternative D-1 Modified on economic development sites. The Woodburn Industrial Park and Antwerp Industrial Park will experience improved access as US 24 is relocated closer to the sites. The Maumee River Crossing Development, Fox Run Executive Park, and the Olson Industrial Park will experience improved access through reduction in congestion on US 24 and the local roadway system; improvements to the SR 424 crossing and the SR 15/18 interchange; and construction of a connector road between SR 15/18 and West High Street/Switzer Road. ODOT is proposing to purchase a portion of the Enterprise Park for wetland and stream mitigation.

Construction of the Preferred Alternative D-1 Modified is projected to create 10,261 construction-related jobs. This includes 1,926 on-site construction jobs, 4,802 off-site construction jobs and 3,534 induced opportunities. The Preferred Alternative D-1 Modified has a higher construction cost than the other Feasible Alternatives given the differences in design in Allen County (consists of a freeway with interchanges or grade-separated crossings at most crossroads while the other Feasible Alternatives are designed as expressways with at-grade intersections at most crossroads), improvements to the I-469/US 24 interchange, improvements to the SR 15/18 interchange, construction of service roads and the West High Street/Switzer Road connector road.

5.2.15 MUNICIPAL FINANCES/TAXES

The Preferred Alternative D-1 Modified requires the acquisition of 815.8 hectares (2,015 acres) of land for right-of-way. This acquisition will remove land generating property tax revenues from the tax revenue streams for the affected counties and municipalities. The area required for the Preferred Alternative D-1 Modified is much larger than the area required for Alternatives D and D-1 due to the addition of the I-469 interchange in Allen County; the addition of the SR 15/18 and West High Street connector road in Defiance County; the inclusion of approximately 64.4 hectares (159 acres) of undeveloped land for use for wetland and stream mitigation in Defiance County; and the addition of drainage areas and service roads along the alignment that were added as part of Stage One and Two design studies.

TABLE 5.5
SUMMARY OF IMPACTS ON ECONOMIC DEVELOPMENT SITES

Economic Development Site/Location	Description of Impacts
Doyle Road Industrial Site Doyle Road/Edgerton Road/Bandalier Road/Dawkins Road Jefferson Township, Allen County	No change.
New Haven Industrial Site Doyle Road/Edgerton Road/Bandalier Road/Dawkins Road Jefferson Township, Allen County	No change.
Casad Industrial Park Development Area Jefferson Township, Allen County	No change.
Canal Place Economic Development Area Ryan Road/Edgerton Road/Webster Road/Dawkins Road Jefferson Township, Allen County	No change.
Bandalier Economic Development Area Jefferson Township, Allen County	No change.
Woodburn Industrial Park SR 101 City of Woodburn, Allen County	Improved Access. Distance to US 24 is reduced from 1981.7 to 914.6 meters (6,500 to 3,000 feet). High visibility.
Antwerp Industrial Park C-43/C-180/T-51/C-176 Village of Antwerp, Paulding County	Improved access. US 24 borders site. High visibility. Small loss of area at southwest corner of site for relocation of T-51.
Enterprise Park SR 424 City of Defiance Defiance County	Proposed for acquisition for wetland and stream mitigation.
Maumee River Crossing Development West High Street Noble Township, Defiance County	Improved access. New connector road between SR 15/18 and West High Street. SR 15/18 interchange improved.
Fox Run Executive Park West High Street Noble Township, Defiance County	Improved access. New connector road between SR 15/18 and West High Street. SR 15/18 interchange improved.
Olson Industrial Park City of Defiance, Defiance County	Improved access. New connector road between SR 15/18 and West High Street. SR 15/18 interchange improved.

A total of 38 parcels are potentially landlocked by construction of the Preferred Alternative D-1 Modified, resulting in the acquisition of more property than required for the highway right-of-way. The 38 parcels cover approximately 164.9 hectares (407.2 acres) of land. To minimize the number of landlocked parcels, a Service Road Study was conducted to review the practicality and feasibility of providing access to the parcels landlocked by the Preferred Alternative D-1 Modified. The study is documented in detail in a separate report entitled *US 24 Service Road Study* (January 2004).

Based on the Service Road Study and engineering design refinements, there are 13 service roads that are justified for construction. The 13 service roads consist of two lanes and range from 2.7 to 3.7 meters (nine to 12 feet) in width. These roads will provide access to 106.9 hectares (264.1 acres) of land. Six of the service roads are in Allen County and will provide access to 45 hectares (112.5 acres). Three service roads are proposed in Paulding County, which will provide access to 33.9 hectares (83.7

acres). Two service roads are proposed in Defiance County, which will provide access to 27.5 hectares (67.9 acres).

Residential and business displacements associated with the Preferred Alternative D-1 Modified will also have a slight effect on municipal tax revenues. The Preferred Alternative D-1 Modified results in 36 residential displacements, including the displacement of nine farms, and four business displacements. As there is available replacement housing within the study area to accommodate all residential displacements, the Preferred Alternative D-1 Modified will likely have no effect on personal income tax revenues. The displaced businesses are small businesses and their displacement should have a nominal effect on personal income tax revenues (loss of employment) and corporate income tax revenues (loss of business).

5.2.16 VISUAL RESOURCES

The Preferred Alternative D-1 Modified will alter viewsheds for Georgian Park and Havenwood Forest residential subdivisions located to the north of US 24 in Milan Township. These impacts are considered to be low to moderate as the changes to the alignment in Allen County have negligible impact on the viewsheds of residences located within these subdivisions.

The Preferred Alternative D-1 Modified will pass in close proximity to the Gar Creek and Edgerton Addition neighborhoods. The visual impacts on nearby residences is considered to be high because a new visual element is being introduced into the rural setting of the neighborhoods.

Within the vicinity of Woodburn, the Preferred Alternative D-1 Modified will be located to the north of the community in an area that is not considered to be visually sensitive because of the industrial setting associated with the existing development. Therefore, the impact rating for this area is no impact.

The Preferred Alternative D-1 Modified will be relocated to the south of Antwerp. Construction of SR 49 will result in the introduction of a new visual element, which will be elevated above the existing ground level. The area is predominantly agricultural in nature with some institutional and industrial development. Given the current development characteristics of this area, only minor visual impacts are anticipated.

The Preferred Alternative D-1 Modified, unlike the Feasible Alternatives, includes the interchange with I-469. This interchange is located near the Niemeyer Farm, a National Registry of Historic Places (NHRP)-eligible property. No property will be taken from the Niemeyer Farm. An interchange at I-469 is now present in the immediate viewshed of the farm, and the Preferred Alternative D-1 Modified will only minimally change the views from the farm and is not considered an impact.

Three additional NRHP-eligible historic resources are located within the Area of Potential Effect for the Preferred Alternative D-1 Modified, which are the Harper House, the Meyer/Gallmeyer Farm, and the Smith/Rich/Krug House. Any visual intrusions within the vicinity of these three resources is minimized through distance between the resources and the highway as well as screening by existing vegetation. The visual impact of the Preferred Alternative D-1 Modified on these properties is considered to be low.

In the vicinity of the Harper House, the Preferred Alternative D-1 Modified follows the existing alignment of US 24. The visual impact is expected to be low as the highway will be constructed on roughly the same elevation as existing US 24. The view will be screened by existing trees growing along the south side of US 24 and on the Harper House property.

The Preferred Alternative D-1 Modified also affects the Meyer/Gallmeyer Farm, a NRHP-eligible resource. In the vicinity of this resource, the residence is screened from the proposed right-of-way by outbuildings and landscaping. Some vegetative screening is provided by trees and brush growing along Gar Creek in addition to trees surrounding the property. The view of the Preferred Alternative D-1 Modified is also minimized by distance as the resource is situated approximately 152.4 meters (500 feet) from the proposed right-of-way. Therefore, the visual impact of the Preferred Alternative D-1 Modified is considered to be low.

The Smith/Rich/Krug House, a NRHP-eligible resource, is within the Area of Potential Effect for the Preferred Alternative D-1 Modified. The alternative will be located more than 365.9 meters (1,200 feet) from the resource. The Preferred Alternative D-1 Modified will be constructed on new alignment through active agricultural lands. The vertical profile of the proposed highway, in general, will result in a minimal rise in elevation in relationship to the existing landscape, except for the proposed overpasses that will carry the new highway over Woodburn Road, Sampson Road, and the Norfolk Southern Railroad. The new highway will be elevated approximately 7.0 meters (23 feet), at its highest point, over these existing right-of-way. The Woodburn Road overpass, the closest of the three, will be located approximately 670.7 meters (2,200 feet) west of the property. The potential for a direct visual impact to the Smith/Rich/Krug House by the proposed overpasses is mitigated by distance, existing vegetation, and modern development that will effectively screen the view of the facility from the resource. Therefore, the visual impact of the Preferred Alternative D-1 Modified is considered to be low.

5.2.17 ARCHAEOLOGICAL RESOURCES

Phase I archaeological investigations were conducted within the proposed right-of-way of the Preferred Alternative D-1 Modified. A total of 120 sites were identified through the Phase I investigations. Thirty sites are located in Allen County, 40 sites in Paulding County, and 50 sites in Defiance County. None of the 120 sites surveyed met the eligibility requirements for listing on the National Register of Historic Places (NRHP). All of the recorded archaeological sites were found to lack sufficient integrity and associated historical significance required to meet the NRHP eligibility criteria.

The Gronauer Lock Site 12AL 1674 is located within the right-of-way of the existing I-469/US 24 interchange (Figure 2). During the construction of the existing I-469/US 24 interchange in June 1991, the Gronauer Lock was discovered. The equivalent of Phase II evaluative testing, Phase III data recovery, and evaluative testing were performed on the Gronauer Lock in 1991. Testing indicated that the lock was eligible for listing on the NRHP. A mitigation plan was developed and approved by the Indiana Division of Historic Preservation and Archaeology (DHPA) in 1992. A memorandum of agreement was prepared and data recovery was conducted resulting in almost complete exposure of the lock in 1992. A Historic American Engineering Record (HAER) document was completed and the majority of the lock was removed for preservation off-site.

The archaeological surveys and mitigation completed in the early 1990's determined that the significance of the Gronauer Lock resides in its information potential and remaining elements of the canal lock do not merit preservation in place. Based on all existing information, it was determined by the DHPA that the Gronauer Lock (12AL 1674) is eligible for listing on the NRHP under Criterion D (Information Potential) since it has or had important information which contributes to our understanding of human history.

The FHWA Indiana Division and the Indiana State Historic Preservation Officer (SHPO) prepared a Programmatic Agreement for the Gronauer Lock in October 2005. The FHWA invited the Advisory Council on Historic Preservation (ACHP) to participate in the

development of the Programmatic Agreement. The ACHP declined to participate in development of the Programmatic Agreement. The purpose of the Programmatic Agreement was to phase the effect determination for the Gronauer Lock and any subsequent data recovery requirements since the engineering design for the I-469/US 24 interchange has not advanced beyond the preliminary phase and the boundaries of the Gronauer Lock site are unknown. The Programmatic Agreement identified the actions FHWA and INDOT will take to satisfy FHWA's Section 106 responsibilities. The following are stipulations specified in the Programmatic Agreement:

- Prior to completing the final project design in Indiana, the INDOT will complete the appropriate archaeological investigations to determine the boundaries of the Gronauer Lock. INDOT will coordinate the archaeological investigations with the Indiana SHPO. A research plan detailing the methodology for defining the boundaries of the site shall be submitted to the Indiana SHPO for review and comment.

- The INDOT will make a reasonable effort to avoid the Gronauer Lock site during design and construction. If the site cannot be avoided, FHWA will apply the Criteria of Adverse effect in accordance with 36 CFR 800.5.

- If the FHWA determines, in consultation with the Indiana SHPO, that the project will have an adverse effect on the Gronauer Lock site, then INDOT will develop plans for Phase II and/or Phase III archaeological investigations in consultation with the Indiana SHPO and submit such plans to the FHWA and Indiana SHPO for their review and comment. The INDOT shall submit alternative mitigation plan to the FHWA and Indiana SHPO for their review and comment, if appropriate. That review period will be 30-days. If archaeological resources are identified which are eligible under Criteria other than or in addition to Criterion D, FHWA shall comply with 36 CFR 800.6.

- A draft report(s) of the archaeological investigations and updated Indiana state site form shall be submitted to the FHWA and Indiana SHPO for review and comment. All final reports of the archaeological investigations will be completed within one year of the completion of field work. The Indiana SHPO will be given 30-days to review and comment on all submissions.

- INDOT shall ensure that all archaeological work carried out pursuant to this Programmatic Agreement is carried out by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualification Standards* (48 FR 44738-9), and that all historic preservation work is carried out by or under the direct supervision of a person or persons meeting, at a minimum the *Secretary of the Interior's Professional Qualification Standards for Architectural Historian Professionals* (48 FR 44738-9).

- If any unanticipated discoveries of historic properties, sites, artifacts, or human remains are encountered during the implementation of this undertaking, FHWA shall comply with 36 CFR 800.13 and Indiana Code (14-21-1-27 and 14-21-1-29) by informing the Indiana Department of Natural Resources of such discoveries within two business days and, if applicable, federally recognized tribal organizations that attach religious and/or cultural significance to the affected property; and by developing and implementing actions that take into account the views of the Indiana SHPO and, if applicable, federally recognized tribal organizations.

The Programmatic Agreement was signed by INDOT, the Indiana SHPO, and FHWA Indiana Division and executed on October 13, 2005. The Programmatic Agreement was filed with the ACHP in October 2005. The Programmatic Agreement is in Appendix C.

5.2.18 HISTORIC RESOURCES

There are four historic resources, which are eligible for listing on the NRHP located within the Area of Potential Effects (APE) of the Preferred Alternative D-1 Modified. The four historic resources are located in Allen County, Indiana, and are:

- Niemeyer Farm,
- Harper House,
- Smith/Rich/Krug House, and
- Meyer/Gallmeyer Farm.

None of the resources will be directly impacted by the Preferred Alternative D-1 Modified. A formal assessment of impacts was completed for the Preferred Alternative by applying the Criteria of Effects in accordance with the requirements of the National Historic Preservation Act (NHPA). The effects determinations are summarized in Table 5.6.

TABLE 5.6
FINDING OF EFFECT ON NRHP-ELIGIBLE PROPERTIES
WITHIN THE AREA OF POTENTIAL EFFECTS OF THE PREFERRED ALTERNATIVE

Property	Impact	Mitigating Factors	Finding of Effect (36 CFR Part 800.5)
Niemeyer Farm	Change to the existing interstate interchange.	Existing interchange; no property impacts; increase in future noise levels is negligible.	No Effect
Meyer/Gallmeyer Farm	Introduction of a large-scale highway into the setting of the resource; slight increase in ambient noise levels.	View is shielded by outbuilding complex and existing mature trees and shrub vegetation; future noise levels do not exceed the FHWA NAC.	No Adverse Effect
Smith/Rich/Krug House	Introduction of a large-scale highway into the setting of the resource; slight increase in ambient noise levels.	View is buffered by distance and shielded by existing mass of mature trees; future noise levels do not exceed the FHWA NAC.	No Effect
Harper House	Introduction of a large-scale highway into the setting of the resource.	View shielded by existing mature trees and undergrowth; reduction in future ambient noise levels.	No Effect

Niemeyer Farm

The Preferred Alternative D-1 Modified has No Effect on the Niemeyer Farm, which is located immediately northwest of the existing I-469/US 24 interchange. The existing interchange is a partial cloverleaf with loop ramps in the northeast and southwest quadrants. The eligible portion of the Niemeyer Farm is 11.2 hectares (28 acres) in size. The Preferred Alternative D-1 Modified will add a new off ramp adjacent to the eastern boundary of the farm. The new ramp will be built within the existing right-of-way. Other changes to the interchange include construction of a directional fly-over

ramp over I-469 in the southeast quadrant and modification of the ramps in the southwest and northwest quadrants. No property will be taken from the Niemeyer Farm. The interchange and I-469 presently exist in the immediate viewshed of the farm and the project will only minimally change the views from the farm and is not considered an impact. The noise levels at the property already exceed the FHWA NAC and a 2003 noise analysis found that the project will have a negligible noise effect on the property, an increase of less than three dBA (a change that is imperceptible to most humans). This change is not considered to be an impact to the Niemeyer Farm. Therefore, it is concluded that the Preferred Alternative D-1 Modified will have No Effect on this property.

Meyer/Gallmeyer Farm

The Preferred Alternative D-1 Modified has the potential for a slight increase over the current noise levels at the Meyer/Gallmeyer Farm, but the noise levels will remain below FHWA NAC level. The historic boundary and buildings with the Meyer/Gallmeyer Farm are located approximately 152.4 meters (500 feet) from the proposed right-of-way. The noise analysis shows that the difference between the future build noise levels for the Preferred Alternative D-1 Modified and the No Build alternative is negligible. Because the proposed highway does not introduce audible elements that degrade the existing historic property environment, the change in the noise levels has no effect on the property. The view of the highway from the residence is shielded for the most part by the outbuilding complex, mature trees, and shrub growth indicating that it will not suffer adverse visual effects. A No Adverse Effect Determination is indicated for the Meyer/Gallmeyer Farm.

Smith/Rich/Krug House

The Preferred Alternative D-1 Modified has No Effect on the Smith/Rich/Krug House. The noise analysis completed for the Effects Determination indicates that future build noise levels will increase slightly, but do not exceed the FHWA NAC level. The Preferred Alternative D-1 Modified will be located more than 365.9 meters (1,200 feet) from the resource. The alternative will be constructed on new alignment through active agricultural lands. The vertical profile of the proposed highway, in general, will result in a minimal rise in elevation in relationship to the existing landscape, except for the proposed overpasses that will carry the Preferred Alternative D-1 Modified over Woodburn Road, Sampson Road, and the Norfolk Southern Railroad. The new highway will be elevated approximately 7.0 meters (23 feet), at its highest point, over these existing rights-of-way. The Woodburn Road overpass, the closest of the three, will be located approximately 670.7 meters (2,200 feet) west of the property. The potential for a direct visual impact to the Smith/Rich/Krug House by the proposed overpasses is mitigated by distance, existing vegetation, and modern development that will effectively screen the view of the facility from the resource. Therefore, the visual impact of the Preferred Alternative D-1 Modified is considered to be low. Also, sufficient distance between the resource and the Preferred Alternative D-1 Modified as well as existing vegetation and buildings shield the property from significant alteration to its viewshed. Therefore, it is concluded that the Preferred Alternative D-1 Modified will have No Effect on this property.

Harper House

The Preferred Alternative D-1 Modified does not require acquisition of property associated with the Harper House. The Preferred Alternative D-1 Modified reduces traffic noise from the current levels, but these reduced levels remain above the FHWA NAC. Because the proposed highway does not introduce audible elements that degrade the existing historic property environment but actually improve the overall setting, the noise levels associated with the undertaking have no effect on the Harper House property. The property is shielded by vegetation (mature trees and undergrowth) and therefore will not suffer visual effects from proposed highway construction. The Preferred Alternative D-1 Modified will have No Effect on the Harper House.

5.2.19 ARCHAEOLOGICAL AND HISTORIC SITES-SECTION 4(f) RESOURCES

Effects evaluations were completed for five NRHP-eligible resources located within the APE of the Preferred Alternative D-1 Modified and reviewed by the Indiana Division of Historic Preservation and Archaeology (DHPA). These resources are the Niemeyer Farm, Gronauer Lock, Meyer/Gallmeyer Farm, Smith/Rich/Krug House, and Harper House. Potential adverse effects to the resources were evaluated by applying the Criteria of Effects in accordance with the requirements of the NHPA. Boundary determinations were included in the Effects Evaluations for historic properties submitted to the DHPA for review and concurrence. The Preferred Alternative D-1 Modified was determined to have no effect on the Niemeyer Farm, Smith/Rich/Krug House, and Harper House; and no adverse effect on the Meyer/Gallmeyer Farm (Table 5.6). The project is located outside of the historic boundary for the Meyer/Gallmeyer Farm. Through coordination with the DHPA, it was determined that the significance of the Gronauer Lock resides in its information potential and remaining elements of the canal lock do not merit preservation in place. FHWA has determined that Section 4(f) is not applicable to the Gronauer Lock. Therefore, the Preferred Alternative D-1 Modified will not use any Section 4(f) resources.

5.2.20 TRANSPORTATION AND TRAFFIC

The Preferred Alternative D-1 Modified will improve traffic flow, congestion, and safety conditions in the US 24 Corridor for all travelers. The Preferred Alternative D-1 Modified will not replace existing US 24 but rather will augment transportation service in the study area.

The operational characteristics for the Preferred Alternative D-1 Modified are similar as those reported for the DEIS Preferred Alternative, with the exception that it has been extended to the I-469/US 24 interchange to the west and the SR 15/18-US 24 interchange to the east, adding approximately four kilometers (0.5 miles) to the highway alignment. The expected mainline level of service under the Preferred Alternative D-1 Modified is LOS A. The estimated 2028 Vehicle Miles Traveled (VMT) is 178.0 million, while the estimated time to travel the corridor in 2028 between New Haven and Defiance is 35 minutes.

Local roadway impacts, however, differ from the DEIS Preferred Alternative. Design changes have been made at crossings with local roads. In most cases, the differences are design changes made in response to public comments. The affected crossings and descriptions of previous and current intersection designs are listed in Table 5.7 and shown on Figure 1.

Construction of the Preferred Alternative D-1 Modified will affect the local roadways in several ways:

- addition of at-grade intersections or interchanges at specific locations where the Preferred Alternative D-1 Modified crosses local roadways,
- construction of underpasses/overpasses at locations of local roadway crossings where access is not provided,
- closure of crossroads, and
- realignment of crossroads.

In order to examine the effects of the Preferred Alternative D-1 Modified on the local roadway network, capacity analyses were performed at each proposed at-grade intersection. A summary of the 2008 and 2028 levels of service for each crossroad is shown in Table 5.8. The table only indicates the levels of service experienced by vehicles on the crossroads since vehicles traveling on US 24 will experience little or no delay.

The results of the capacity analyses indicate that eleven at-grade intersections will operate at a LOS C or better in 2008 and eight at-grade intersections will operate at a

LOS C in 2028. Three at-grade intersections are anticipated to function at a LOS D in 2028 for crossroad traffic movements: the Maumee Center Road/Bull Rapids Road intersection, the T-51/C-176 intersection, and the at-grade intersection with the Preferred Alternative D-1 Modified at C-115.

TABLE 5.7
DESIGN REFINEMENTS RELATIVE TO LOCAL ROAD CROSSINGS

Road	Preferred Alternative D-1 Modified Intersection Design (2005)
Doyle Road	Grade-separated crossing with Doyle Road passing over Preferred Alternative D-1 Modified.
Ryan/Bruick Road	Interchange.
Webster Road	Interchange.
Rousey Road	Closed.
Sampson Road	Grade-separated crossing with Preferred Alternative D-1 Modified passing over Sampson Road.
Woodburn Road	Grade-separated crossing with Preferred Alternative D-1 Modified passing over Woodburn Road.
Maumee Center Road	Re-aligned to at-grade intersection with Bull Rapids Road.
Bull Rapids Road	Grade-separated crossing with Bull Rapids Road passing over Preferred Alternative D-1 Modified.
SR 101	Interchange.
Gustin Road	Closed.
State Line Road	Grade-separated crossing with State Line Road passing over Preferred Alternative D-1 Modified.
C-11	Grade-separated crossing with Preferred Alternative D-1 Modified passing over C-11.
C-33	Closed.
SR 49	Interchange.
C-43	Grade-separated crossing with C-43 Road passing over Preferred Alternative D-1 Modified.
T-51	Re-aligned to at-grade intersection with C-176.
C-176	Grade-separated crossing with C-176 passing over the Preferred Alternative D-1 Modified.
C-180	Closed.
T-61	Closed.
T-69	Closed.
T-83	At-grade intersection.
US 127	Interchange.
C-206	Re-aligned to at-grade intersection with C-87.
C-216	Closed.
C-224	Closed.
T-129	Re-aligned to intersect with C–232.
Powers Road (C-29)	Re-aligned to at-grade intersection with T-143.
Krouse Road (C-146)	Grade-separated crossing with Krouse Road passing under Preferred Alternative D-1 Modified.

SR 49 and US 127, originally proposed as at-grade intersections, would function at a LOS E or F for crossroad traffic, as an intersection. Due to the heavy traffic volumes on SR 49, an at-grade intersection, as originally proposed with the Feasible Alternatives, provides a LOS F under 2008 and 2028 traffic conditions for vehicles on this crossroad. A traffic signal warrant analysis on this intersection determined that the intersection did not meet any of the traffic signal warrants under Year 2008 traffic conditions, but did meet several criteria under Year 2028 traffic conditions. The proposed at-grade intersection at US 127 would provide a LOS E in 2008 and LOS F in 2028. A traffic signal warrant analysis on this intersection determined that the intersection meets several criteria for signalization in 2008 and 2028.

TABLE 5.8

INTERSECTION ANALYSIS FOR THE PREFERRED ALTERNATIVE D-1 MODIFIED

Crossroad	Year 2008 Crossroad LOS	Year 2028 Crossroad LOS	Results and Recommendations
I-469	Interchange	Interchange	Existing interchange is improved.
Harper Rd.	Closed	Closed	Recommend closing due to close proximity to the I-469 interchange.
Doyle Rd.	Overpass	Overpass	Overpass is proposed to provide for freeway design in Allen County.
Bremer Rd.	Closed	Closed	Recommend closing because it would require a realignment to provide an acceptable sight distance. Nearby Ryan Road would not require re-alignment and would serve as a better crossing location.
Ryan/Bruick Rd.	Interchange	Interchange	Provides crossing over the Maumee River and is a primary travel route for the Amish community.
Berthaud Rd.	Closed	Closed	Recommend closing due to minimal traffic volumes. Nearby Webster Road is more heavily traveled and would serve as an acceptable crossing location.
Webster Rd.	Interchange	Interchange	Provides crossing over the Maumee River, a primary travel route for the Amish community.
Rousey Rd.	Closed	Closed	Recommend closing due to minimal traffic volumes.
Sampson Rd.	Overpass	Overpass	Overpass is proposed to provide for freeway design in Allen County.
Woodburn Rd.	Overpass	Overpass	An overpass is proposed because of the high volume of high school traffic expected to attempt to cross the new US 24 on this roadway and to address public comments.
Maumee Center Rd.	Realignment C	Realignment D	Maumee Center Road re-aligned to intersect with Bull Rapids Road.
Bull Rapids Rd.	Overpass	Overpass	Overpass is proposed to provide for freeway design in Allen County.
SR 101	Interchange	Interchange	Provides crossing over Maumee River and is a primary travel route for the Amish community.
Gustin Rd.	Closed	Closed	Recommend closing since few vehicles presently use this road.
State Line Rd.	Overpass	Overpass	Overpass is proposed to provide for freeway design in Allen County.
T-150	Closed	Closed	Recommend closing since few vehicles currently use this roadway.
C-11	Underpass	Underpass	Underpass is proposed to maintain emergency access to properties north of the Maumee & Western Railroad.
C-21	C	C	An at-grade intersection provides acceptable LOS.
T-29	Closed	Closed	Recommend closing since the small number of vehicles on this roadway can use SR 49 to travel into and out of Antwerp.
C-33	Closed	Closed	Recommend closing due to minimal traffic volumes and close proximity to the SR 49 interchange.
SR 49	Interchange	Interchange	Due to heavy traffic volumes on SR 49 in 2008 and 2028, an at-grade intersection provides a poor LOS F.
C-43	Overpass	Overpass	Overpass is proposed to separate mainline traffic from Antwerp School traffic.
T-51	Realignment C	Realignment D	T-51 will be re-aligned to intersect with C-176. T-51 could be considered for closure since very few vehicles presently travel on this road.
C-176	Overpass	Overpass	An at-grade intersection provides acceptable LOS on opening day. A poor LOS D will be experienced on the crossroad under Year 2028 traffic conditions.
C-180	Closed	Closed	Recommend closing since roadway provides same function as C-176, but is not built to ODOT design standards for local roadways.

TABLE 5.8 (CONTINUED)
INTERSECTION ANALYSIS FOR THE PREFERRED ALTERNATIVE D-1 MODIFIED

Crossroad	Year 2008 Crossroad LOS	Year 2028 Crossroad LOS	Results and Recommendations
T-61	Closed	Closed	Recommend closing since only a small number of vehicles use this roadway.
T-69	Closed	Closed	Access to properties along T-69 will be provided by the Antwerp Bypass connector.
T-83	C	C	T-83 could be considered for closure since very few vehicles presently travel on this road.
C-206	Realignment C	Realignment C	Re-aligned to at-grade intersection with C-87.
C-87	C	C	An at-grade intersection provides acceptable LOS.
C-105	Underpass	Underpass	An underpass is being proposed at C-105 because the proposed US 24 alignment must span over the nearby railroad tracks.
C-216	Closed	Closed	Recommend closing due to minimal traffic volumes and close proximity to the US 127 interchange
US 127	Interchange	Interchange	Due to heavy traffic volumes on US 127, an at-grade intersection provides a poor LOS F.
C-224	Closed	Closed	Recommend closing since very few vehicles travel on the roadway.
C-115	C	D	An at-grade intersection provides acceptable LOS in 2008. A poor LOS D will be experienced under Year 2028 traffic conditions.
C-123	Closed	Closed	Recommend closing since very few vehicles travel on the roadway and vehicles can cross Alternative D-1 using the at-grade intersection proposed at nearby C-115.
C-232	C	C	An at-grade intersection provides acceptable LOS.
T-129	Realignment	Realignment	T-129 is an unimproved gravel roadway which is currently closed.
C-133	B	C	An at-grade intersection provides acceptable LOS.
T-139	Closed	Closed	Recommend closing due to the minimal number of vehicles traveling on the roadway.
Whetstone Rd (C-143)	B	C	An at-grade intersection provides acceptable LOS.
Powers Rd. (C-29)	Realignment C	Realignment C	Re-aligned to intersect with T-143.
Ashwood Rd. (T-153)	Closed	Closed	Recommend closing since vehicles can use C-143 to travel across new US 24.
Krouse Rd. (C-146)	Underpass	Underpass	An underpass is proposed as roadway is key north-south access route for area residents.
SR 424	Interchange	Interchange	A full interchange is being proposed to provide a connection between existing SR 424/US 24 and the new US 24. This location will also provide direct access into the city of Defiance.
May Rd	Driveway	Driveway	May Road is an unimproved road that functions as an industrial driveway.
West High St./ Switzer Rd.	Overpass	Overpass	An overpass is being proposed at West High Street/Switzer Road due to the large number of vehicles using the roadway and to address public comments.

Notes: The Crossroad LOS represents the level of service of the vehicles attempting to cross the critical direction of the Preferred Alternative D-1 Modified traffic only. Vehicles traveling on the Preferred Alternative D-1 Modified will operate at LOS A since their movements are unimpeded. C (F) designates the LOS rating for vehicles attempting to travel across the non-critical direction of Preferred Alternative with traffic crossing the critical direction of the Preferred Alternative D-1 Modified.

Signalization of the SR 49 and US 127 intersections is an option to reduce delay experienced by motorist traveling on the crossroads. The installation of traffic signals at these at-grade intersections would stop vehicles on the proposed expressway and allow vehicles on the crossroads safer passage through the intersection. However, traffic signals would also increase the travel time and delay experienced to motorists traveling on the expressway in addition to creating an unsafe condition based on driver expectancy along similar roadways. The absence of traffic signals would greatly assist in providing a continuous travel speed of 65 miles per hour along the Preferred Alternative D-1 Modified. To improve travel time and provide for motorist safety, interchanges will be provided at SR 49 and US 127.

On roads where grade-separated crossings (overpasses and underpasses) will be constructed, traffic will not experience delays as a result of the Preferred Alternative D-1 Modified. The roadways include Doyle, Sampson, Woodburn, Bull Rapids, and State Line roads in Allen County; C-11, C-43, C-176, and C-105 in Paulding County; and Krouse Road and West High Street/Switzer Road in Defiance County. Similarly, the provision of full interchanges at Ryan/Bruick Road, Webster Road, SR 101, SR 49, US 127, and SR 424 will also allow for continuous flow of traffic onto and off of the new facility with little delay to motorists.

Where road closures are proposed, it is likely that the existing traffic will travel to the nearest roadway that crosses or intersects the Preferred Alternative D-1 Modified. Sixteen of the existing crossroads are slated for closures due to minimal traffic volumes or unacceptable sight distance characteristics. These include Harper, Bremer, Berthaud, Rousey, and Gustin roads in Allen County; T-150, T-29, C-33, C-180, C-216, T-61, T-69, C-224, C-123, and T-139 in Paulding County; and Ashwood Road in Defiance County.

Five crossroads will be realigned to intersect with other roadways instead of the Preferred Alternative D-1 Modified. These are Maumee Center Road in Allen County, T-51, and C-206 in Paulding County, and T-129 and Powers Road in Defiance County.

5.2.21 AIR QUALITY

The US Environmental Protection Agency (USEPA) redesignated Allen County from attainment to nonattainment for ozone on June 15, 2004. The Northeastern Indiana Regional Coordinating Council (NIRCC), which is the Metropolitan Planning Organization (MPO) for Allen County, included the US 24 project in the Long Range Plan and completed a draft air quality conformity analysis. The analysis determined that Allen County will meet the conformity criteria for transportation projects. The analysis was reviewed by the USEPA, FHWA, Federal Transit Administration (FTA), Indiana Department Environmental Management (IDEM), INDOT, and the local transit operator. The FHWA and FTA determined that the conformity analysis demonstrates conformity. A conformity determination was issued by FHWA and FTA on May 16, 2005.

The proposed US 24 project is included in the Ohio Fiscal Year 2000-2003 State Transportation Improvement Program (STIP), which conforms with the USEPA final rule for conformity determinations.

Traffic projections for the US 24 Corridor indicate that traffic volumes will increase from a maximum of 10,650 vehicles per day in 2008 to a maximum of 13,650 vehicles per day in 2018. This projected traffic volume is below the 20,000 vehicles per day threshold used to determine the need to complete detailed air quality analyses in Ohio.

5.2.22 NOISE

Noise analyses were completed for the Preferred Alternative D-1 Modified and are documented in the *US 24 New Haven to Defiance Noise Analysis Report* (August 2000)

and the *Addendum to the US 24 New Haven to Defiance Noise Analysis* (October 2005). Noise monitoring was conducted at seven locations in 2004, which are summarized in Table 5.9. The noise analysis documents the existing and anticipated noise levels, evaluates the potential for noise impacts, and discusses the feasibility of noise mitigation measures associated with the proposed Preferred Alternative D-1 Modified. The Preferred Alternative D-1 Modified impacts 138 noise sensitive receptors including 137 residences and one church.

TABLE 5.9
RECEIVER NUMBER, GENERAL LOCATION, AND LAND USE ACTIVITY

Receiver Number	Location	Number of Associated Receivers Represented	Land Use Activity
51	US 24 & I-469 interchange, southwest quadrant	1 Residence	Residential
52	US 24 & I-469 interchange, northwest quadrant	3 Residences	Residential
53	US 24 & I-469 interchange, northeast quadrant	3 Residences	Residential
54	US 24 & I-469 interchange, southeast quadrant	2 Residences	Residential
55	SR 49, west of C-43	3 Residences	Residential
56	US 127 & C-216	5 Residences	Residential
18	Bohlman Trailer Park, US 24 & US 424	26 Residences	Residential

The improvements to the US 24-SR 15/18 interchange were not addressed in the noise analysis. The ODOT Office of Environmental Services analyzed the US 24 SR 15/18 interchange for potential noise impacts. The project in this location does not meet the criterion of a Type I project, but there were concerns over potential noise impacts associated with increasing the speed limit on US 24 from 55 miles per hour (mph) to 65 mph. Existing, No Build, and Build noise levels were calculated for 26 residences adjacent to the interchange. While noise increases ranging from 1.3 dBA to 3.0 dBA are predicted to occur in the design year Build scenario when compared to existing conditions, no location is predicted to experience noise levels that approach or exceed the FHWA Noise Abatement Criteria (NAC) for residential land use. Further consideration for noise abatement is unwarranted at this location.

Mitigation Analysis

Various methods can be utilized for mitigation (abatement) of noise impacts including, but not limited to:

- traffic management,
- alteration of the vertical and horizontal alignments,
- noise barriers, and
- sound insulation.

Traffic management practices including restrictions on medium and heavy trucks, or restrictions on all motor vehicles during specific time periods during the day, were determined not to be appropriate for this project as such measures would interfere with interstate commerce and would not be consistent with the purpose and need for improvements to US 24.

Noise abatement through alterations to the vertical and horizontal alignment of the Preferred Alternative are also not appropriate for this project several reasons. The

existing topography of the study area is generally flat with little, if any, vertical relief. Therefore any alteration to the vertical alignment complicates intersection and drainage design. The horizontal alignment is based on an approved corridor location.

Installation of highway traffic noise barriers can often abate highway traffic noise impacts to localized receivers. One noise barrier is proposed for this project to protect residences located in the Bohlman Trailer Park. Noise barriers were not considered for other locations, because in most cases, only one or two noise receptors are present. Noise barriers are generally not cost effective for such a small number of receptors. Also, local roadways are also a source of highway traffic noise. The design of noise barriers to attenuate noise from US 24 and local roadways would require openings for property access, which also significantly decrease the effectiveness of noise barriers in achieving the desired reduction in noise levels.

Sound insulation may include the installation of central air conditioning systems, acoustical draperies, double or triple-paned windows and solid core doors which serve to reduce the sound levels inside affected structures. Sound insulation is generally used for special land uses affected by a highway project such as libraries, churches, hospitals, and schools and residences that are likely to experience extraordinary increases in noise levels as a result of this project. Two of the sensitive receptors, a church and a residence, analyzed for this study meet the criteria for sound insulation. Noise mitigation will not be provided to the church, which is located in the village of Cecil, approximately 0.8-kilometer (0.5-mile) from the new highway. Church services are held on Sunday at 7:30 a.m., which is not during peak travel hours. The noise analysis represents noise levels during weekday a.m. and p.m. peak travel hours. Therefore, it is not expected that traffic noise will interfer with church activities. The single family residence is located in close proximity to the US 127 interchange. ODOT will coordinate noise abatement options with the property owners.

The Bohlman Trailer Park, located along SR 424 in Defiance County will experience an increase in traffic generated noise as a result of the Preferred Alternative D-1 Modified. Future traffic generated noise is predicted to exceed FHWA NAC for residential uses. The Preferred Alternative D-1 Modified avoids the displacement of residences located within the trailer park. Shifting the access ramps for the SR 424 interchange to the west to avoid the displacement of residential units associated with the Bohlman Trailer Park resulted in the traffic-generated noise levels which exceed the FHWA NAC for residential land uses (Activity Category B). In accordance with ODOT's noise policies, the feasibility of noise abatement has been determined for the Bohlman Trailer Park.

Because of the limited amount of land available between US 24 and the trailer park, as well as existing development patterns for the surrounding land uses, several strategies for noise abatement are not feasible such as changes in vertical and horizontal geometry. Also, under current state regulations, ODOT cannot restrict traffic on US 24, limiting the feasibility of traffic management strategies. There is, however, sufficient area to accommodate noise walls. The feasibility of providing noise walls to mitigate noise impacts at the Bohlman Trailer Park was evaluated through the use of FHWA's Traffic Noise Model 1.0b (TNM). In this analysis, the Leq(h) peak hour traffic volumes were used to predict representative noise levels for the trailer park for three scenarios: existing (2000) conditions, future design year (2028) conditions for the Preferred Alternative D-1 Modified, and future design year (2028) conditions with a noise barrier in place for the Preferred Alternative D-1 Modified. A unit cost of $17.50 per square foot was used to estimate costs of the noise barrier.

The mitigation analysis indicated that a noise wall varying in height from 2.4 meter (eight feet) to 3.7 meters (12 feet) and approximately 298 meters (978 feet) in length

will reduce noise levels by approximately 5.1 dBA. The proposed noise barrier will extend west along the north side of SR 424 to the US 24/SR 424 interchange and then extend north paralleling the eastbound entrance ramp to US 24. Figure 4 shows the location of the noise wall. With an estimated construction cost of $250,000, the cost per dwelling unit is $15,840, which is less than the reasonable cost threshold of $25,000 per benefited receiver. According to FHWA's and ODOT's policies a noise wall is feasible at the Bohlman Trailer Park. On May 26, 2005, ODOT met with residents of the Bohlman Trailer Park to discuss noise mitigation and to determine if the residents were in favor of a noise wall. The residents completed surveys and expressed their desire for a noise wall. The noise wall will be included in the construction plans.

5.2.23 ENERGY

The energy evaluation consisted of a qualitative comparison of energy consumed in the construction of the facility, long-term maintenance of the facility, and operation by vehicles on the facility. The impacts of the Preferred Alternative D-1 Modified are higher than those resulting from the other Feasible Alternatives. The construction cost of the Preferred Alternative D-1 Modified is $280,666,964, which exceeds the construction costs for the other alternatives. The cost estimate is higher because of the change in design in Allen County from expressway to freeway with interchanges and grade-separated crossings including improvements to the I-469/US 24 interchange; the addition of grade-separated crossings in Paulding and Defiance counties; improvements to the US 24/SR 15/18 interchange; and the West High Street connector road. The additional cost for structures results in higher construction costs. A onetime energy expenditure will be required for construction. Additional energy expenditures will be incurred for operation and maintenance of the facility as well as by users of the highway. Expenditures for operation and maintenance will exceed those associated with the No Build alternative and the other Feasible Alternatives because of the additional structures that have been incorporated into the design. User energy consumption rates may be higher than the No Build alternative because regional travel is higher. However, this will be offset by reductions gained through improved traffic flow.

5.2.24 SECONDARY IMPACTS AND CUMULATIVE IMPACTS

Guidelines prepared by the Council on Environmental Quality (CEQ) for implementing the National Environmental Policy Act (NEPA) broadly define secondary impacts as those impacts that are caused by an action and are later in time for farther removed in distance but are still reasonably foreseeable (40 CFR 1508.8). Cumulative impacts are defined as "the impact on the environment which results from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

For the secondary and cumulative impacts analysis the study area was defined as the area extending 1.6 kilometers (one–mile) from the right-of-way limits of the Preferred Alternative D-1 Modified. The Maumee River served as the boundary to the north as this topographic feature would act as a natural boundary restricting development. The boundary of the study area was entered into a Geographic Information system (GIS) and used to calculate the occurrence of sensitive environmental resources within the study area and within each economic development site. For the purpose of this analysis it was assumed that the economic development sites are being actively marketed now and will develop with or without the Preferred Alternative D-1 Modified. It was also assumed that under the worst case scenario, all land within the 1.6 kilometer (one-mile) area extending from the proposed intersections and interchanges would be developed for transportation related services (i.e. gasoline stations, restaurants, convenience stores). The Preferred Alternative D-1 Modified is similar to the other

Feasible Alternatives with the following exceptions:

- the I-469/US 24 interchange will be reconstructed as system-to-system interchange,
- interchanges will be constructed at Ryan/Bruick Road, Webster Road, SR 101, SR 49, US 127, and SR 424,
- the US 24/SR 15/18 interchange will be reconstructed,
- grade-separated crossings will be constructed at Doyle, Sampson, Woodburn, Bull Rapids, and State Line roads, C-11, C-43, C-176, C-105, Krouse Road, and West High Street/Switzer Road, and
- construction of a connector road between SR 15/18 and West High Street.

The secondary effects of the Preferred Alternative D-1 Modified are essentially the same as the other Feasible Alternatives on new alignment as described in the DEIS. The provision of additional interchanges and grade-separated crossings at crossroads will improve traffic flow on these crossroads, specifically Webster Road, Bull Rapids Road, and SR 101. Improvements to the I-469 and SR 15/18 interchanges will also improve local traffic operations.

The Preferred Alternative D-1 Modified includes the improvements to the I-469/US 24 and SR 15/18-US 24 interchanges and the West High Street Connector Road, which are not included with the other alternatives, the cumulative impacts for the Preferred Alternative D-1 Modified are greater than those reported for the other Feasible Alternatives. Also, the Enterprise Park site has been removed from the analysis of the Preferred Alternative D-1 Modified (with the exception of the farmland impacts), as ODOT is proposing to purchase a portion of the site for wetland and stream mitigation. A summary of cumulative impacts associate with the Preferred Alternative D-1 Modified is presented in Table 5.10.

TABLE 5.10
SUMMARY OF SECONDARY AND CUMULATIVE IMPACTS

Resource	Development Scenario	Preferred Alternative D-1 Modified
Wetlands	US 24 Improvements	23.8 hectares (9.6 acres)
	Development of Known Economic Development Sites	0.5 hectares (1.2 acres)
	Full Development of Secondary and Cumulative Study Area	585.8 hectares (1,447 acres)
	Cumulative Impacts (Development on Known Economic Sites/ Full Development of Secondary and Cumulative Study Area/ US 24 Improvements)	610.1 hectares (1,475.4 acres)
Low Quality Streams (QHEI < 45)	US 24 Improvements	5980 meters (19,612 feet)
	Development of Known Economic Development Sites	N/A
	Full Development of Secondary and Cumulative Study Area	N/A
	Cumulative Impacts (Development on Known Economic Sites/ Full Development of Secondary and Cumulative Study Area/ US 24 Improvements)	5980 meters (19,612 feet)
High Quality Streams (QHEI between 45 and 60)	US 24 Improvements	2077 meters (6,813 feet)
	Development of Known Economic Development Sites	N/A
	Full Development of Secondary and Cumulative Study Area	N/A
	Cumulative Impacts (Development on Known Economic Sites/ Full Development of Secondary and Cumulative Study Area/ US 24 Improvements)	2077 meters (6,813 feet)
Floodplains	US 24 Improvements	32.3 hectares (80.0 acres)
	Development of Known Economic Development Sites	40.9 hectares (101.0 acres)
	Full Development of Secondary and Cumulative Study Area	1461.1 hectares (3,609 acres)
	Cumulative Impacts (Development on Known Economic Sites/ Full Development of Secondary and Cumulative Study Area/ US 24 Improvements)	1534.4 hectares (3,790.0 acres)
Woodlots	US 24 Improvements	25 woodlots 81.1 hectares (200.4 acres)
	Development of Known Economic Development Sites	10 woodlots 35.6 hectares (88.0 acres)
	Full Development of Secondary and Cumulative Study Area	189 woodlots 531.6 hectares (1,313 acres)
	Cumulative Impacts (Development on Known Economic Sites/ Full Development of Secondary and Cumulative Study Area/ US 24 Improvements)	224 woodlots 648.3 hectares (1,601.4 acres)
Productive Farmlands	US 24 Improvements	640.6 hectares (1,582.9 acres)
	Development of Known Economic Development Sites	194.8 hectares (481.2 acres)
	Full Development of Secondary and Cumulative Study Area	7178.1 hectares (17,773.0 acres)
	Cumulative Impacts (Development on Known Economic Sites/ Full Development of Secondary and Cumulative Study Area /US 24 Improvements)	7933.0 hectares (19594.4 acres)
NRHP – Listed and Eligible Sites	US 24 Improvements	1 site
	Development of Known Economic Development Sites	0 sites
	Full Development of Secondary and Cumulative Study Area	24 sites
	Cumulative Impacts (Development on Known Economic Sites/ Full Development of Secondary and Cumulative Study Area /US 24 Improvements)	25 sites

6.0 CONCLUSIONS AND ENVIRONMENTAL COMMITMENTS

6.0 CONCLUSIONS AND ENVIRONMENTAL COMMITMENTS

6.1 PREFERRED ALTERNATIVE D-1 MODIFIED

The selection process for the Preferred Alternative is described in the Draft Environmental Impact Statement (DEIS) and Section 1.2.2 of this Final Environmental Impact Statement (FEIS). Alternative D-1 was presented as the Preferred Alternative at the public hearings held October 2003. Following the public hearings, the project has continued to move forward in the project development process which has resulted in the development of the current Alternative D-1 Modified.

The Preferred Alternative for the US 24 New Haven to Defiance project is Alternative D-1 Modified, resulting from design refinements, agency comments, public comments, and mitigation measures. Elements of the Alternative D-1 Modified include Stage One and Two engineering design, proposed service roads, improvements to the I-469 and SR 15/18 interchanges, a connector road between West High Street and SR 15/18, improvements to local roads, and a wetland mitigation area. Alternative D-1 Modified is presented in Figure 1. The proposed facility is a four-lane divided, limited access highway. Access will be provided by both interchanges and at-grade intersections.

Since the public hearings held in October 2003, design refinements to the proposed alignment have been made in Ohio and Indiana in accordance with the Ohio Department of Transportation's (ODOT's) and the Indiana Department of Transportation's (INDOT's) Project Development Processes. ODOT initiated Stage One engineering in 2004 for Alternative D-1 Modified for the Ohio portion. Elements of Stage One engineering include detailed drainage design, conceptual maintenance of traffic plan, preliminary utility plan, bridge design (i.e. type, size and location), conceptual right-of-way limits, flood hazard evaluation, soil borings, and roadway plan development and design. As a result of the Stage One and Two engineering, the right-of-way limits for Alternative D-1 have been revised in Ohio. Some areas of the right-of-way limits were expanded to accommodate drainage features and in other area, the right-of-way limits were reduced to minimize impacts. The primary factor affecting revisions to the right-of-way limits was the detailed drainage design, which included extended drainage ditches to channel storm water runoff and the implementation of Best Management Practices (BMPs) for improving the quality of the water runoff.

The Indiana portion of the proposed highway was developed to a preliminary engineering level of detail. Detailed design studies were initiated by INDOT in 2004 for the 17.7-kilometer (11-mile) section of new highway in Allen County. In addition to the mainline, INDOT is proposing to improve the I-469/US 24 interchange.

Based on the Service Road Study and engineering design refinements, there are 13 service roads that are justified for construction. The 13 service roads consist of two lanes and range from 2.7 to 3.7 meters (nine to 12 feet) in width. These roads will provide access to 106.9 hectares (264.1 acres) of land. Six of the service roads are in Allen County and will provide access to 45 hectares (112.5 acres). Three service roads are proposed in Paulding County, which will provide access to 33.9 hectares (83.7 acres). Four service roads are proposed in Defiance County, which will provide access to 27.5 hectares (67.9 acres).

The existing interchange at I-469 and US 24 in Allen County, Indiana will be upgraded. Improvements to the I-469/US 24 interchange include a directional fly-over ramp to provide access from westbound US 24 to southbound I-469 and a new diagonal ramp from northbound I-469 to eastbound US 24.

The existing interchange at SR 15/18 and US 24 in Defiance County, Ohio will also be upgraded. The improvements involve lowering the profile of the US 24 mainline to increase the bridge clearance, adding turn lanes on exit ramps, and widening SR 15/18 to include a third lane to accommodate left-turn movements at interchange ramps in the vicinity of the interchange.

A connector road will be constructed to link West High Street with SR 15/18, in response to public comments received during the public hearings. Construction of Alternative D-1 Modified will eliminate access to US 24 at West High Street/Switzer Road. As a result, vehicles will no longer be able to directly access West High Street or Switzer Road via US 24. Access to US 24 will still be provided at the existing SR 15/18 (Ralston Avenue) interchange. The connector road will provide an alternate route for traffic going to and from US 24 via SR 15/18 without traveling through the Harding Street residential area.

Twenty local roads which intersect the proposed highway will be improved. These roads are Doyle Road, Ryan/Bruick Road, Webster Road, Bull Rapids Road, SR 101, State Line Road, SR 49, C-43, T-51, C-176, T-61, C-206, US 127, C-323, C-8, SR 424, Switzer Road, West High Street, SR 15/18, and Harding Street. Improvements to these local roads include widening, realignment, and adding turn lanes and shoulders. Additionally, T-139 is being cut-off from US 24 with a cul-de-sac on the north and a connection to T-236 on the south side of US 24.

Additional land adjacent to the proposed highway will be purchased (64.4 hectares [159 acres]) for stream and wetland mitigation in Defiance County, Ohio. Approximately 10.5 hectares (26 acres) of this land is an agricultural field where a compensatory wetland will be created. The remaining 53.8 hectares (133 acres) is a woodlot which contains a Category 3 forested wetland and several small unnamed tributaries. This woodlot will be purchased for wetland and stream preservation.

Because of the additional elements included in the Alternative D-1 Modified (i.e. Stage One and Two engineering design proposed service roads, improvements to the I-469 and SR 15/18 interchanges, a connector road between West High Street and SR 15/18, improvements to local roads, and a wetland mitigation area) the impacts and costs associated with D-1 Modified, deviate from those of Alternative D-1.

6.2 FEATURES OF ALTERNATIVE D-1 MODIFIED

The following features summarize the environmental impacts, costs and certain design elements of the Preferred Alternative D-1 Modified.

- Preferred Alternative D-1 Modified will be constructed as a freeway between I-469 and the Indiana/Ohio State Line and as expressway between the state Line and SR 15/18 in Defiance. In Indiana, interchanges will be constructed at Ryan/Bruick Road, Webster Road, and SR 101. In Ohio, interchanges will be provided at SR 49, US 127, and SR 424 with at-grade intersections constructed at other key crossroads.
- The estimated construction cost for Preferred Alternative D-1 Modified is $280.7 million.
- Preferred Alternative D-1 Modified has 35 total stream crossings, impacting 8056 meters (26,425 feet) of streams.
- Preferred Alternative D-1 Modified impacts 9.6 hectares (23.85 acres) of wetlands in total.
- Preferred Alternative D-1 Modified affects 84.9 hectares (209.9 acres) of forest land.
- Preferred Alternative D-1 Modified displaces 36 residences and four businesses.

- Preferred Alternative D-1 Modified impacts 32.4 hectares (80.0 acres) of floodplain area.
- Preferred Alternative D-1 Modified includes three segments that are favored by the public (Segments 1, 8, and 18) and includes one segment not favored by the public (Segment 11).
- Preferred Alternative D-1 Modified utilizes existing transportation corridors in Segments 1, 8, 11, 13, 15, and 20, approximately 43 percent of the total length.
- Preferred Alternative D-1 Modified follows Segment 13, located north of the Maumee & Western Railroad. This segment minimizes drainage impacts to cropland.
- Preferred Alternative D-1 Modified impacts 640.8 hectares (1,582.9 acres) of agricultural land involving nine farm residences, and eight properties in agricultural districts.
- Preferred Alternative D-1 Modified results in 164.9 hectares (407.2 acres) of landlocked property.

6.3 MINIMIZATION, MITIGATION, AND CONSERVATION

Beginning with the alternative development studies, avoidance, minimization, mitigation and conservation of sensitive environmental resources have been considered to resolve potential impacts of the project. The development of minimization, mitigation and conservation strategies will continue through the final design studies for the US 24 project. A summary of these strategies is presented in Table 6.1.

TABLE 6.1
ENVIRONMENTAL COMMITMENTS

Issue	Minimization/Mitigation/Conservation Measures
Geology, Soils and Erosion	• Erosion and sedimentation control measures will be implemented during construction. • Stormwater management measures will be implemented during construction.
Groundwater, Sole Source Aquifers and Wellheads	• Affected water wells will be properly abandoned and replaced as required. • Erosion and sedimentation control and stormwater management measures will be implemented during construction. Stormwater management measures are listed throughout this table.
Wetlands	• Wetland mitigation ratios will be in accordance with Section 404 permit requirements. Mitigation will include creation of 10.5 hectares (26 acres) of wetlands and preservation of 24.7 hectares (61 acres) of forested Category 3 wetlands and a 29-hectare (72-acre) buffer. • Wetlands adjacent to the construction limits will be protected from construction activities. • Temporary fencing or other measures will be placed around the perimeter of the wetlands.
Streams/Rivers	• Properly sized and engineered culverts to provide unobstructed water flow. • Stream mitigation ratios will be in accordance with permit requirements. • Mitigation will include preservation of 1319.5 meters (4,328 feet) of undisturbed stream channel; construction of 617.4 meters (2,025 feet) of natural stream channel with vegetative buffer onsite and a perpetual conservation easement along 1504 meters (4,932 feet) of the Maumee River. • Implementation of stream enhancement techniques in unavoidable stream channel relocations. • Implementation of an Erosion and Sedimentation Control Plan and stormwater management measures. • Denuded areas, including ditches, culverts and river/stream banks, will be permanently seeded and mulched (or fiber mat) upon completion of earthwork or temporarily seeded and mulched (or fiber mat) within seven days if the area is to remain idle for more than 30 days. • Access roads constructed on slopes will be graveled to prevent erosion. • A spill containment and cleanup plan will be developed prior to construction. • All stream bank vegetation will be left undisturbed to the maximum extent possible. • All components of the existing Maumee River bridge structure (piers, abutments, etc.) will be completely removed. Piers will be removed down to the same elevation as the surrounding riverbed. The asphalt deck material will be removed before any portion of the bridge is removed. All debris, excess fill material and material excavated from the river bottom shall be disposed of at an approved upland site • In-stream work for the Maumee River will not be conducted between March 15th and June 30th. • Disturbed areas in the Maumee River stream bottom will be returned to pre-construction contours. River bottom elevations will be determined before in-stream work commences to ensure that all fill material and debris is completely removed before construction is completed.

TABLE 6.1 (CONTINUED)
ENVIRONMENTAL COMMITMENTS

Issue	Minimization/Mitigation Measures
Streams/Rivers (cont.)	• During construction of the Maumee River bridges, if dewatering is necessary to facilitate in-stream work, all wastewater shall be pumped onto a vegetated area a sufficient distance from the Maumee River to allow for complete infiltration. No wastewater of any kind will be discharged directly into the Maumee River or any other drainage ways, ditches or streams. If discharge to a vegetated area is not feasible, then wastewater will be discharged into a sediment filter bag or into a temporary detention/retention pond. • Areas where vegetation is removed along the Maumee River will be re-vegetated with native tree species. Trees will be centimeter (one inch) in diameter and balled/ burlap nursery stock. After a full growing season for the trees, any stakes and guide wires will be removed and properly disposed of. Any trees that die during the first growing season will be replaced. • Rip-rap used around piers and abutments for the Maumee River bridges will be kept to the minimum amount needed to prevent scour and shall consist of clean rock only (free of any toxic or fine material). All fill material used as rip rap, work platforms or cofferdams will be a minimum of centimeters (three inches) in diameter and be washed to remove fine particulate matter (clay, silt, sand and soil). Work platforms will be kept to the absolute minimum size needed to facilitate in-stream work. • In-stream work for the Maumee River bridges will be conducted through the use of water diversions not requiring the placement of earthen fill (sheet piling, membrane dams, etc.) wherever possible. Any fill will be completely removed from the streambed as soon as possible after its purpose has been served. • Aprons will be used for any painting, sanding or water blasting on the US 24 bridges to contain debris and overspray.
Floodplains	• Completion of detailed hydraulic studies for affected streams. • Development of adequate drainage measures so that post-construction hydraulics match pre-construction (existing) drainage conditions. • Bridge spans will be lengthened to reduce impacts on floodplains. • Develop highway in accordance with accepted local floodway plans and floodplain management programs.
Wildlife, Plants, and Threatened/ Endangered Species	• Natural stream channel design will be used for relocated segments of stream channels. A landscape plan which incorporates native vegetation will be developed for the stream banks • Mussel populations will be removed in areas where in stream work will occur. Mussels will be relocated to suitable upstream habitat. • Post-construction stormwater pollution prevention measures will be incorporated into the project design and construction activities. Use of detention basins and retention ponds will be considered wherever practicable. Stormwater control appurtenances will be designed to limit in stream sedimentation, which will minimize the potential for impacts to water quality. • ODOT and INDOT will mitigate wetland impacts in accordance with state and federal permits. • The area used for construction will be limited to the construction right-of-way. Environmental resources (i.e. woodlots, wetlands, historic properties) adjacent to the construction right-of-way will be protected from any construction activities. • Tree clearing within the construction right-of-way limits will only occur between September 15th and April 15th. • Maintenance that involves tree removal, limbing, pruning, or similar activities will be scheduled from September 15th to April 15th. • Contractors will burn debris only between September 15th and April 15th. • Contractors will obtain the service of a qualified bat scientist to investigate trees for the presence of Indiana bats if limited tree removal is required between April 15th and September 15th. The results of the investigations will be coordinated with the USFWS. • Contractors will thoroughly rinse or clean any vehicles, equipment, or machinery specifically used for in-stream construction prior to construction, in order to prevent the spread of invasive species such as zebra mussel adults or larvae. • Contractors will limit the amount of in-stream disturbance to areas within the construction limits. • Contractors will avoid practices that involve prolonged changes in stream flow dynamics, including construction of impoundments through levees or dams, or utilization of culverts that could prevent upstream and downstream movement of host fish. • Contractors will develop and comply with a project-specific emergency spill response protocol. • Contractors will follow strict guidelines dictating the use and handling of hazardous materials and other contaminants. A plan note will be incorporated into the construction contract requiring contractors to adhere to the ODOT *Office of Construction Administration's Handbook for Removal of Regulated Wastes* from the work area or properties associated with the project. • Contractors will develop and implement a comprehensive sediment and erosion control plan. A plan note will specify that Sedimentation and Erosion Control features be placed as soon as

TABLE 6.1 (CONTINUED)
ENVIRONMENTAL COMMITMENTS

Issue	Minimization/Mitigation/Conservation Measures
Wildlife, Plants, and Threatened/ Endangered Species (cont.)	practicable during the construction process. Provisions for placement of primary Sedimentation and Erosion Control features which are necessary during advanced tree-cutting operations, will be included. • Contractors will develop and incorporate provisions for implementation of a post-construction re-vegetation plan to control erosion and maintain water quality. Areas in which there are no construction activities for 45 days will be seeded to provide temporary ground cover to control erosion. • Herbicide applications will follow guidelines set by INDOT and ODOT mowing and herbicide application policies. Herbicide use will be restricted to ends of guardrails and roadway clear zones and will be applied by a State Licensed Practitioner once per year. • Winter de-icing agents will be applied at minimum effective rates. • Carcasses will be removed from the roadway in a timely manner.
Farmlands	• Property acquisition and relocation assistance will be provided in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act. • Coordination with the Ohio Department of Agriculture concerning condemnation of farmlands designated as Agricultural Districts. • Provision of service roads to mitigate landlocking of active farmland. • Coordination with local agencies and property owners concerning mitigation of impacts to farmland irrigation/drainage systems. • Grade-separated crossings provided for local roads that are important to farm operations.
Municipal/Industrial/Hazardous Waste	• Closure of USTs and ASTs in accordance with applicable regulations on three properties as needed (ODOT Defiance County Garage, Mark Moats Ford, and an abandoned property on T-69). • The storage drums found on an abandoned property on T-69 will be disposed of properly. • Inspection of nonresidential buildings for asbestos in Indiana by a licensed asbestos inspector prior to any demolition activities.
Land Use	• Service roads will be constructed to mitigate landlocking of properties, where feasible. • Landlocked parcels will be sold to adjacent property owners in Ohio.
Residential Displacements	• Property acquisition and relocation assistance provided in accordance with the Uniform Relocation and Real Property Acquisition Policies Act. • Implementation of a Residential Relocation Assistance Program.
Environmental Justice	• Minimization of right-of-way impacts to the Bohlman Trailer Park and the Rolling Meadows Mobile Home Park (both located in Defiance County) and avoidance of residential units. • Construction of a noise wall at the US 24/424 interchange and the Bohlman Trailer Park to mitigate noise impacts
Community Facilities	• Provisions for grade-separated crossings at Woodburn Road (Allen County) and C-43 (Paulding County) for safe access to Woodlan High School and Antwerp School complex. • On-site replacement of salt storage, brine mixing, and other affected facilities at the ODOT Defiance County Garage. • Notifications to emergency service providers during construction concerning temporary local roadway impacts.
Parks, Recreation Land, Natural and Wildlife Areas, Section 4(f)/6(f) Resources	• Scenic River coordination with ODNR for the Maumee River crossing will be ongoing throughout construction in accordance with Section 1517.6 of the Ohio Revised Code. • Installation of signs stating Maumee State Scenic River at the approaches of the Maumee River Bridge.
Business Displacements	• Property acquisition and relocation assistance provided in accordance with the Uniform Relocation and Real Property Acquisition Policies Act.
Visual Resources	• Preservation of landscape features and existing vegetation where feasible.
Archaeological Resources	• Prior to completing the final project design in Indiana, the INDOT will complete the appropriate archaeological investigations to determine the boundaries of the Gronauer Lock. INDOT will coordinate the archaeological investigations with the Indiana State Historic Preservation Office (SHPO). A research plan detailing the methodology for defining the boundaries of the site shall be submitted to the Indiana SHPO for review and comment.

TABLE 6.1 (CONTINUED)
ENVIRONMENTAL COMMITMENTS

Issue	Minimization/Mitigation/Conservation Measures
Archaeological Resources (cont.)	• The INDOT will make a reasonable effort to avoid the Gronauer Lock site during design and construction. If the site cannot be avoided, the Federal Highway Administration (FHWA) will apply the Criteria of Adverse effect in accordance with 36 CFR 800.5. • If the FHWA determines, in consultation with the Indiana SHPO, that the project will have an adverse effect on the Gronauer Lock site, then INDOT will develop plans for Phase II and/or Phase III archaeological investigations in consultation with the Indiana SHPO and submit such plans to the FHWA and Indiana SHPO for their review and comment. The INDOT shall submit alternative mitigation plan to the FHWA and Indiana SHPO for their review and comment, if appropriate. That review period will be 30-days. If archaeological resources are identified which are eligible under Criteria other than or in addition to Criterion D, FHWA shall comply with 36 CFR 800.6. • A draft report(s) of the archaeological investigations and updated Indiana state site form shall be submitted to the FHWA and Indiana SHPO for review and comment. All final reports of the archaeological investigations will be completed within one year of the completion of field work. The Indiana SHPO will be given 30-days to review and comment on all submissions. • INDOT shall ensure that all archaeological work carried out pursuant to the Programmatic Agreement is carried out by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualification Standards* (48 FR 44738-9), and that all historic preservation work is carried out by or under the direct supervision of a person or persons meeting, at a minimum the *Secretary of the Interior's Professional Qualification Standards for Architectural Historian Professionals* (48 FR 44738-9). • If any unanticipated discoveries of historic properties, sites, artifacts, or human remains are encountered during the implementation of this undertaking, FHWA shall comply with 36 CFR 800.13, Indiana Code (14-21-1-27 and 14-21-1-29), Ohio Revised Code (2909.05 and 2927.11), and Section 203.04 of ODOT's *Construction and Materials Specifications* (2005). The Indiana Department of Natural Resources, the Ohio SHPO, ODOT, and INDOT will be informed of such discoveries within two business days and, if applicable, federally recognized tribal organizations that attach religious and/or cultural significance to the affected property. FHWA will developand implement actions that take into account the views of the SHPOs and, if applicable, federally recognized tribal organizations. • If future design studies results in changes in the proposed right-of-way limits of the Preferred Alternative D-1 Modified affecting previously unsurveyed areas, additional archaeological investigations will be undertaken to determine the potential impact on archaeological resources.
Historic Resources	• Avoidance of NRHP-listed and NRHP-eligible resources. Historic resources adjacent to the construction limits will be protected from construction activities. • Preservation of existing vegetation between the right-of-way and the Niemeyer Farm, Harper House, Meyer/Gallmeyer Farm, and Smith/Rich/Krug House.
Traffic	• Provisions for grade-separated crossings at Woodburn Road (Allen County) and C-43 (Paulding County) for safe access to Woodlan High School and Antwerp School complex. • Provisions for grade-separated crossings at Ryan/Bruick Road, Webster Road, and SR 101 in Allen County to support travel needs of the local Amish Community. • Maintenance and protection of traffic during construction. • Notifications to general public and emergency service providers during construction concerning temporary local roadway impacts.
Air Quality	• Implementation of Best Management Practices during construction to minimize local short-term air quality problems. Contractors will be required to adhere strictly to dust control measures as outlined in INDOT's Standard Specifications and ODOT's *Construction and Materials Specifications (2005).*
Noise	• Implementation of Best Management Practices during construction to minimize local short-term construction noise. Contractors will minimize construction noise by limiting operation of heavy construction equipment to daylight hours whenever possible, installing and maintaining effective mufflers on equipment, locating equipment and vehicle staging areas as far from noise sensitive areas as possible, and limiting unnecessary idling of equipment. • Construction of a noise wall at the US 24/424 interchange for the residents of the Bohlman Trailer Park. • Texture and color of the noise wall have been chosen by the impacted residents and will be forwarded for construction.

6.4 US FISH AND WILDLIFE SERVICE INCIDENTAL TAKE PERMIT REQUIREMENTS

The US Fish and Wildlife Service (USFWS) Incidental Take Permit requires that the Federal Highway Administration (FHWA) and ODOT adhere to the terms and conditions of the Incidental Take Statement. These measures are non-discretionary and must be undertaken by FHWA so that they become binding conditions of any funding issued to ODOT, as appropriate.

The USFWS Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of Indiana bats:

1. The implementation status of all the proposed conservation measures, mitigation efforts, and terms and conditions must be monitored and clearly communicated to the USFWS on an annual basis.
2. An Indiana bat education program must be developed and implemented for all personnel involved in the construction, operation, and maintenance of the US 24 highway project in Ohio.
3. Indiana bat habitat in temporary construction areas must be restored to the maximum extent practicable.
4. To the maximum extent practicable, incorporate measures to benefit the Indiana bat into mitigation plans for stream and wetland impacts.
5. Ensure that construction equipment is in proper working order to minimize operation noise and reduce the risk of equipment spills and leaks.
6. Ensure that if suitable Indiana bat roost trees may be impacted by waste, borrow, staging, and/or maintenance areas, these trees are explicitly identified and consultation re-initiated accordingly.

The FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/ monitoring requirements. These terms and conditions are nondiscretionary.

1. Monitoring Requirements:
    - FHWA will prepare an annual report detailing all conservation measures, mitigation efforts, and terms and conditions that have been initiated, are ongoing, or completed during the previous calendar year and the current status of those yet to be completed. The report will be submitted to the USFWS's Reynoldsburg, Ohio Field Office by January 31st each year (the first report will be due January 31, 2007) and reporting will continue until the construction phase of the project is completed.
    - Any dead bats located within the construction limits and right-of-way, regardless of species, should be immediately reported to the USFWS's Reynoldsburg, Ohio Field Office, and subsequently transported (frozen or on ice) to the Field Office. No attempt should be made to handle any live bat, regardless of its condition; report bats that appear to be sick or injured to the USFWS's Reynoldsburg, Ohio Field Office. The Field Office will make a species determination on any dead or moribund bats.

2. All US 24 highway project engineers, construction personnel (includes logging personnel), equipment operators, and road maintenance staff will attend a mandatory environmental awareness training to learn about the Indiana bat and its habitat requirements. This training will provide personnel with an increased awareness about the species and should increase the likelihood of compliance with the non-discretionary measures and terms of this Incidental Take Statement. The program should be developed in cooperation with the USFWS. All participants are to be provided with a protocol for reporting the presence of any live, injured, or dead bats observed or found within or near the

construction limits or right-of-way during construction, operation, and maintenance of the new US 24. This training should occur prior to the initiation of onsite project activities.

3. A reforestation plan will be developed using native tree species for disturbed areas adjacent to stream crossings and within the stream and wetland mitigation areas. These tree species should be incorporated into post-construction revegetation plans to control erosion and maintain water quality, as well as along relocated stream segments. Tree species used for reforestation should be a combination of the species from the following list. These species frequently exhibit suitable Indiana bat roost tree characteristics.

    - *Black Ash* (Fraxinus nigra)
    - *Green Ash* (Fraxinus pennsylvanica)
    - *White Ash* (Fraxinus americana)
    - *Eastern Cottonwood* (Populus deltoides)
    - *American Elm* (Ulmus americana)
    - *Slippery Elm* (Ulmus rubra)
    - *Bitternut Hickory* (Carya cordiformis)
    - *Shagbark Hickory* (Carya ovata)
    - *Shellbark Hickory* (Carya laciniosa)
    - *Black Locust* (Robinia pseudoacacia)
    - *Red Maple* (Acer rubrum)
    - *Silver Maple* (Acer saccharinum)
    - *Sugar Maple* (Acer saccharum)
    - *Black Oak* (Quercus velutina)
    - *Post Oak* (Quercus stellata)
    - *Red Oak* (Quercus rubra)
    - *Shingle Oak* (Quercus imbricaria)
    - *White Oak* (Quercus alba)
    - *Sassafras* (Sassafras albidum)

4. During the development of mitigation plans required under Sections 401 and 404 of the Clean Water Act, mitigation opportunities which both fulfill the requirements of this Act and benefit the Indiana bat through habitat protection, restoration and/or enhancement should be sought. The USFWS strongly encourages stream and wetland mitigation areas to be planted with native tree species that provide suitable habitat for the Indiana bat, as described in Term and Condition number 3 above.

5. Regular inspections of construction equipment should be conducted to ensure that equipment is in good working order to minimize disturbance to bats from operational noise and to reduce the risk of surface water contamination from equipment leaks and spills which could affect the bats prey base and drinking sources.

6. If a limited number of trees must be removed between April 15th and September 15th, the contractor will be required to obtain the service of a qualified bat scientist to investigate trees for the presence of Indiana bats. Pending results of the investigation, the following actions will occur:

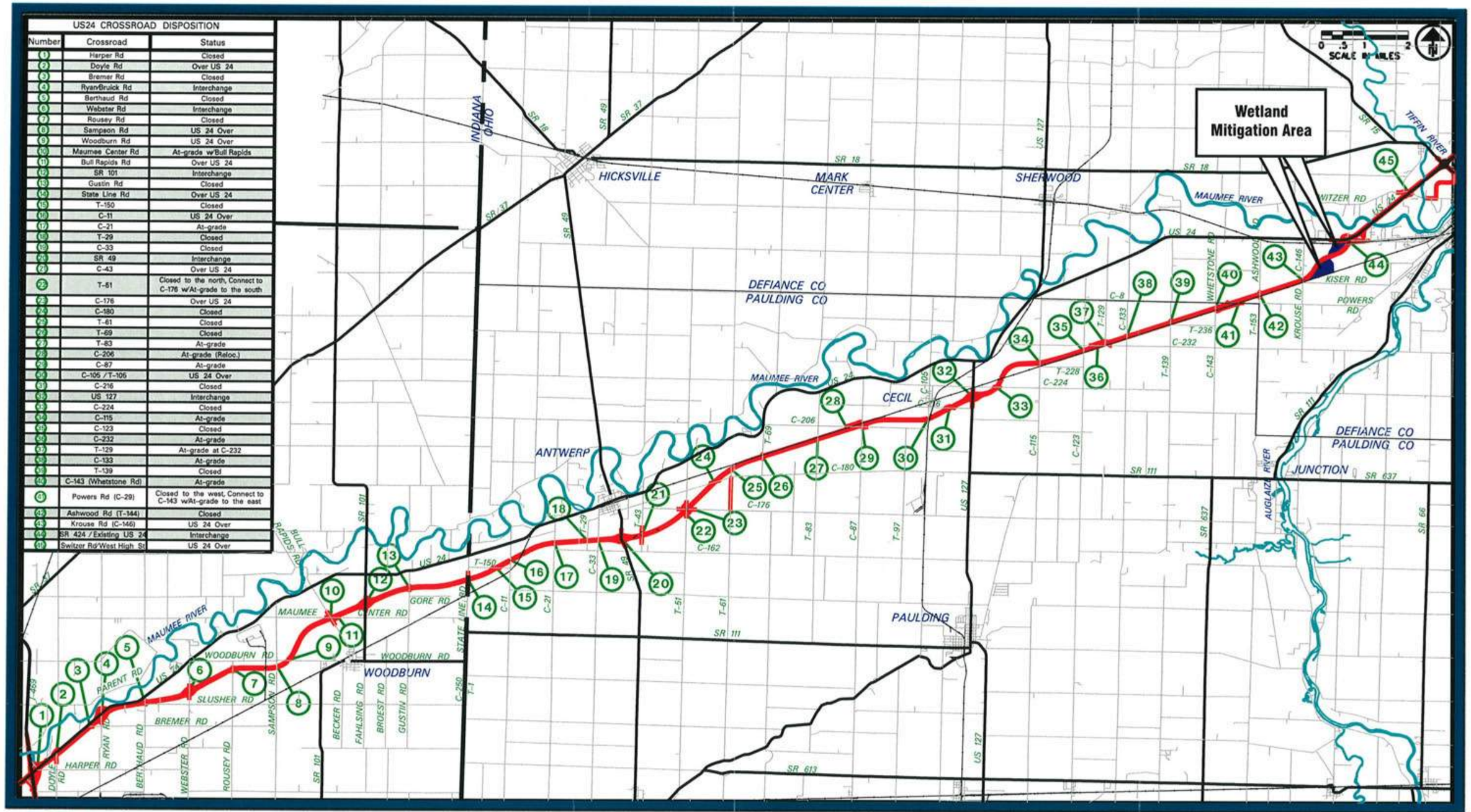
    - A qualified bat scientist will evaluate the potential of roosting habitat for each selected tree. If the tree offers no potential for roosting habitat, it may be cut between April 15th and September 15th.

- If a selected tree does offer the potential for roosting habitat, an emergence survey will be conducted. If no bats are detected, the tree may be cut the day following completion of the emergence survey.
- If bats are detected during the emergence survey, the tree will not be cut until the period between September 15th and April 15th

According to the USFWS, the reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the US 24 project. If, during the course of the action, the level of incidental take is exceeded as indicated by additional, unanticipated habitat loss, such incidental take represents new information requiring reinitiation of Section 7 consultation and review of the reasonable and prudent measures provided. FHWA must provide an explanation of the causes of the taking and review with the USFWS the need for possible modification of the reasonable and prudent measures.

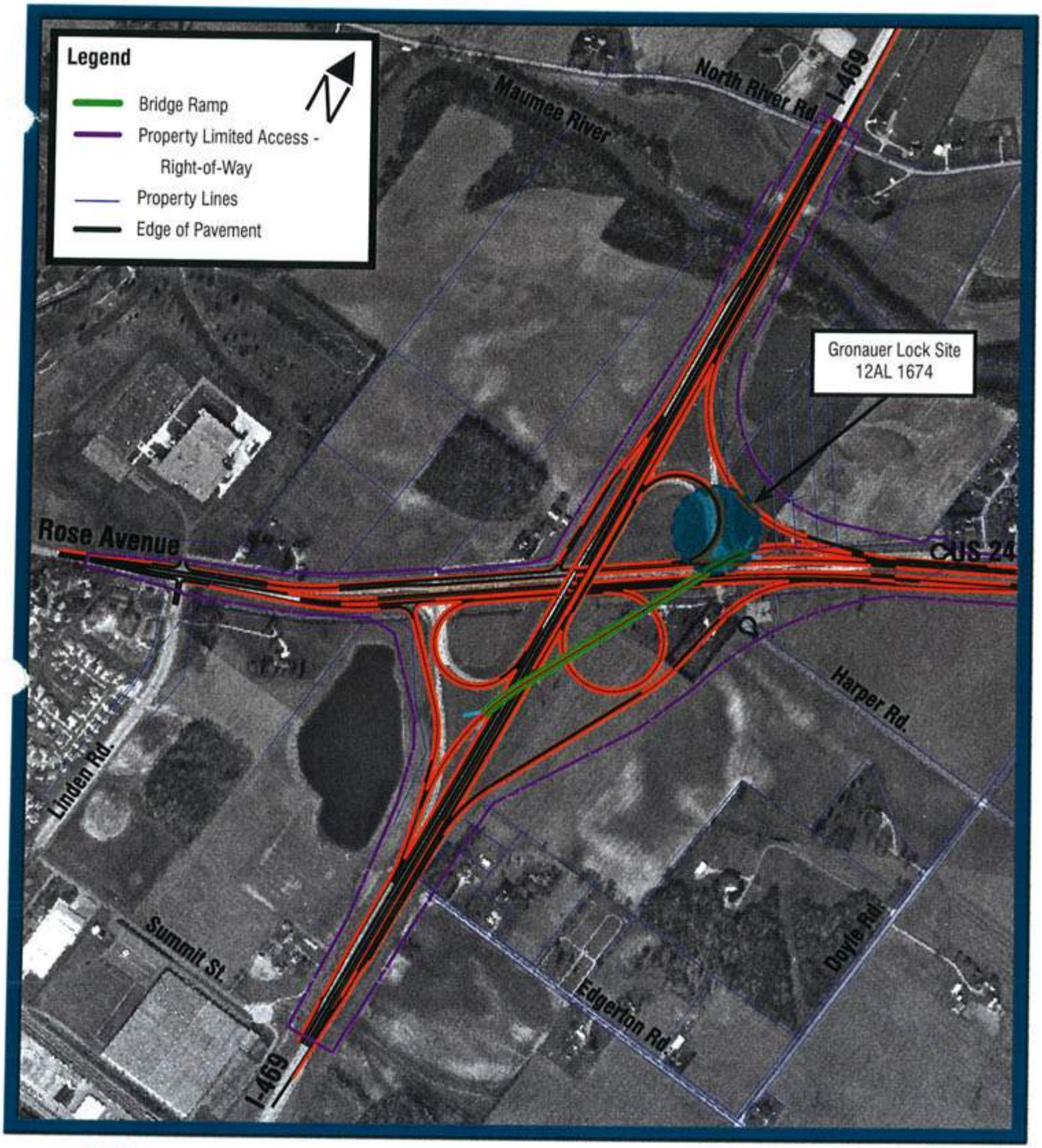
APPENDIX A: FIGURES

US24 CROSSROAD DISPOSITION		
Number	Crossroad	Status
1	Harper Rd	Closed
2	Doyle Rd	Over US 24
3	Bremer Rd	Closed
4	RyanBruick Rd	Interchange
5	Berthaud Rd	Closed
6	Webster Rd	Interchange
7	Rousey Rd	Closed
8	Sampson Rd	US 24 Over
9	Woodburn Rd	US 24 Over
10	Maumee Center Rd	At-grade w/Bull Rapids
11	Bull Rapids Rd	Over US 24
12	SR 101	Interchange
13	Gustin Rd	Closed
14	State Line Rd	Over US 24
15	T-150	Closed
16	C-11	US 24 Over
17	C-21	At-grade
18	T-29	Closed
19	C-33	Closed
20	SR 49	Interchange
21	C-43	Over US 24
22	T-51	Closed to the north, Connect to C-176 w/At-grade to the south
23	C-176	Over US 24
24	C-180	Closed
25	T-61	Closed
26	T-69	Closed
27	T-83	At-grade
28	C-206	At-grade (Reloc.)
29	C-87	At-grade
30	C-105 / T-105	US 24 Over
31	C-216	Closed
32	US 127	Interchange
33	C-224	Closed
34	C-115	At-grade
35	C-123	Closed
36	C-232	At-grade
37	T-129	At-grade at C-232
38	C-133	At-grade
39	T-139	Closed
40	C-143 (Whetstone Rd)	At-grade
41	Powers Rd (C-29)	Closed to the west, Connect to C-143 w/At-grade to the east
42	Ashwood Rd (T-144)	Closed
43	Krouse Rd (C-146)	US 24 Over
44	SR 424 / Existing US 24	Interchange
45	Switzer Rd/West High St	US 24 Over



Preferred Alternative D-1 Modified

Figure 1



US24 New Haven to Defiance

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

I-469/US 24 Interchange
Preferred Alternative 13 Modified

Figure 2

PB

PAU/DEF-24 File
PID 18904

FEDERAL HIGHWAY ADMINISTRATION
RECORD OF DECISION
For
United States Route 24 (US-24)
New Haven, Indiana to Defiance, Ohio
PAU/DEF–US24-0.00/0.00
ODOT Project Identification Number 18904
Paulding and Defiance Counties, Ohio; and
Allen County, Indiana

I. Introduction

The Ohio Department of Transportation (ODOT) and the Indiana Department of Transportation (INDOT), in cooperation with the Federal Highway Administration (FHWA), will improve United States Route 24 (US-24) between New Haven, Indiana and Defiance, Ohio. The proposed action consists of the construction of approximately forty miles of new four-lane, limited access highway (freeway in Indiana and expressway in Ohio). FHWA is the lead Federal Agency for the review process required by the National Environmental Policy Act (NEPA).

The Record of Decision (ROD) complies with NEPA, regulations implementing NEPA (40 CFR 1505.2), and related FHWA procedures (23 CFR 771). It is a statement of the decisions made as a result of environmental and socioeconomic analysis, and consideration of input from the public and other agencies. The Final Environmental Impact Statement (FEIS) (FHWA-OH-EIS-03-03-F) released for public comment in October 2005 summarizes the analysis and input.

II. Purpose and Need

U.S. 24 is a major east-west transportation corridor located in the northern portions of Indiana and northwestern Ohio. In the Midwest, U.S. 24 provides the most direct access between Fort Wayne, Indiana and Toledo, Ohio. U.S. 24 also provides direct connections to I-80/90 and to I-75, enabling the motoring public to reach points northward into the Great Lakes region and Canada as well as other large cities on the eastern seaboard.

U.S. 24 between Fort Wayne, Indiana and Defiance, Ohio has experienced significant traffic growth at a rate higher than normal for northwest Ohio and eastern Indiana over the past several years. Major factor contributing to this growth include increased population, developing industry, and a greater reliance on intermodal transportation affecting accessibility to both rail transport and the intermodal services available at the Port of Toledo.

U. S. 24 between New Haven and Defiance is a two-lane rural roadway that curves along the Maumee River and has frequent access points for local residences, businesses, and crossing for other local roadways. In some areas, development is directly adjacent to the roadway. The roadway has narrow, often discontinuous shoulders and numerous no passing zones. The frequency of no passing zones severely limits the flow of traffic and the capacity of the roadway. Additionally, approximately 45% of the overall traffic volumes consist of trucks. Due to this high

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volume, trucks are often observed traveling in platoons of three or more, which makes passing difficult and dangerous.

The section of U.S. 24 between Fort Wayne and Defiance is deficient in meeting the needs of the vehicles that utilize this highway. The existing operational deficiencies of the roadway, including decreased safety, increased congestion and a deteriorating level of service are due primarily to its location, design, and high volume of users. Traffic studies show that the number of vehicles using the highway will continue to increase.

The purpose of the U.S. 24 study is to develop a transportation solution that will:

- Improve traffic flow and level of service by reducing congestion
- Reduce travel times by increasing efficiency and eliminating delays
- Improve roadway safety by eliminating geometric and design deficiencies
- Enhance the regional transportation network by minimizing conflicts between local and through traffic
- Accommodate future economic growth in the region and enhance the competitiveness of local and regional business

III. Decision

The Selected Alternative for the U.S. 24 project is the D-1 Modified alignment identified in the October 2005, Final Environmental Impact Statement (FEIS). US-24 will be upgraded to a four-lane limited access highway (freeway in Indiana and expressway in Ohio). The alternative will be on new alignment from east of the I-469 Bypass in New Haven to State Route 424 (SR 424) west of Defiance. The D-1 Modified alignment is shown in Figure 1 of the FEIS.

In general, the alignment of the Selected Alternative is south of and parallel to the Maumee River and existing US-24. West of the City of Defiance, the selected alternative overlaps with the alignment of existing US-24 prior to crossing the Maumee River. The D-1 Modified alignment includes the following:

- In Indiana, interchanges will be provided at I-469, Ryan/Bruick Road, Webster Road, and SR-101.
- In Ohio, interchanges will be provided at SR-49, US-127, SR-424, and SR-15/18.
- In Indiana, five grade-separated overpasses will be provided at Doyle Road, Sampson Road, Woodburn Road, Bull Rapids Road, and State Line Road.
- In Ohio, six grade-separated overpasses will be provided at C-11, C-43, C-176, C-105, Krouse Road (C-146), and West High Street/Switzer Road.
- Also in Ohio, seven at-grade intersections with the selected alternative will be provided at C-21, T-83, C-87, C-115, C-232, C-133, and C-143 (Whetstone Road).
- All other impacted local roads will be either closed in the vicinity of the selected alternative or reconnected to another local road.

Consultation with the United States Fish and Wildlife Service (USFWS) regarding impacts to the Indiana bat has been completed. Section 7 Consultation of the Endangered Species Act was initiated on May 18, 2005. A Biological Opinion was issued by the USFWS on September 30, 2005. The USFWS concurred that the US 24 project *Is Likely to Adversely Affect* the Indiana bat. The USFWS assessed the direct, indirect, and cumulative impacts of the project on the Indiana bat and determined that the US 24 project, as proposed, is not likely to jeopardize the continued existence of the

Indiana bat, and is not likely to destroy or adversely modify designated Indiana bat critical habitat. The USFWS concluded that the overall US 24 project will not contribute a measurable decrease in reproduction or numbers of the Indiana bat at the local level.

IV. Alternatives Considered

Prior to the selection of the Preferred Alternative by ODOT and INDOT in May 2002, a broad range of modal alternatives were considered. These included highway, transportation system management (TSM), transportation demand management (TDM), transit, rail freight, and No Build alternatives. The modal alternatives were evaluated based on their ability to address the current and future transportation needs and problems identified in the US 24 study area. This evaluation determined that only the highway alternative succeeds in meeting all the transportation needs identified in the study area.

The No Build alternative consisted only of minor, short-term safety and maintenance improvements to US 24 that maintain its continuing operation. The No Build alternative did not meet the transportation needs of the study area. The No Build alternative was retained throughout the study as the baseline condition to measure the potential impacts of other alternatives.

Fourteen preliminary corridors were initially developed between the I-469/US 24 interchange in New Haven, Indiana and the Ohio SR 15/US 24 intersection west of Defiance, Ohio. The preliminary corridors were evaluated individually with regards to environmental features, public comments, agency comments, and consistency with local and regional planning goals and objectives. Five of the 14 preliminary corridors were selected for further research based on a coordinated process of elimination. These were Corridors 4, 7, 10, 13 and existing US 24.

Within Corridors 4, 7, 10 and 13, a total of 26 feasible highway alternatives were studied for the project. These included 24 expressways on new alignment alternatives (Alternatives A through X), the improved two-lane alternative on existing US 24 (Alternative Y), and the four-lane expressway along existing US 24 (Alternative Z). Feasible Alternatives A through X were comprised of combinations of 20 segments that were developed within the corridors, resulting in 24 highway alternatives on new alignment. The Feasible Alternatives in Indiana were not initially designed as freeways, but as expressways.

The 26 Feasible Alternatives were analyzed in a three-step screening process. First, the alternatives were analyzed to determine if they met the established purpose and need of the project. In the second step of the screening analysis, the potential environmental impacts were assessed for each alternative. The third step of analysis involved a more detailed examination of the environmental impacts and the consideration of other information such as public and agency comments, constructability, and right-of-way issues.

Public meetings were held on May 1, 2, and 3, 2001 to present the findings of the three step Feasible Alternative analysis. Alternative C was presented as the Preferred Alternative at the May 2001 public meeting. However, the citizens and local public officials in the Defiance area requested that Alternative D be reconsidered as the Preferred Alternative. Alternative D follows the same route as Alternative C from the interchange with I-469 in Indiana to Defiance County, Ohio. In Defiance County,

Alternative C follows segments 14 and 19, while Alternative D follows segments 15 and 18. Additionally, in correspondence dated May 24, 2001, the Ohio Environmental Protection Agency (OEPA) recommended Alternative D be selected as the Preferred Alternative over Alternative C to further minimize overall impacts to Category 3 wetlands.

As a result of public and agency input, it was determined that detailed environmental studies (i.e. archaeology surveys, wetlands delineations, and threatened and endangered species surveys) would be conducted on both Alternatives C and D. Following completion of wetland delineations, additional engineering designs were developed with the intention of minimizing impacts on wetlands. In Paulding County, the Preferred Alternative was shifted to the north between US 127 and C-224, which reduced wetland impacts. Within Segment 18 in Defiance County, design refinements reduced impacts to a Category 3 forested wetland. These engineering refinements resulted in the development of a 27th alternative – Alternative D-1, which minimized impacts to Category 3 wetlands.

On February 14, 2002, a meeting was held with the US Army Corps of Engineers (USACE) and OEPA to discuss wetland impacts associated with Alternatives C and D-1. Following this meeting, the USACE and OEPA provided written comment regarding wetland impacts and mitigation options associated with Alternatives C and D-1. The USACE commented that Alternative D-1 is the least damaging practical alternative and recommended Alternative D-1 as the Preferred Alternative.

Based on public comments, the findings of the wetland delineation surveys, and concurrence by the USACE and OEPA, Alternative D-1 was identified as the Preferred Alternative for the US 24 New Haven to Defiance project in May 2002. The primary values employed during this decision-making process were safety, operational effectiveness, local access, economic competitiveness, continuity of farm activities; preservation of biological habitat such as quality woodlots, streams, and wetlands, and avoidance of cultural and recreational resources. In the final analysis, the quality of wetlands rather than the quantity of wetlands impacted became the deciding value in selecting Alternative D-1 over Alternative C. The selection of D-1 also enables ODOT to acquire a sensitive forested wetland, precluding its loss as a potential secondary impact if another alternative had been selected. As a result of the continuous coordination conducted with the public and resource agencies, the selected alternative evolved into the environmentally preferred alternative that causes the least overall damage to the biological and physical environment.

Since identification of Alternative D-1 as the Preferred Alternative, investigation into several design refinements were undertaken in response to specific comments made by the public and/or resource agencies. The main objectives of the investigations were to develop design refinements and mitigation strategies that result in avoidance or minimization of impacts to sensitive resources. Modifications included detailed engineering design, proposed service roads, improvements to the I-469 and State Route (SR) 15/18 interchanges, a connector road between West High Street and SR 15/18, improvements to local roads, and a wetland mitigation area. These refinements and additional improvements to Alternative D-1 resulted in identification of the preferred alternative as Alternative D-1 Modified.

V. Section 4(f)
The selected alternative does not impact any parklands or recreational resources that qualify for Section 4(f) protection.

The Maumee River is a State Scenic and Recreation River. Reconstruction of the existing US 24 crossing over the Maumee River, including the construction of a new parallel structure adjacent to the existing structure, is required for the selected alternative. Based on coordination with the Ohio Department of Natural Resources (ODNR), FHWA has determined that Section 4(f) is not applicable to the Maumee River in the vicinity of the existing US 24 bridge. Scenic River coordination with ODNR for the Maumee River crossing will be ongoing throughout construction in accordance with Section 1517.6 of the Ohio Revised Code. Signs will be installed stating Maumee State Scenic River at the approaches of the Maumee River Bridge.

Effects evaluations were completed for five properties eligible for the National Register of Historic Places (NHRP) located within the Area of Potential Effect (APE) of the selected alternative. The selected alternative was determined to have no effect on three properties and no adverse effect on one property. For the fifth property (Gronauer Lock), the effect determination will be completed when detail design progresses at this location (I-469). However, it was determined that the significance of this property resides in its information potential through data recovery, and that it does not merit preservation in place. Therefore, FHWA determined that Section 4(f) is not applicable to the remaining portions of the Gronauer Lock.

Additional information can be found in the FEIS in Sections 5.2.13 and 5.2.19.

VI. Measures to Minimize Harm
Measures to avoid impacts and to minimize impacts when they cannot be avoided have been incorporated throughout the project development process. Such measures are discussed for each resource in the FEIS, October 2005, Chapter 6.0, Conclusions and Environmental Commitments. Throughout this process, alignment shifts and adjustments were made to minimize impacts. Unless otherwise noted, ODOT and INDOT are responsible for implementing all measures to minimize harm in their respective states.

1. Water Resources
The project has been developed pursuant to the Presidential Executive Order 11990 – *Protection of Wetlands*. Based on evaluation of all alternatives, it has been determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands and related resources that may result from such action.

Impacts to wetlands are discussed in Section 5.2.1 of the FEIS. The project will encroach upon 23.85 acres of wetlands. Impacts to streams are discussed in Section 5.2.2 of the FEIS. The project will result in 35 stream crossings, affecting 26,425 feet of streams. Impacts to streams and wetlands will be minimized during design and construction.

Concurrent with final design efforts, detailed mitigation measures specific to the right-of-way and the impacted wetlands and surface waters will be developed. With the exception of the Maumee River, in-stream work within Class III primary headwater

streams (watersheds < or equal to 1 mi^2), Exceptional Warmwater Habitat, Coldwater Habitat, Warmwater Habitat, or streams with threatened and endangered species shall be prohibited between April 15th and June 30th. In-stream work for the Maumee River will not be conducted between March 15th and June 30th. ODNR will continue to provide project specific recommendations during commenting periods and waivers or modifications of the specific exclusionary dates may be requested from ODNR by contacting the Division of Wildlife. Mitigation for these resources, in accordance with state regulations, will be negotiated with the resource agencies through coordination for the Section 404 permit, OEPA and Indiana Department of Environmental Management (IDEM) Section 401 Water Quality Certification, OEPA Isolated Wetlands permit, Level Two Pre-Activity Notification (PAN), National Pollutant Discharge Elimination System (NPDES) General Permit for discharges from Construction Activities, and Indiana Department of Natural Resources (INDNR) construction in a floodway. Replacement ratios will be based on the quality of the wetland or stream affected.

The following measures will be used to minimize impacts to wetlands:

- Wetland mitigation ratios will be in accordance with Section 404 permit requirements. Mitigation will include creation of 26 acres of wetlands, preservation of 61 acres of forested Category 3 wetlands, and a 72-acre buffer adjacent to each other to enhance and protect the Steven's Ditch ecosystem.
- Existing Wetlands adjacent to the construction limits will be protected from construction activities with temporary fencing or other measures placed around the perimeter of the wetlands.

The following measures will be used to minimize impacts to streams and rivers:

- Properly sized and engineered culverts to provide unobstructed water flow
- Stream mitigation ratios will be in accordance with permit requirements.
- Mitigation will include preservation of 4,328 feet of undisturbed stream channel; construction of 2,025 feet of natural stream channel with vegetative buffer onsite and a perpetual conservation easement along 4,932 feet of the Maumee River.
- Implementation of stream enhancement techniques in unavoidable stream channel relocations.
- Implementation of an Erosion and Sedimentation Control Plan and stormwater management measures.
- Denuded areas, including ditches, culverts and river/stream banks, will be permanently seeded and mulched (or fiber mat) upon completion of earthwork or temporarily seeded and mulched (or fiber mat) within seven days if the area is to remain idle for more than 30 days.
- Access roads constructed on slopes will be graveled to prevent erosion.
- A spill containment and cleanup plan will be developed prior to construction.
- All stream bank vegetation will be left undisturbed to the maximum extent possible.
- All components of the existing Maumee River bridge structure (piers, abutments, etc.) will be completely removed. Piers will be removed down to the same elevation as the surrounding riverbed. The asphalt deck material will be removed before any portion of the bridge is removed. All debris, excess fill material and material excavated from the river bottom shall be disposed of at an approved upland site.

- Disturbed areas in the Maumee River stream bottom will be returned to pre-construction contours. River bottom elevations will be determined before in-stream work commences to ensure that all fill material and debris is completely removed before construction is completed.
- During construction of the Maumee River bridges, if dewatering is necessary to facilitate in-stream work, all wastewater shall be pumped onto a vegetated area a sufficient distance from the Maumee River to allow for complete infiltration. No wastewater of any kind will be discharged directly into the Maumee River or any other drainage ways, ditches or streams. If discharge to a vegetated area is not feasible, then wastewater will be discharged into a sediment filter bag or into a temporary detention/retention pond.
- Areas where vegetation is removed along the Maumee River will be re-vegetated with native tree species. Trees will be one inch in diameter and balled/ burlap nursery stock. After a full growing season for the trees, any stakes and guide wires will be removed and properly disposed of. Any trees that die during the first growing season will be replaced.
- Rip-rap used around piers and abutments for the Maumee River bridges will be kept to the minimum amount needed to prevent scour and shall consist of clean rock only (free of any toxic or fine material). All fill material used as rip rap, work platforms or cofferdams will be a minimum of three inches in diameter and be washed to remove fine particulate matter (clay, silt, sand and soil). Work platforms will be kept to the absolute minimum size needed to facilitate in-stream work.
- In-stream work for the Maumee River bridges will be conducted through the use of water diversions (sheet piling, membrane dams, etc.) not requiring the placement of earthen fill, wherever possible. Any fill will be completely removed from the streambed as soon as possible after its purpose has been served.
- Aprons will be used for any painting, sanding or water blasting on the US 24 bridges to contain debris and overspray.

2. Sediment and Erosion Control

The following measures will be used to minimize impacts associated with sedimentation:

- Erosion and sedimentation control measures will be implemented during construction.
- Stormwater management measures will be implemented during construction.
- Post-construction stormwater pollution prevention measures will be incorporated into the project design and construction activities. Use of detention basins and retention ponds will be considered wherever practicable. Stormwater control appurtenances will be designed to limit in stream sedimentation, which will minimize the potential for impacts to water quality.
- Contractors will develop and implement a comprehensive sediment and erosion control plan. A plan note will specify that Sedimentation and Erosion Control features be placed as soon as practicable during the construction process. Provisions for placement of primary Sedimentation and Erosion Control features which are necessary during advanced tree-cutting operations will be included.
- Contractors will develop and incorporate provisions for implementation of a post-construction re-vegetation plan to control erosion and maintain water quality. Areas in which there are no construction activities for 45 days will be seeded to provide temporary ground cover to control erosion.

3. Non-Native and Invasive Species Control
Non-native invasive species will be controlled during and after construction with the following measures:

- Contractors will thoroughly rinse or clean any vehicles, equipment, or machinery specifically used for in-stream construction prior to construction, in order to prevent the spread of invasive species such as zebra mussel adults or larvae.

4. Additional Measures to Promote Water Quality

- Contractors will develop and comply with a project-specific emergency spill response protocol.
- Contractors will follow strict guidelines dictating the use and handling of hazardous materials and other contaminants. In Ohio, a plan note will be incorporated into construction contracts requiring contractors to adhere to the ODOT *Office of Construction Administration's Handbook for Removal of Regulated Wastes* from the work area or properties associated with the project.
- Herbicide applications will follow guidelines set by INDOT and ODOT mowing and herbicide application policies. Herbicide use will be restricted to ends of guardrails and roadway clear zones and will be applied by a State Licensed Practitioner.
- Winter de-icing agents will be applied at minimum effective rates.

5. Groundwater
There are no sole source aquifers in the study area. Affected water wells will be properly abandoned and replaced as required.

6. Floodplains
ODOT and INDOT will coordinate with local floodplain administrators and the Federal Emergency Management Agency (FEMA), as required, to insure highway development is in accordance with local flood hazard development permit requirements, floodway plans, and floodplain management programs.

The following measures will be used to minimize impacts to floodplains:

- Completion of detailed hydraulic studies for affected streams.
- Development of adequate drainage measures so that post-construction hydraulics match pre-construction (existing) drainage conditions.
- Bridge spans will be lengthened to reduce impacts on floodplains.
- Develop highway in accordance with accepted local floodway plans and floodplain management programs.
- In Indiana, obtain applicable permits from INDNR for construction in a floodway.

7. Wildlife and Habitat
The following project design features will be used to minimize the potential for adverse effects on wildlife species and habitat from roadway construction, operation, and maintenance activities:

- Natural stream channel design will be used for relocated segments of stream channels. A landscape plan which incorporates native vegetation will be developed for the stream banks
- Mussel populations will be removed in areas where in stream work will occur. Mussels will be relocated to suitable upstream habitat.

- ODOT and INDOT will mitigate wetland impacts in accordance with state and federal permits.
- The area used for construction will be limited to the construction right-of-way. Environmental resources (i.e. woodlots, wetlands, historic properties) adjacent to the construction right-of-way will be protected from any construction activities.
- Tree clearing within the construction right-of-way limits will only occur between September 15th and April 15th.
- Contractors will burn debris only between September 15th and April 15th.
- Contractors will obtain the service of a qualified bat scientist to investigate trees for the presence of Indiana bats if limited tree removal is required between April 15th and September 15th.
- Contractors will limit the amount of in-stream disturbance to areas within the construction limits.
- Contractors will avoid practices that involve prolonged changes in stream flow dynamics, including construction of impoundments through levees or dams, or utilization of culverts that could prevent upstream and downstream movement of host fish.
- Carcasses will be removed from the roadway in a timely manner.

8. Indiana Bat

- The following reasonable and prudent measures were identified by the USFWS and presented in the Biological Opinion issued on September 30, 2005, specifically for the Indiana bat. These measures will be implemented:

  a. The implementation status of all the proposed conservation measures, mitigation efforts, and terms and conditions must be monitored and clearly communicated to the USFWS on an annual basis.
  b. An Indiana bat education program must be developed and implemented for all personnel involved in the construction, operation, and maintenance of the US 24 highway project in Ohio.
  c. Indiana bat habitat in temporary construction areas must be restored to the maximum extent practicable.
  d. To the maximum extent practicable, incorporate measures to benefit the Indiana bat into mitigation plans for stream and wetland impacts.
  e. Ensure that construction equipment is in proper working order to minimize operation noise and reduce the risk of equipment spills and leaks.
  f. Ensure that if suitable Indiana bat roost trees may be impacted by waste, borrow, staging, and/or maintenance areas, these trees are explicitly identified and consultation re-initiated accordingly.

- The following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements, will be implemented:

  a. Monitoring Requirements:
     - ODOT will prepare an annual report detailing all conservation measures, mitigation efforts, and terms and conditions that have been initiated, are ongoing, or completed during the previous calendar year and the current status of those yet to be completed. The report will be

submitted to the USFWS's Reynoldsburg, Ohio Field Office by January 31st each year (the first report will be due January 31, 2007) and reporting will continue until the construction phase of the project is completed.

- Any dead bats located within the construction limits and right-of-way, regardless of species, should be immediately reported to the USFWS's Reynoldsburg, Ohio Field Office, and subsequently transported (frozen or on ice) to the Field Office. No attempt should be made to handle any live bat, regardless of its condition; report bats that appear to be sick or injured to the USFWS's Reynoldsburg, Ohio Field Office. The Field Office will make a species determination on any dead or moribund bats.

b. All US 24 highway project engineers, construction personnel (includes logging personnel), equipment operators, and road maintenance staff will attend a mandatory environmental awareness training to learn about the Indiana bat and its habitat requirements. This training will provide personnel with an increased awareness about the species and should increase the likelihood of compliance with the non-discretionary measures and terms of this Incidental Take Statement. The program should be developed in cooperation with the USFWS. All participants are to be provided with a protocol for reporting the presence of any live, injured, or dead bats observed or found within or near the construction limits or right-of-way during construction, operation, and maintenance of the new US 24. This training should occur prior to the initiation of onsite project activities.

c. A reforestation plan will be developed using native tree species for disturbed areas adjacent to stream crossings and within the stream and wetland mitigation areas. These tree species should be incorporated into post-construction revegetation plans to control erosion and maintain water quality, as well as along relocated stream segments. Tree species used for reforestation should be a combination of the species from the following list. These species frequently exhibit suitable Indiana bat roost tree characteristics.

    - Black Ash (*Fraxinus nigra*)
    - Green Ash (*Fraxinus pennsylvanica*)
    - White Ash (*Fraxinus americana*)
    - Eastern Cottonwood (*Populus deltoides*)
    - American Elm (*Ulmus americana*)
    - Slippery Elm (*Ulmus rubra*)
    - Bitternut Hickory (*Carya cordiformis*)
    - Shagbark Hickory (*Carya ovata*)
    - Shellbark Hickory (*Carya laciniosa*)
    - Black Locust (*Robinia pseudoacacia*)
    - Red Maple (*Acer rubrum*)
    - Silver Maple (*Acer saccharinum*)
    - Sugar Maple (*Acer saccharum*)
    - Black Oak (*Quercus velutina*)

- Post Oak (*Quercus stellata*)
- Red Oak (*Quercus rubra*)
- Shingle Oak (*Quercus imbricaria*)
- White Oak (*Quercus alba*)
- Sassafras (*Sassafras albidum*)

d. During the development of mitigation plans required under Sections 401 and 404 of the Clean Water Act, mitigation opportunities which both fulfill the requirements of this Act and benefit the Indiana bat through habitat protection, restoration and/or enhancement should be sought. The USFWS strongly encourages stream and wetland mitigation areas to be planted with native tree species that provide suitable habitat for the Indiana bat, as described in Term and Condition number 3 above.

e. Regular inspections of construction equipment should be conducted to ensure that equipment is in good working order to minimize disturbance to bats from operational noise and to reduce the risk of surface water contamination from equipment leaks and spills which could affect the bats prey base and drinking sources.

g. If a limited number of trees must be removed between April 15th and September 15th, the contractor will be required to obtain the service of a qualified bat scientist to investigate trees for the presence of Indiana bats. Pending results of the investigation, the following actions will occur:
   - A qualified bat scientist will evaluate the potential of roosting habitat for each selected tree. If the tree offers no potential for roosting habitat, it may be cut between April 15th and September 15th.
   - If a selected tree offers the potential for roosting habitat, an emergence survey will be conducted. If no bats are detected, the tree may be cut the day following completion of the emergence survey.
   - If bats are detected during the emergence survey, the tree will not be cut until the period between September 15th and April 15th

9. Municipal/Industrial/Hazardous Waste

The potential to encounter hazardous substances has been assessed and will be minimized as follows:

- Closure of Underground Storage Tanks and Aboveground Storage Tanks in accordance with applicable regulations on three properties as needed (ODOT Defiance County Garage, Mark Moats Ford, and an abandoned property on T-69).
- The storage drums found on an abandoned property on T-69 will be disposed of properly.
- Inspection of nonresidential buildings for asbestos in Indiana by a licensed asbestos inspector prior to any demolition activities.

10. Farmlands

Right-of-Way impacts include acquisition of 1,582 acres of farmland and impact 214 different farming operations. These impacts include eight properties within agricultural districts totaling 178.1 acres. Additionally, approximately 407.2 acres of

land will be landlocked. The following measures will be used to minimize impacts to farmlands and farming operations:

- Property acquisition and relocation assistance will be provided in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act.
- Coordination with the Ohio Department of Agriculture concerning condemnation of farmlands designated as Agricultural Districts.
- Provision of service roads to mitigate landlocking of active farmland.
- Coordination with local agencies and property owners concerning mitigation of impacts to farmland irrigation/drainage systems.
- Grade-separated crossings provided for local roads that are important to farm operations.

11. Land Use

The selected alternative will landlock 38 parcels of property, which total 407.2 acres. The following measures will be used to minimize impacts:

- Service roads will be constructed to mitigate landlocking of properties, where feasible.
- In Ohio, landlocked parcels will be offered for sale.

Additional information regarding land use conversion and mitigation measures can be found in the FEIS in Section 5.2.8.

12. Residential Displacements

The selected alternative will displace 36 residences, of which 23 are single family homes, four are mobile homes, and nine are single-family residences located on actively farmed properties. The following measures will be used to minimize and/or mitigate impacts to displaced residences:

- Property acquisition and relocation assistance provided in accordance with the Uniform Relocation and Real Property Acquisition Policies Act.
- Implementation of a Residential Relocation Assistance Program.

13. Environmental Justice

Environmental Justice populations affected include minority and low income residents. The following measures will be used to minimize and/or mitigate impacts to Environmental Justice populations:

- Minimization of right-of-way impacts to the Bohlman Trailer Park and the Rolling Meadows Mobile Home Park (both located in Defiance County) and avoidance of residential units.
- Construction of a noise wall at the US 24/424 interchange and the Bohlman Trailer Park to mitigate noise impacts

14. Community Facilities

The selected alternative will displace the AEP substation at Harper Road as well as affect the associated transmission line spanning US 24. Pipelines owned and operated by the ANR Pipeline and Panhandle Eastern Pipeline companies will also be impacted. The Ohio State Highway Patrol Post Located just east of the US 24/SR 424 intersection in Defiance will be affected by minor right-of-way acquisition; however, the function of the facility will not be permanently affected. The ODOT Defiance County Garage and access to Woodlan High School and the Antwerp

School complex will also be impacted. The following measures will be used to minimize and/or mitigate impacts to these community facilities:

- Provisions for grade-separated crossings at Woodburn Road (Allen County) and C-43 (Paulding County) for safe access to Woodlan High School and Antwerp School complex.
- On-site replacement of salt storage, brine mixing, and other affected facilities at the ODOT Defiance County Garage.
- Notifications to emergency service providers during construction concerning temporary local roadway impacts.

15. Business Displacements

The following measures will be used to minimize and/or mitigate impacts to four displaced businesses:

- Property acquisition and relocation assistance provided in accordance with the Uniform Relocation and Real Property Acquisition Policies Act.

16. Visual Resources

The following measures will be used to minimize visual impacts:

- Preservation of landscape features and existing vegetation where feasible.

Additional information can be found in the FEIS in Section 5.2.16.

17. Cultural Resources

Historic sites are located adjacent to the right-of-way of the selected alternative. These sites will be protected from all ancillary construction activities (i.e. borrow or waste areas, parking equipment, storage of materials, field office placement, etc.). For projects in Ohio, Section 105.6 of ODOT's *2005 Construction and Materials Specifications* details the activities related to borrow and waste areas and specifically states that there will be no waste or borrow from cultural resource sites listed in or eligible for the NHRP. Visual elements of historic resources will also be preserved by maintaining existing vegetation between the right-of-way and the Niemeyer Farm, Harper House, Meyer/Gallmeyer Farm, and Smith/Rich/Krug House.

One archaeological site, the Gronauer Lock site, is located within the right-of-way of the existing US 24/I-469 interchange and has been determined eligible for the inclusion in the NHRP. A portion of the lock remains underneath US 24 and will be affected by improvements. The FHWA Indiana Division and the Indiana State Historic Preservation Officer (SHPO) prepared a Programmatic Agreement for the Gronauer Lock in October 2005. The purpose of the Programmatic Agreement was to phase the effect determination for the Gronauer Lock and any subsequent data recovery requirements since the engineering design for the I-469/US 24 interchange has not advanced beyond the preliminary phase and the boundaries of the Gronauer Lock site are unknown. The Programmatic Agreement identified the actions FHWA and INDOT will take to satisfy FHWA's Section 106 responsibilities. The following are stipulations specified in the Programmatic Agreement:

- Prior to completing the final project design in Indiana, the INDOT will complete the appropriate archaeological investigations to determine the boundaries of the Gronauer Lock. INDOT will coordinate the archaeological investigations with the Indiana SHPO. A research plan detailing the methodology for defining the

boundaries of the site shall be submitted to the Indiana SHPO for review and comment.

- The INDOT will make a reasonable effort to avoid the Gronauer Lock site during design and construction. If the site cannot be avoided, FHWA will apply the Criteria of Adverse effect in accordance with 36 CFR 800.5.
- If the FHWA determines, in consultation with the Indiana SHPO, that the project will have an adverse effect on the Gronauer Lock site, then INDOT will develop plans for Phase II and/or Phase III archaeological investigations in consultation with the Indiana SHPO and submit such plans to the FHWA and Indiana SHPO for their review and comment, if appropriate. The INDOT shall submit alternative mitigation plan to the FHWA and Indiana SHPO for their review and comment, if appropriate. That review period will be 30 days. If archaeological resources are identified which are eligible under Criteria other than or in addition to Criterion D, FHWA shall comply with 36 CFR 800.6.
- A draft report(s) of the archaeological investigations and updated Indiana state site form shall be submitted to the FHWA and Indiana SHPO for review and comment. All final reports of the archaeological investigations will be completed within one year of the completion of field work. The Indiana SHPO will be given 30 days to review and comment on all submissions.
- INDOT shall ensure that all archaeological work carried out pursuant to this Programmatic Agreement is carried out by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualification Standards* (48 FR 44738-9), and that all historic preservation work is carried out by or under the direct supervision of a person or persons meeting, at a minimum the *Secretary of the Interior's Professional Qualification Standards for Architectural Historian Professionals* (48 FR 44738-9).
- If any unanticipated discoveries of historic properties, sites, artifacts, or human remains are encountered during the implementation of this undertaking, FHWA shall comply with 36 CFR 800.13, Indiana Code (14-21-1-27 and 14-21-1-29), Ohio Revised Code (2909.05 and 2927.11), and Section 203.04 of ODOT's *Construction and Materials Specifications* (2005). The Indiana Department of Natural Resources, the Ohio SHPO, and ODOT and INDOT will be informed of such of such discoveries within two business days and, if applicable, federally recognized tribal organizations that attach religious and/or cultural significance to the affected property. FHWA will develop and implement actions that take into account the views of the SHPOs and, if applicable, federally recognized tribal organizations.
- If future design studies result in changes in the proposed right-of-way limits of the selected alternative and affect previously non-surveyed areas, additional archaeological investigations will be undertaken to determine the potential impact on archaeological resources.

18. Traffic

The following measures will be used to minimize and/or mitigate traffic impacts:

- Provisions for grade-separated crossings at Woodburn Road (Allen County) and C-43 (Paulding County) for safe access to Woodlan High School and Antwerp School complex.

- Provisions for grade-separated crossings at Ryan/Bruick Road, Webster Road, and SR 101 in Allen County to support travel needs of the local Amish Community.
- Maintenance and protection of traffic during construction.
- Notifications to general public and emergency service providers during construction concerning temporary local roadway impacts.

Additional information can be found in the FEIS in Section 5.2.20.

19. Air Quality

The following measures will be used to minimize and/or mitigate air quality impacts:

- Implementation of Best Management Practices during construction to minimize local short-term air quality problems. Contractors will be required to adhere strictly to dust control measures as outlined in INDOT's Standard Specifications and ODOT's *Construction and Materials Specifications (2005).*

20. Noise

The following measures will be used to minimize and/or mitigate noise impacts:

- Implementation of Best Management Practices during construction to minimize local short-term construction noise. Contractors will minimize construction noise by limiting operation of heavy construction equipment to daylight hours whenever possible, installing and maintaining effective mufflers on equipment, locating equipment and vehicle staging areas as far from noise sensitive areas as possible, and limiting unnecessary idling of equipment.
- Construction of a noise wall at the US 24/424 interchange for the residents of the Bohlman Trailer Park.

VII. Monitoring or Enforcement Program

For the Indiana Bat:

- For construction projects in Ohio, ODOT will prepare an annual report detailing all conservation measures, mitigation efforts, and terms and conditions that have been initiated, are ongoing, or completed during the previous calendar year and the current status of those yet to be completed. The report will be submitted to the USFWS's Reynoldsburg, Ohio Field Office by January 31st each year (the first report will be due January 31, 2007) and reporting will continue until the construction phase of the project is completed.

- Any dead bats located within the construction limits and right-of-way, regardless of species, should be immediately reported to the USFWS's Reynoldsburg, Ohio Field Office, and subsequently transported (frozen or on ice) to the Field Office. No attempt should be made to handle any live bat, regardless of its condition; report bats that appear to be sick or injured to the USFWS's Reynoldsburg, Ohio Field Office. The Field Office will make a species determination on any dead or moribund bats.

VIII. Comments on the Final Environmental Impact Statement

The Notice of Availability of the FEIS was published in the Federal Register on November 4, 2005 with comments due by December 5, 2005.

Comments received on the FEIS are as follows:

- Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology reviewed the document and concurred with the information presented.

- U.S. Department of Housing and Urban Development stated the project does not present any special interests or concerns to them.

- United State Coast Guard stated the project is not within their area of jurisdiction and offered no comments.

- Indiana Department of Natural Resources, Environmental Unit reviewed the document and indicated where to send future documents.

- Ohio Department of Natural Resources offered no comments.

- Fort Wayne Chamber of Commerce provided the following two comments:

    a. "Since INDOT plans to acquire the interchange land with the remaining right of way acquisition, and since the interchanges are part of the project detailed in this environmental process, further documentation on INDOT's plans to complete the interchanges as well as the I-469 improvement should be included in this study."

    As INDOT has discussed with the Ft. Wayne Chamber's US 24 Task Force, the final form of the improvement will be a fully limited access freeway in Indiana. Four phases of the US 24 improvement are fully funded in the current Draft fiscally-constrained 10-year construction program. The final phase - construction of the I-69/US 24 interchange - is not currently within the 10-year plan, but remains part of the long-range plan. The Draft 10-year plan is still in development and will not be finalized until the second quarter of 2006. The plan will be reviewed quarterly and an updated 10-year program will be published annually. INDOT will coordinate with FHWA to ensure that the US 24 improvement is constructed fully and safely in compliance with all federal and state regulations.

    b. In reference to Gronauer Lock: "While environmental consideration and mitigation is important in a highway construction project, so to are the safety benefits that will result from this road improvement. I would hope that great care is taken by all involved offices to expedite all report reviews and approvals, so as to not further delay the construction of this improvement."

    The offices involved in completing the Section 106 process for the Gronauer Lock are aware of the importance of this project and will diligently work to resolve any issues related to the lock and maintain the project schedule.

- U. S. Environmental Protection Agency restated their comments on the DEIS and how they were sufficiently addressed in the FEIS. Several new issues were raised and are addressed below.

    a. "Despite the document's many references to modifications made to reduce impacts, a significant number of impacts are illustrated as increasing, including cost, land use acreage, farmlands, National Register of Historic Places and most ecological resource impacts. The ROD should explain why Alternative D-1 Modified was determined to be a better overall performer than Alternative D-1."

    Alternative D-1 Modified is essentially Alternative D-1, but with improvements incorporated into the project in response to requests from and issues raised from the public and local officials. These improvements are discussed on pages 5-1 and 5-2 of the FEIS. In summary, the increases in cost and other impact quantities represent the additional work associated with measures to improve the quality of water runoff, thirteen service roads providing access to 107 hectares (264 acres), upgrades to the I-469/US-24 and SR-15/US-24 interchanges, the proposed connector road in the City of Defiance from West High Street to SR-15/18, improvements to twenty local roads impacted by proposed US-24, and the purchase of 64 hectares (159 acres) of land for stream and wetland mitigation.

    b. "As indicated above, we applaud the creation of 26 acres and preservation of 61 acres of forested wetlands with additional forest buffer. The ROD should indicate the connectivity between these wetlands and the Steven's Ditch ecosystem they will be augmenting."

    See first bullet on page 6 of this ROD.

    c. "In addition to the FEIS Section 6, Table 6.1 Environmental Commitments during construction and the USFWS Permit Requirements indicated, the ROD should explain the post-project monitoring of created wetlands, stream run-off mitigations and endangered species recovery."

    Any requirements for post-project monitoring of created wetlands and stream run-off would be promulgated through the Section 404/401 permit processes. Post-project monitoring of the Indiana Bat is not specifically required per the Biological Assessment; however road maintenance staff will receive awareness training as discussed on page 9 of this ROD.

IX. Conclusion

It is the FHWA's conclusion and decision that the proposed action, known as PAU/DEF – US24-0.00/0.00, complies with all applicable provisions of the National Environmental Policy Act, specifically 42 U.S.C. 4332 (2) and, where applicable 49 U.S.C. 303.

Patrick A. Bauer

12-9-05

for Dennis A. Decker
Division Administrator
Federal Highway Administration

Date