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1.0 INTRODUCTION

The Ohio Department of Transportation (ODOT) in cooperation with the Federal Highway Administration (FHWA) is proposing to correct geometric deficiencies, improve pavement and bridge conditions, and increase transportation efficiency within the Interstate 75 (I-75) corridor in Allen and Auglaize counties, Ohio.

1.1 Study Area

The project study area shown in Figures 1 and 2 encompasses a 12-mile segment of I-75 between the interchanges at National Road (exit 118) in Auglaize County and at Bluelick Road (exit 130) in Allen County. Five additional interchanges are within this section of I-75. They are Breese Road (exit 120), State Route (SR) 65 (exit 122), Fourth Street (exit 124), SR 309/117 (exit 125), and SR 81 (exit 127). The eastern and western limits of the study area generally follow the existing alignment of I-75 but deviate in some locations to encompass proposed interchange designs.

1.2 Project Overview

The poor pavement performance on the section of I-75 in the study area led to the Study. Continuous resurfacing of the interstate has proven to be ineffective, as the pavement performance problems cause surface treatments to fail more rapidly than similar treatments on comparable highways. Poor pavement conditions also accelerate the rate of wear and tear on vehicles. Frequent resurfacing is expensive and causes delays to motorists on I-75. Delays resulting from the maintenance work cause an increase in some vehicular emissions, particularly during peak traffic hours. Maintenance closures also cause some vehicles to detour, thus increasing traffic on other roads.

Geometric design concerns have been identified on this 12-mile segment of I-75. The narrow shoulders and deficient bridge horizontal and vertical clearances are a result of the design standards used at the time of construction for this segment of interstate, which was originally built in the 1950s.

Concerns with poor pavement performance, geometric design, and the ability of the road to accommodate economic development have lead to the identification of the Allen 75 Study in both *Access Ohio*, ODOT's long-range State Transportation Improvement Program (STIP), and the Lima Allen County Regional Planning Commission[1] (LACRPC) *2025 Long Range Fiscally Constrained Transportation Plan Update*, October 2000.

The purpose and need of the Allen 75 Study are based on three transportation issues:

- Pavement performance
- Roadway deficiencies
- Inclusion in long-range statewide or local transportation plans

1.3 Purpose of Report

The Conceptual Alternatives Study (CAS) is submitted in Step 5 of the ODOT Project Development Process (PDP). The CAS, federal and state agency coordination, and input

[1] LACRPC is the metropolitan planning organization (MPO) for Allen County, and for those portions of the city of Delphos, and the villages of Bluffton and Cridersville that are located outside of Allen County.

from the project stakeholders and the public serve as Coordination Point #2. This report discusses the results of engineering, traffic and environmental studies completed for the conceptual alternatives. Information from the Strategic Plan in Step 4 and developed throughout Step 5 is presented. This report identifies the feasible alternatives selected for further study in Step 6. The Conceptual Alternatives Study is carried out under the guidelines of ODOT's *Location and Design Manual* (October 2006) and PDP procedures.

1.4 Project Goals

The Allen 75 Study was proposed because I-75 exhibits inadequate pavement performance between log points 0.21 and 10.00 in Allen County, Ohio. Within this section, the interstate facility also exhibits geometric conditions that do not meet current Ohio Department of Transportation (ODOT) design standards for an urban interstate. These two factors have lead to the identification of the Allen 75 Study on the regional Transportation Improvement Plan (TIP) and Statewide Transportation Improvement Plan (STIP).

Specific goals of the Allen 75 Study, which were developed through public involvement, are to:

- Improve pavement and bridge conditions on I-75 between mile points 0.21 and 10.00.
- Improve safety by upgrading pavement and bridge conditions to current state and federal design standards
- Provide sufficient capacity for future traffic needs
- Assure appropriate access to sustain existing and future economic growth
- Minimize impacts to social, economic and environmental resources

1.5 Purpose and Need Statement

The purpose of the project is to develop ways to address the following transportation issues identified in the study area:

Roadway Deficiencies and Pavement Performance – Deteriorating bridge and pavement conditions, narrow shoulders, and other design deficiencies have been identified on I-75 in the study area. These deficiencies lead to problems including increased maintenance costs; increased risk of crashes; increased delay during crashes, breakdowns, or scheduled construction; increase of traffic on other roadways; and accelerated wear and tear on vehicles.

Inclusion in Statewide or Local Plans – This study is included in *Access Ohio*, ODOT's long-range transportation plan, and in the State Transportation Improvement Plan. It is also in the Lima-Allen County Regional Planning Commission (LACRPC) *2025 Long Range Fiscally Constrained Transportation Plan Update*, dated October 2000. In addition, research for the 2000 ODOT report, *Ohio's Interstate System 50 Years of Service (1945 – 2005)*, indicated that this section of I-75 is "a suitable candidate for major rehabilitation efforts."

2.0 DEVELOPMENT OF CONCEPTUAL ALTERNATIVES

The *Conceptual Alternatives* (2006) document identified and evaluated a broad range of alternatives for the Allen 75 Study. The conceptual alternatives were developed and evaluated through a two-step comparative analysis. Based on the comparative analysis,

several alternatives were eliminated from further consideration and others were recommended for further study in Step 5 of the Ohio Department of Transportation's (ODOT) project development process (PDP).

2.1 Alternatives Considered and Dismissed

The conceptual alternative solutions considered and dismissed in Step 4 of the PDP are:

- Freight rail
- Mass transit
- Transportation System Management (TSM)
- Transportation Demand Management (TDM)
- Eastern Bypass
- Western Bypass

These conceptual alternatives were dismissed from further consideration due to their inability to meet the project purpose and need goals. Further details of these alternatives are presented in the *Conceptual Alternatives* (2006) report.

2.2 No Build Alternative

The No Build alternative maintains the current four-lane configuration of Interstate 75 (I-75) and consists of minor, short-term safety and maintenance improvements to the interstate, which would maintain its continuing operation. The No Build alternative is retained as a baseline for evaluation of the highway build conceptual alternatives.

2.3 Conceptual Build Alternatives

Conceptual highway alternatives were evaluated for the Allen 75 Study. The conceptual alternatives propose reconstructing I-75 along its existing location between exit 118 (National Road), and exit 130 (Bluelick Road) (Figure 1). The road will be reconstructed to improve its foundation and correct the problem of rapid deterioration of surface pavement treatments experienced on I-75 in the study area.

Conceptual alternatives recommended for further consideration in Step 5 of the PDP included Alternatives 4, 5, 6, and 7. Conceptual alternative 4 proposed four travel lanes on I-75. Conceptual alternatives 5, 6, and 7 proposed six travel lanes on I-75, with different combinations of interchange and local roadway improvements. The optional local improvements would improve accessibility between I-75 and the local traffic network. The following is a summary of the four conceptual alternatives.

- Conceptual Alternative 4: I-75 would be reconstructed as a four-lane facility with all interchanges in their current locations. The I-75 mainline, all overpass bridges, and the five interchanges between and including Breese Road and SR 81 would be rebuilt to meet current ODOT design standards. The current configuration of SR 117 would be maintained.
- Conceptual Alternative 5: The I-75 mainline would be rebuilt as a six-lane facility, and the five interchanges would be reconstructed in their existing locations. SR 117 would remain in its current configuration.
- Conceptual Alternative 6: The I-75 mainline would be rebuilt as a six-lane facility, and the interchanges at Breese Road, SR 65 and SR 81 would be reconstructed in

their existing locations. SR 117 would be realigned on a new road constructed along the abandoned railroad corridor south of SR 309. As part of this conceptual alternative, the interchanges at SR 309 and at Fourth Street would be removed, with a new interchange constructed at the relocated SR 117. Greely Chapel Road, which parallels I-75 approximately ¼-mile east of the interstate, would be improved to provide access to the new interchange. Access on the western side of I-75 would be provided by a new service road.

- Conceptual Alternative 7: The I-75 mainline would be rebuilt as a six-lane facility, and the five interchanges between and including Breese Road and SR 81 would be reconstructed in their existing locations. Fourth Street would be extended east of Bowman Road on new alignment to meet existing SR 117. Existing Fourth Street would be improved but not widened between SR 65 and Bowman Road. SR 117 would be realigned to follow Fourth Street. SR 117 traffic would enter I-75 via the Fourth Street interchange, reducing traffic volumes and the potential for vehicular conflicts at the existing SR 309/117 interchange area.

Conceptual alternatives 4, 5, 6, and 7 were further developed and studied in more detail in Step 5. These efforts included:

- Traffic capacity analyses
- Conceptual Relocation Assistance Program survey
- Noise analysis
- Historic architecture survey
- Ecological resources survey
- Hazardous material sites survey
- Section 4(f) survey
- Social and economic analyses
- Geotechnical assessment
- Secondary and cumulative impacts assessment
- Development of interchange designs
- Development of horizontal alignments
- Development of access management for businesses
- Cost estimates
- Utilities coordination
- Coordination with stakeholders

As a result of the traffic, environmental, engineering studies and stakeholder coordination, conceptual alternatives 4, 5, 6, and 7 evolved into two design scenarios, a four-lane alternative and a six-lane alternative. Conceptual alternative 4 became the four-lane alternative and conceptual alternatives 5, 6, and 7 were combined into a six-lane alternative.

The four-lane and six-lane alternatives were further developed and studied in more detail (Appendix A). Five conceptual build alternatives were studied in Step 5 of the PDP:

- No Build Alternative: An alternative, which maintains the current four-lane configuration of I-75 and consists of minor, short-term safety and maintenance to the interstate, which would maintain its continuing operation (Appendix A).
- Alternative A: A four-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards (Appendix A).

- Alternative B: A four-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards and makes provisions for future upgrade to a six-lane facility (Appendix A).
- Alternative C: A four-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards, provides auxiliary lanes where necessary in areas of level of service D or worse, and provides for future upgrade to a six-lane facility (Appendix A).
- Alternative D: A six-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards (Appendix A).

Alternatives A, B, C, and D also include upgrading the interchanges at Breese Road, SR 65, Fourth Street, SR 309/117 and SR 81 to meet current design standards (Appendix A).

2.3.1 Design Concept and Scope

The 12-mile section of I-75 in the study area was designed and constructed in the 1950's. Since its construction, this section of I-75 has undergone maintenance improvements and resurfacing. There have not been any upgrades to the facility to bring the I-75 mainline or the interchanges up to modern design standards. As a result, there are numerous geometric and structural deficiencies in this section of I-75, which were documented in the *Red Flag Summary* (2005). For example, the vertical and horizontal clearances of the bridges are still the 1950's design standards and do not meet current ODOT standards. All interchange ramps in the study area are designed below ODOT's "Ramp Speed Guide" guidance and have inadequate shoulder widths. Specifically, the SR 65 interchange ramp has a short merge distance on to northbound I-75, according to current design standards. Other design deficiencies include:

- SR 309/117 and SR 65 interchanges have local roads with access directly to on-ramps.
- At several of the interchanges, existing development is within the 600 foot limited access right of way from ramps. According to current ODOT design standards, development is not permitted within the 600 foot limited access right of way.

Roadway deficiencies would be corrected during the reconstruction and widening to bring the interstate and its interchanges and overpasses in compliance with current ODOT design standards, enhancing traffic flow and safety. Construction of any of the conceptual build alternatives would improve the I-75 sub-base below the pavement and correct the problem of pavement deterioration. Both the four-lane (Alternatives A, B, and C) and six-lane (Alternative D) conceptual build alternatives include:

- Reconstruction of all interchanges between and including Breese Road and SR 81 due to poor pavement conditions, inadequate inside/outside shoulder widths, and other safety and design criteria upgrades such as turning radii deficiencies, and deficient acceleration and deceleration lane lengths.
- Reconstruction of overpass bridges to address deficient shoulders and parapet treatments and horizontal and vertical clearance deficiencies. Each overpass bridge will be further analyzed in future steps to provide the most cost effective and prudent solution to clearance issues. If horizontal clearance is not an issue at a certain location, then the option to lower the mainline will be investigated. The age of some overpasses may result in a need for reconstruction regardless of horizontal and vertical clearance deficiencies.

- Flattening of the mainline I-75 curves near Hanthorn Road and McClain Road to a 70 mile per hour design speed to improve safety
- Removal of local roads and driveways from interchange ramps (Yoder Road at the SR 65 interchange and Dean Road at the SR 309/ SR 117 interchange) for safety
- Use of extra wide ditches, etc., to accommodate Best Management Practices for drainage and stormwater management
- Minimization of right of way acquisition to the maximum extent possible

Additional features proposed to improve traffic flow, safety, and local connectivity include:

- Upgrade highway lighting to current standards
- At the SR 81 interchange, the existing divided highway will be removed and replaced with an undivided highway
- Installation of closed-loop traffic signal systems near interchanges, where needed, to improve traffic flow
- Numerous public comments have noted that the SR 309/117 interchange area acts as a gateway to Lima for most visitors. Local stakeholders have expressed desire to improve aesthetics at SR 309/117 interchange so the area provides a gateway into the City of Lima
- Introduction of turn lanes where substantiated by traffic volumes

2.3.2 Conceptual Build Alternative Design Criteria

Alternative A would reconstruct the existing pavement and be designed and built to current ODOT highway and bridge design and construction standards. The proposed typical section for Alternative A has two design scenarios (Appendix B). In the mainline sections with a grass median area, there would be four-foot inside shoulders, two 12-foot lanes, and a 12-foot outside shoulder. The mainline sections with a median barrier would have a 12-foot inside shoulder, two 12-foot lanes, and a 12-foot outside shoulder.

Alternative B would reconstruct the existing pavement and eliminate the grass median sections. The typical section would include a 12-foot inside shoulder; two 12-foot lanes and a 12-foot outside shoulder (Appendix B). Alternative C would be constructed identical to Alternative B except where traffic analyses warrant auxiliary lanes.

The typical section for Alternative D would have a median barrier section the length of the improvements with a 12-foot inside shoulder, three 12-foot lanes, and a 12-foot outside shoulder (Appendix B). Overpasses would be reconstructed to accommodate all clearance requirements for a six-lane facility. The mainline bridges would accommodate the full roadway section plus two feet on the outside shoulders for guardrail offsets.

The Conceptual Build Alternative table in Appendix A further describes design features for the No Build and conceptual build alternatives. ODOT determined that the 12-foot inside shoulder was an important design feature for the conceptual build alternatives to accommodate future maintenance of traffic and safety considerations, and snow removal.

The design criteria presented in Table 1 summarize the geometric design criteria applied to the Conceptual Build Alternatives A, B, C, and D as provided in the current ODOT *Location and Design Manual Volume 1.*

Table 1. Geometric Criteria

Functional Classification: Interstate **Terrain: Level / Locale: Urban / Mainline Design Speed: 70 miles per hour (mph)**							
Design Feature	**Design Criteria**						**Notes**
	Mainline (70 mph)		**Service Ramp[1] (60/50/35 mph)**		**Local Street (40 mph)**		
Horizontal Alignment							
Maximum Centerline Deflection without Horizontal Curve	0°45 minutes	Figure[2] 202-1E	1°00 minutes 1°15 minutes 2°45 minutes	Figure 202-1E	2°15 minutes	Figure 202-1E	
Maximum Degree of Curve	2°45 minutes	Figure 202-2E	4°15 minutes 6°45 minutes 15°30 minutes	Figure 202-2E Figure 202-10E Figure 202-10E	10°45 minutes	Figure 202-9E	
Maximum Curve without Super	0°26 minutes	Figure 202-3E	0°33 minutes 0°47 minutes 11°28 minutes	Figure 202-3E Figure 202-10E Figure 202-10E	7°42 minutes	Figure 202-9E	
Maximum Superelevation (e_{max})	5.90%	Figure 202-8E	6.00%	Figure 202-8E Figure 202-10E	4.00%	Figure 202-9E	
Vertical Alignment							
Maximum Grade[3]	3%	Figure 203-1E	4%	Figure 203-1E	7%	Figure 203-1E	1% steeper may be used in extreme cases or for one-way downgrades
Maximum Vertical Deflection without a Vertical Curve	0.25%	Figure 203-2E	0.30% 0.45% 0.95%	Figure 203-2E	0.75%	Figure 203-2E	Minimum distance between deflections is 100 feet for speed ≥ 50 MPH, 50' for speed < 50 MPH
Pavement Cross Slopes (normal)	0.016	301.1.5					
Use of Spirals	D > 3°	202-11 202-5					
Spiral Length	≥ Length of Runoff						
Transition Length / Rate (drop line)	L= 60 x Lane Width	301.1.4					
Pavement Slope Transition	250:1 max	Figure 202-4E	222:1 max 200:1 max 161:1 max	Figure 202-4E	172:1	Figure 202-4E	For methods of transition see Figure 202-5, 202-5a, 202-5b, 202-5c, 202-5d, 202-6
Grade Point Position	Inside Edge		Inside/Out-side Edge		Outside Edge		
K-Values							
Crest Vertical Curve	247	Figure 203-3E	151 84 29	Figure 203-3E	44	Figure 203-3E	

Table 1. Geometric Criteria

Functional Classification: Interstate **Terrain: Level / Locale: Urban / Mainline Design Speed: 70 miles per hour (mph)**							
Design Feature	**Design Criteria**						**Notes**
	Mainline (70 mph)		**Service Ramp[1] (60/50/35 mph)**		**Local Street (40 mph)**		
Sag Vertical Curve[4]	181	Figure 203-6E	136 feet 96 feet 49 feet	Figure 203-6E	64 feet	Figure 203-6E	
Sight Distance							
Stopping Sight Distance (vertical curves)	730 feet minimum	Figure 201-1E	570 feet 425 feet 250 feet	Figure 201-1E	305 feet	Figure 201-1E	
Minimum Passing Sight Distance	---		---		1,470 feet	Figure 201-3E	
Intersection Sight Distance	---		---		445 feet LT 385 feet RT	Figure 201-5E	See Figure 201-4 also
Decision Sight Distance	1,410 feet (B) 1,445 feet (E)	Figure 201-6E	1,150 feet (B) 1,280 feet (E) 910 feet (B) 1,030 feet (E) 590 feet (B) 720 feet (E)	Figure 201-6E	690 feet (B) 825 feet (E)	Figure 201-6E	
Clearances (New and Reconstructed)							
Lateral on Bridge (≥ 200 feet long)	12 feet Right 12 feet Median	Figure 302-1E	8 feet Right 6 feet Left	Fig 303-1E	Uncurbed / Curbed 4 feet-10 feet / 1foot -2 feet	Figure 301-4E	Lateral clearance shown applies to the six-lane alternative. The median side can be reduced to 4 feet on the four-lane alternative; however, 12 feet is used for future Maintenance of Traffic (MOT) considerations.
Lateral on Bridge (≤ 200 feet long)	12 feet Right 12 feet Median	Figure 302-1E	8 feet Right 6 feet Left	Figure 303-1E	Uncurbed / Curbed 4 feet-10 feet / 1 foot -2 feet	Figure 301-4E	See lateral clearance note above.
Vertical	17 feet preferred 16.5 feet minimum	Figure 302-1E	17 feet preferred 16.5 feet minimum	Figure 302-1E	15 feet preferred 14.5 feet minimum	Figure 302-1E	
Clear Zone	**(>6000 ADT)**		**(>6000 ADT)**		**(>6000 ADT)**		
Foreslope 6:1 or Flatter	30 feet	Figure 600-1E	30 feet 19 feet 15 feet	Figure 600-1E	15 feet	Figure 600-1E	
Foreslope Steeper than 6:1 to 4:1	30 feet	Figure 600-1E	30 feet 26 feet 17 feet	Figure 600-1E	17 feet	Figure 600-1E	
Backslope 6:1 or Flatter	27 feet	Figure 600-1E	27 feet 21 feet 15 feet	Figure 600-1E	15 feet	Figure 600-1E	

Table 1. Geometric Criteria

Functional Classification: Interstate **Terrain: Level / Locale: Urban / Mainline Design Speed: 70 miles per hour (mph)**							
Design Feature	**Design Criteria**						**Notes**
	Mainline (70 mph)		**Service Ramp[1] (60/50/35 mph)**		**Local Street (40 mph)**		
Backslope Steeper than 6:1 to 4:1	25 feet	Figure 600-1E	25 feet 19 feet 15 feet	Figure 600-1E	15 feet	Figure 600-1E	
Backslope Steeper than 4:1	21 feet	Figure 600-1E	21 feet 15 feet 15 feet	Figure 600-1E	15 feet	Figure 600-1E	
Lanes							
Number of Thru Lanes	>3 (by alt)		2 or 1		Varies		
Lane Width	12 feet	Figure 301-4E	12 feet (2-lane) 16 feet (1-lane)	Figure 303-1E	12 feet 11 feet (Minimum)	Figure 301-4E	
Shoulders							
Treated Width	12 feet Right 12 feet Median	Figure 301-3E	6 feet Right / 3 feet Left	Figure 303-1E	2 feet Curb & Gutter	Figure 301-4E	Treated width shown applies to the six-lane alternative. The median side can be reduced to 4 feet on the four-lane alternative; however, 12 feet is used for future MOT considerations in all median barrier selections.
Graded Width with Barrier or Foreslopes Steeper Than 6:1	17 feet Right 17 feet Median	Figure 301-3E	15 feet Right / 9 feet Left 11 feet Right / 9 feet Left	Figure 303-1E	---	---	Top number applies to 2-lane, bottom number applies to 1-lane
Graded Width without Barrier and Foreslopes 6:1 or Flatter	12 feet Right 12 feet Median	Figure 301-3E	10 feet Right. / 6 feet Left 8 feet Right / 6 feet Left	Figure 303-1E	---	---	Top number applies to 2-lane, bottom number applies to 1-lane
Normal Barrier Offset	14 feet Right 14 feet Median	Figure 301-3E	12 feet Right / 6 feet Left 8 feet Right / 6 feet Left	Figure 303-1E	4 feet Minimum	602.1.5.1	Top number applies to 2-lane, bottom number applies to 1-lane
Assumed Median Width	30 feet	---	---	---	---	---	
Shoulder Pavement Cross Slopes (normal)	0.04	Figure 301-8	0.04	Figure 301-8	0.04	Figure 301-8	
Terminal Classification							
Freeway Terminal	---	---	High-Speed	Figure 503-2aE Figure 503-3aE	---	---	
	---	---	Low-Speed	Figure 503-4aE Figure 503-4bE	---	---	

Table 1. Geometric Criteria

Functional Classification: Interstate **Terrain: Level / Locale: Urban / Mainline Design Speed: 70 miles per hour (mph)**							
Design Feature	**Design Criteria**						**Notes**
	Mainline (70 mph)		**Service Ramp[1] (60/50/35 mph)**		**Local Street (40 mph)**		
Freeway Terminal	---	---	CD	Figure 504-1E Figure 504-2E	---	---	
	---	---	Multi-Entrance	Figure 505-1aE Figure 504-2E	---	---	
			Multi-Exit	Figure 505-2aE Figure 505-2bE			

Notes:
The listed design criteria will require verification prior to use for design.

1. For Service Ramps, top line indicates upper range speed (60 mph); middle line indicates middle range speed (50 mph), bottom line indicates lower range speed (35 mph).
2. References to figures within the table are applicable to the ODOT *Location and Design Manual Volume 1*.
3. Grades may be increased by one percent for freeways in developed areas where a flatter grade is precluded.
4. Where street lighting is present, the minimum length of sag vertical curve is three times the speed.
5. Local streets may have different criteria as required by the local municipalities.

2.3.3 Proposed Interchange Options

Improvement options are proposed at five existing interchanges along I-75 (Appendix A). All conceptual build alternatives include upgrading geometric deficiencies as follows:

- Breese Road: Upgrade geometric deficiencies of the on-ramp acceleration length.
- SR 65: Upgrade geometric deficiencies of the on-ramp acceleration lengths and re-align Yoder Road.
- Fourth Street: Upgrade deficient ramp curves and acceleration lengths.
- SR 309/117: Upgrade deficient curve deceleration and acceleration lengths and remove Dean Avenue from on-ramp.
- SR 81: Upgrade deficient acceleration lengths.

Interchange options that include more than upgrading geometric or design deficiencies were also included in the analysis. These additional interchange options were analyzed for their costs and ability to improve the function of an interchange. The purpose of the additional options was to determine if they could achieve an increased function over the rehabilitation options at comparable costs.

Additionally, a new interchange is proposed between the Fourth Street and SR 309/117 interchanges. This new interchange would be located on the abandoned railroad corridor. As an option, it would replace the Fourth Street and SR 309/117 interchanges, which would be removed. All proposed interchange options can be applied to Alternatives A, B, C, and D. Interchange options are as described in Table 2.

Table 2. Interchange Options

Option	Description
Breese Road Interchange	
Breese Road Rehabilitation	• Upgrade deficiencies of the on-ramp acceleration length
Breese Road Option 1 (See Appendix A; Figure A2)	• Construct new diamond interchange north of Breese Road and eliminate old Breese Road interchange • Allow for future connection of Fort Shawnee Industrial Drive from Dixie Highway to McClain Road for development potential • I-75 overpass with link to re-aligned Fort Shawnee Industrial Drive • Re-align Fort Shawnee Industrial Drive away from railroad tracks to provide turn lane storage off tracks • On Figure A2, only work in yellow is proposed at this time
Breese Road Option 2 (See Appendix A; Figure A3)	• Split interchange at Breese Road by relocating southbound ramps to the north to terminate at a re-aligned Fort Shawnee Industrial Drive • Relocate Delong Road to maintain 600-foot limited access right of way along Breese Road • Re-align Fort Shawnee Industrial Drive to intersect with Breese Road further away from railroad tracks
Breese Road Option 3 (See Appendix A; Figure A4)	• Shift southbound exit ramp to terminate at a re-aligned Fort Shawnee Industrial Drive • Relocate Delong Road to maintain 600-foot limited access right of way along Breese Road • Re-align Fort Shawnee Industrial Drive to line up with the southbound entrance ramp • Southbound on-ramp to I-75 to remain
SR 65 Interchange	
SR 65 Rehabilitation (See Appendix A; Figure A5)	• Upgrade geometric deficiencies of the on-ramp acceleration lengths • Remove access from Yoder Road to the northbound I-75 on-ramp • Reconfigure Yoder Road to intersect with SR 65 behind gas station
Fourth Street Interchange	
Fourth Street Rehabilitation	• Upgrade deficient ramp curves and acceleration lengths
Fourth Street Option 1 (See Appendix A; Figure A6)	• Upgrade the existing Fourth Street interchange with northbound ramps in a diamond configuration • Geometric upgrades at entrance and exit ramps
Abandoned Railroad Interchange	
Abandoned Railroad Option 1 (See Appendix A; Figure A7)	• Use the abandoned railroad corridor for new interchange and close interchanges at Fourth Street and SR 309/117 • Compressed diamond interchange configuration • Multiple options for tying Greely Chapel Road to SR 117 • Provide connection between Fourth Street and SR 309 on west side of I-75 • Reconstruct Fourth Street overpass

Table 2. Interchange Options

Option	Description
Abandoned Railroad Option 2 (See Appendix A; Figure A7)	• Use the abandoned railroad corridor for new interchange and close interchanges at Fourth Street and SR 309/117 • Compressed diamond interchange configuration • Multiple options for tying Greely Chapel Road to SR 117 • Provide connection between Fourth Street and Kibby Road/Bellefontaine Road on west side of I-75 • Reconstruct Fourth Street overpass
Abandoned Railroad Option 3 (See Appendix A; Figure A8)	• Use the abandoned railroad corridor for new interchange and close interchanges at Fourth Street and SR 309/117 • Compressed single point urban interchange (SPUI) configuration • Multiple options for tying Greely Chapel Road to SR 117 • Provide connection between Fourth Street and SR 309 on west side of I-75 • Reconstruct Fourth Street overpass
Abandoned Railroad Option 4 (See Appendix A; Figure A8)	• Use the abandoned railroad corridor for new interchange and close interchanges at Fourth Street and SR 309/117 • Compressed single point urban interchange (SPUI) configuration • Multiple options for tying Greely Chapel Road to SR 117 • Connect between Fourth Street and Kibby Road/Bellefontaine Road on west side of I-75 • Reconstruct Fourth Street overpass
SR 309/117 Interchange	
SR 309/117 Rehabilitation	• Upgrade deficient curve deceleration and acceleration lengths and remove Dean Avenue from ramp
SR 309/117 Option 1 (See Appendix A; Figure A9)	• Compressed diamond configuration at SR 309/117 • Geometric upgrades at on-ramps • End Dean Avenue at Wellesley Drive to separate from existing northbound ramp • Limited access right of way approximately 450 feet to Leonard Avenue • Limited access right of way approximately 525 feet to Roschman Avenue • Improve Willard Avenue and Saratoga Avenue to accommodate increased traffic from Bryn Mawr Avenue and Dean Avenue
SR 309/117 Option 2 (See Appendix A; Figure A10)	• Upgrade the existing SR 309/117 interchange on the east side • Geometric upgrades at on-ramps • End Dean Avenue at Wellesley Drive to separate from existing northbound ramp • Improve Willard Avenue to accommodate increased traffic from Bryn Mawr Avenue and Dean Avenue • Eliminate left turns for SR 309/117 eastbound traffic between South Leonard Avenue and Willard Avenue • Limited access right of way approximately 600 feet from southbound ramps • Limited access right of way approximately 550 feet past Roschman Avenue on east side
SR 117 Option 1 (See Appendix A; Figure A11)	• Relocate SR 309/117 interchange on historic alignment (Bellefontaine Road) of SR 117 • Dead end SR 309 at Dean Avenue • Geometric upgrades at on-ramps

Table 2. Interchange Options

Option	Description
SR 81 Interchange	
SR 81 Rehabilitation	• Upgrade deficient acceleration lengths
SR 81 Option 1 (See Appendix A; Figure A12)	• Shorten bridge carrying I-75 over SR 81 • Diamond interchange at SR 81 • Access drive required for 600-foot limited access right of way • Ramp termini shifted to avoid properties on southwest corner of interchange • New five-lane configuration of SR 81 to satisfy traffic capacity needs. New roadway shifted to the north by 30 feet to provide room for access road • Tie-in Neubrecht Road to reconstructed SR 81
SR 81 Option 2 (See Appendix A; Figure A13)	• Shorten bridge carrying I-75 over SR 81 • Diamond interchange at SR 81 • Optional roundabout at ramps to and from I-75 • Access drive required for 600-foot limited access right of way • Ramp termini shifted to avoid properties on southwest corner of interchange • New five-lane configuration of SR 81 to satisfy traffic capacity needs. New roadway shifted to the north by 30 feet to provide room for access road • Tie-in Neubrecht Road to reconstructed SR 81

3.0 AFFECTED ENVIRONMENT

Information on environmental resources and characteristics of the study area was collected to provide a preliminary indication of the potential environmental impacts of the four-lane and six-lane conceptual alternatives. The following paragraphs summarize the results of the environmental data collection and analysis for the study area. A discussion of impacts is presented Section 5.0.

The following reports have been completed through Step 5 of Ohio Department of Transportation's (ODOT) Project Development Process (PDP). These reports identify the affected environment and development of conceptual alternatives for the Allen 75 Study.

- Red Flag Summary (2005)
- Existing and Future Conditions (2005)
- Conceptual Alternatives (2006)
- Strategic Plan (2006)
- Environmental Technical Reports
    - Environmental Site Assessment Screening Report (2007)
    - Level I Ecological Survey Report (2007)
    - Phase I History/Architecture Reconnaissance Survey (2007)
    - Phase II History/Architecture Investigations of the Sewage Lift Station and the Indiana, Columbus and Eastern Traction Co. Substation (2007)
    - Geotechnical Review (2007)
    - Preliminary Geotechnical Exploration (2007)
- Preliminary Maintenance of Traffic Alternatives Analysis Report (2007)

3.1 Existing Roadway Network

Interstate 75 (I-75) exhibits numerous conditions that do not meet current ODOT design standards (Figure 3). Examples of deficient conditions along the portion of I-75 in the study area include:

- Inadequate inside/outside shoulder width on the mainline and ramps
- The superelevation of the freeway (i.e., banking or cross sloping of a road curve to enable vehicles to counteract the excess centrifugal force)
- Turning radii
- Acceleration/deceleration lane lengths
- Stopping sight distance
- Overhead structure horizontal and vertical clearance
- Mainline bridge lateral clearance

Within the study area, there are several local roads that parallel or intersect I-75. Due to their proximity to the interstate, these roads may be impacted by I-75 improvements. Table 3 summarizes the design and legal speeds by functional classification of the roadways within the study area that may be affected by the conceptual alternatives.

Table 3. Design Designations of Roadways within the Study Area

Route	Existing Number of Lanes	Functional Classification	Posted Legal Speed (mph)	Proposed Design Speed (mph)
I-75	4	Urban Interstate	65	70
SR 65	2	Urban Principal and Minor Arterial	45	50
SR 81	4	Urban Principal and Minor Arterial	45	50
SR 309	5	Urban Principal Arterial	40	50
SR 117	5	Urban Principal and Minor Arterial	40	50
Breese Road	2	Urban Minor Arterial	35	40
Fourth Street	2	Urban Minor Arterial and Collector	45	50
Reservoir Road	2	Minor Arterial	45	50
Greely Chapel Road	3	Urban Collector	45	50
Hanthorn Road	2	Urban Collector	45	50
McClain Road	2	Urban Collector	55	60
Commerce Parkway	2	Local	25	30
Fort Shawnee Industrial Drive	2	Local	25	30
Yoder Road	2	Local	45	50

Source: ODOT, Technical Services, 2007
mph = miles per hour

3.2 Existing Traffic

3.2.1 Volumes

Recorded 2005 traffic volumes on I-75 in the study area range from 42,220 vehicles per day (vpd) between Breese Road and SR 65 to 48,460 vpd between SR 117/309 and SR 81, at the northern end of the study area.

I-75 is a major interstate trucking route in Ohio. Trucks make up almost 40 percent of the traffic using the interstate on a daily basis and account for approximately 25 percent of the peak hour traffic volume within the study area.

Traffic volumes have grown substantially over the past decade along the portion of I-75 in the study area, and are forecasted to grow through the 2035 design year. Two sets of traffic projections were obtained for I-75 within the study area. One set was completed prior to 2000 and is based on 1995 traffic counts (Table 4).

Table 4. I-75 Traffic Counts and Projections from 2000

Section of I-75	1995 Average Annual Daily Traffic	2005 Average Annual Daily Traffic	2020 Average Annual Daily Traffic
MP 0.00 to 3.28 (Auglaize County Line to McClain Road overpass)	29,237	33,966	41,060
MP 3.28 to 4.23 (McClain Road to SR 65)	24,656	28,645	34,628
MP 4.23 to 4.72 (SR 65 to near Hanthorn Road)	25,899	30,088	36,372
MP 4.72 to 6.13 (Near Hanthorn Road to Fourth Street)	25,955	30,152	36,451
MP 6.13 to 7.03 (Fourth Street to SR 117/SR 309)	29,940	34,782	42,047
MP 7.03 to 8.75 (SR 117/SR 309 to SR 81)	31,345	36,415	44,021
MP 8.75 to 9.00 (SR 81 interchange area)	23,412	27,201	32,882

Source: ODOT-Office of Technical Services, 2000.
Note: MP = mile post

For the second set of traffic projections, ODOT Certified Traffic was provided in September 2007 for the entire study area in the years 2015 and 2035. Certified Average Daily Traffic (ADT), AM Peak hour and PM Peak hour volumes were provided along with truck factors. Certified mainline ADT volumes are shown in Table 5. Certified volumes were used for all analyses of future opening year and design year conditions.

Table 5. I-75 Mainline Certified Traffic Projections

Section of I-75	2005 Average Annual Daily Traffic	2015 Average Annual Daily Traffic	2035 Average Annual Daily Traffic
Auglaize County Line to Breese Road	41,290	41,710	50,820
Breese Road to SR 65 (St. Johns Road)	42,220	43,250	52,590
SR 65 (St. Johns Road) to Fourth Street	43,570	45,300	54,700
Fourth Street to SR 117 (Bellefontaine Road)	44,220	45,520	54,830
SR 117 (Bellefontaine Road) to SR 81	48,460	49,540	60,240
SR 81 to Blue Lick Road	40,620	40,280	49,500

Source: ODOT-Office of Technical Services, 2005 and 2007.

Traffic volumes on local roads within the study area are presented in Table 6. As shown in Table 6, growth in the traffic volumes on the local road network does not keep pace with traffic growth rates on I-75 mainline. The differences in future traffic volumes on the local roads compared to I-75 indicates that the traffic on I-75 is mainly through traffic, which does not normally affect the local road network.

Table 6. Traffic Volumes on Local Roads within the Study Area

Roadway Section	2005 Counts (vehicles per day)	2035 Counts (vehicles per day)
SR 65 (St. Johns Road)	7,171	9,480
Fourth Street	5,455	8,430
SR 309 (Harding Highway)	33,690	34,620
SR 117 (Bellefontaine Road)	13,470	32,260

Source: ODOT Central Office; 2005 ground counts collected by PB

3.2.2 Capacity

Level of service (LOS) for mainline segments was calculated using certified traffic volumes provided by ODOT. Within the study area, the LOS for all segments of the I-75 mainline will operate at LOS B or C in the 2035 design year and the no-build scenario. For all interchange on and off ramps from the I-75 mainline, analyses show an expected LOS C or D in the 2035 design year, No Build alternative.

Lima Allen County Regional Planning Commission (LACRPC), the metropolitan planning organization, has identified “deficient and deteriorating” levels of service on a number of other corridors, including the Bellefontaine/SR 117 corridor, from Kibby Road to I-75, and the SR 81 corridor from I-75 to North Street.

3.2.3 Crash Data and Safety

The ODOT summarizes crash data for the state of Ohio on an annual basis. These data are summarized as crash rates for various classes of roadways and highways. This portion of I-75 in Allen County is classified as an urban interstate. Average crash rates were obtained from the ODOT Office of Systems Planning and Program Management. The average crash rate for similar urban interstates throughout Ohio for the three years (2001 to 2003) is 0.35 crashes per million vehicle miles (mvm). The average crash rate for four-lane divided urban interstates throughout Ohio for the most recent three years (2004 to 2006) is 1.3613 crashes per million

vehicle miles (mvm). The crash rates for the segments of I-75 within the study area are shown in Table 7.

Table 7. Crash Data and Crash Rates

I-75 Segment	Length	Total Crashes by Year						Average Crash Rate	Average Crash Rate
	(miles)	2001	2002	2003	2004	2005	2006	(2001-2003)	(2004-2006)
Auglaize County Line to Breese Road	2.12	4	3	4	22	20	13	0.137	0.574
Breese Road to SR 65 (St. Johns Road)	2.11	15	16	21	24	23	26	0.579	0.748
SR 65 (St. Johns Road) to Fourth Street	1.88	28	30	33	45	28	34	1.095	1.193
Fourth Street to SR 309/117	0.92	27	22	25	17	29	20	1.795	1.482
SR 309 /117 to SR 81 (Ada Road)	1.72	38	30	46	43	36	25	1.354	1.139
SR 81 (Ada Road) to Bluelick Road	3.08	25	33	48	19	19	18	0.848	0.409

Crash statistics obtained from ODOT for the *Highway Safety Program* listing of Freeway High Crash locations showed that there are no High Crash Segments along I-75 mainline within the study area. One non-freeway segment within the study area is included in *ODOT's 2006 Non-Freeway High Crash Locations* data at SR 117 between SR 65 and Greeley Chapel Road. Additionally, the intersection of SR 309 with SR 117 and the adjacent roadway segment are included on the list of *ODOT's Safety Hotspots* and *Congested Areas.*

3.3 Socioeconomics

3.3.1 Population and Neighborhoods

The study area includes portions of the City of Lima, the Village of Fort Shawnee, and Bath, Perry and Shawnee townships in Allen County; and the Village of Cridersville, and Duchouquet Township in Auglaize County.

Although similar in area, the populations of the two counties are very different in terms of size, with Allen County having more than twice the population of Auglaize County. Table 8 presents a summary of demographic data for Allen and Auglaize counties.

Table 8. 2000 Demographics for Allen and Auglaize Counties

Characteristics	Allen County		Auglaize County	
	Number	Percent	Number	Percent
Total Population	108,473	100%	46,611	100%
Persons age 65+	15,366	14%	6,692	14%
Children (age 0 to 17)	28,092	26%	12,873	28%
Median Age	36	N/A	37	N/A
Hispanic	1,545	1%	310	1%
White*	92,147	85%	45,735	98%
Black*	13,225	12%	110	0%
Native American*	224	0%	86	0%
Asian*	601	1%	189	0%
Other Races*	699	1%	106	0%
Two or more races	1,577	1%	385	1%

Note: * Race designations are for individuals who checked only one race.
Source: Ohio State University Extension Data Center County Profiles (www.osuedc.org).

Table 8 shows that approximately 25 percent of each county's population is below the age of 16, and 14 percent of the population is age 65 or over.

Racial and ethnic diversity in Allen and Auglaize counties is increasing. The number of Hispanics, African-Americans, Asians, American Indians, and other races increased between 1990 and 2000. Whites represent the largest group in the two-county area. African-Americans are the largest minority group in the two counties, consisting of 13,335 persons in 2000.

The Census data for 1990 and 2000 show that the population of Allen County has decreased slightly over the last decade, with the highest percentage losses in population from the Village of Fort Shawnee and the City of Lima (Table 9).

Table 9. Population Trends 1990-2000

Area	1990 Population	2000 Population	Change in Population	Change in Population (%)
State of Ohio	**10,847,115**	**11,353,140**	**506,025**	**+4.7**
Allen County	**109,755**	**108,473**	**-1,282**	**-1.2**
City of Lima	45,549	40,081	-5,468	-12.0
Village of Fort Shawnee	4,128	3,855	-273	-6.6
Bath Township*	10,105	9,819	-286	-2.8
Perry Township*	3,577	3,620	43	+1.2
Shawnee Township*	8,005	8,365	360	+4.5
Auglaize County	**44,585**	**46,611**	**2,026**	**+4.5**
Village of Cridersville	1,885	1,817	-68	-3.6
Duchouquet Township*	12,311	12,512	201	+1.6

Note: * Population counts for townships exclude areas that are part of the City of Lima and the villages of Fort Shawnee and Cridersville. Source: 1990 and 2000 US Census.

Census data for Auglaize County show an overall 4.5 percent increase in population, with Cridersville experiencing a loss of 68 persons between 1990 and 2000. The remainder of Duchouquet Township experienced a 1.6 percent population increase in that decade.

The Ohio Department of Development projects a slight population loss over the next 25 years for Allen County (Table 10). The total number of residents is anticipated to decline to approximately 106,000 in 2020, and 105,000 by 2030. This represents a population loss of about one percent per decade, a continuation of the 1990-2000 trends.

Table 10. Population Projections

Year	Allen County	Auglaize County
1990	109,755	44,585
2000	108,473	46,611
2020	105,875	49,738
2030	104,724	52,060

Sources: 1990 and 2000 US Census, and Ohio State University Extension Data Center County Profiles (www.osuedc.org).

Population projections for Auglaize County anticipate total growth of 16.7 percent between 2000 and 2030, a rate of less than one-half percent annually.

Locations of neighborhoods and communities in the study area include portions of the City of Lima, the Village of Fort Shawnee, and Bath, Perry and Shawnee townships in Allen County. The largest community in the project area is the City of Lima. Several neighborhoods are located along the study area. These neighborhoods include Lost Creek, Bath Leonard, and Northwest Perry (Figures 4A – 4C).

Several areas of mobile homes are located near the interstate and interchanges, specifically at the Breese Road interchange, and north of the SR 309/SR117 interchange on the east and west sides of I-75 (Table 11). A small community is located northeast of the SR 309 interchange. Community businesses are located at the SR 309 interchange. Mobile home communities are shown in Figure 4.

Table 11. Mobile Home Communities

Mobile Home Community	Location
Country Estates Mobile Home	1800 Reservoir Road, Lima 45804
Indian Village Mobile Home	3850 DeLong Road, Lima 45806
Walton Mobile Home Court	551 South Leonard Avenue, Lima 45804
Unnamed Mobile Home Park	Adjacent to Stewart Road & I-75, Lima

3.3.2 Land Use

The study area contains a diverse range of land uses, including residential, farmland, retail/commercial, institutional, warehouse and industrial (Figure 5). A mix of modern development and rural elements characterized the portion of I-75 along the east edge of Lima's corporate boundaries. Additionally, quarries and a major reservoir lie immediately adjacent to the interstate.

Southeast of Lima are older historic homes in rural settings and small cross roads communities interspersed with more recent suburban development. The greatest concentration of residences in the study area is located next to the Lost Creek Country Club, north of SR 309. The Lost Creek Subdivision is on the east side of I-75 near the Lost Creek Reservoir. Residences are also located along Bryn Mawr Avenue near Lost Creek Reservoir. Another large residential neighborhood is located on the west side of I-75 along Leonard and Turner streets. A mobile home park is adjacent to this neighborhood. There are several smaller neighborhoods in the

study area. Residences, for the most part, are located along major roadways and arterials in the study area. Agricultural land is largely located along the east side of I-75 between Fort Shawnee and Fourth Street and at the north end of the study area.

Commercial clusters have been developed at interchanges along I-75 as well as at the main intersections of highways. Typical highway-related businesses are located at each of the interchanges in the study area. Hotels and restaurants are concentrated at the SR 309/SR 117 interchange. Industrial buildings (distribution and warehousing facilities) are scattered throughout the study area. The Fort Shawnee Industrial Park is located on the west side of I-75 near the Breese Road interchange.

Municipal land uses are located at the Fourth Street interchange. A state highway patrol station is on the east side of I-75 and an Ohio Department of Transportation, District 1 property is on the west side of I-75.

3.3.3 Community Resources

Community resources are facilities or services accessible to the public that can improve the quality of life for local residents. Examples of community resources include churches, cemeteries, fire and police stations, medical facilities, schools, and courts/government administrative offices. Community facilities and services within the study area are shown on Figure 4.

Public safety facilities (police, fire stations, etc.) that provide services to the study area consist of two law enforcement facilities. One hospital is located adjacent to the study area on Bellefontaine Avenue. The Heart Institute of Northwest Ohio is building a facility on SR 65 that will house offices and outpatient services. No schools are located within the study area. Three churches were identified within the study area (Table 12). Government buildings and other public agency offices are concentrated near downtown Lima.

Table 12. Churches within the Study Area

Name	Location
Full Gospel Tabernacle	1520 Stewart Road
Lima Missionary Baptist	3085 Yoder Road
Northwest Baptist Church	2696 Greely Chapel Road

Parks and other recreational facilities in the study area are listed in Table 13 and shown on Figures 4A – 4C. These include only privately-owned facilities; therefore there are no Section 4(f) properties within the study area. Section 4(f) applies to publicly-owned parks and recreation areas, wildlife refuges, and cultural resources eligible for or listed on the National Register of Historic Places.

Table 13. Recreational Facilities

Recreation Facility	Location	Ownership
Lost Creek Country Club	2409 Lost Creek Blvd., Lima 45804	Private
FAST	3477 S. Dixie Highway, Lima 45804	Private
Indian Village Community Center	3850 Delong Road, Lima 45806	Private

Section 6(f) applies to an area or facility that has received Land and Water Conservation Fund (LWCF) assistance. Three areas have received LWCF assistance within Allen County, Ohio (Appendix C). None of these Section 6(f) properties are within the study area.

3.3.4 Economic Development

3.3.4.1 Income Trends

Income levels for Allen County are below state and national averages. Income levels for Auglaize County are similar to the state and national medians. Table 14 presents the counties' income statistics by type, and compares them against Ohio income figures for 1989 and 1999.

Table 14. Income Trends 1989-1999

Income by Type and Year	Ohio	Allen County	Auglaize County	Allen County as % of Ohio	Auglaize County as % of Ohio
1999					
Median Household	$ 40,956	$ 37,048	$ 43,367	90.5%	105.9%
Median Family	$ 50,037	$ 44,723	$ 50,024	89.4%	100.0%
Median Non-Family	$ 24,005	$ 20,426	$ 22,672	85.1%	94.4%
Per Capita	$ 21,003	$ 17,511	$ 19,593	83.4%	93.3%
1989					
Median Household	$ 28,076	$ 27,166	$ 30,090	96.8%	107.2%
Median Family	$ 34,351	$ 32,513	$ 35,312	94.6%	102.8%
Median Non-Family	$ 15,645	$ 14,467	$ 14,577	92.5%	93.2%
Per Capita	$ 13,461	$ 11,830	$ 12,398	87.9%	92.1%

Source: 1990 and 2000 US Census.

3.3.4.2 Labor Force

The LACRPC report *Comprehensive Economic Development Strategy for Allen County, Ohio 2005* states that almost 25 percent of Allen County's population is below the age of 16 and another 14 percent of the population is over age 65, the typical age of retirement, and that the median age is increasing. Auglaize County's population is similar to Allen County. Approximately 28 percent of the population is below the age of 16 and approximately 14 percent of the population is over the age of 65. This indicates that due to the age of the population more than a third of it is not able to fully contribute to the economic growth of the area.

3.3.4.3 Employment

Total employment for both counties increased over the 1990 to 2000 period, as shown in Table 15. More recent figures, from 2002, show a decrease in employment levels.

Table 15. Total Employment for Selected Years

Year	Allen	Auglaize
1990	47,164	16,169
2000	51,607	17,830
2002	48,223	16,621

Source: Ohio State University Extension Data Center County Profiles (www.osuedc.org) (2005).

The LACRPC report *Comprehensive Economic Development Strategy for Allen County, Ohio 2005* included an analysis examining the trends in employment by sector between 1990 and 2000. The five sectors examined, in 2001, made up almost half of the total employers in the county, and two-thirds of the county's employees. Table 16 presents the number of employees working in these industries for the first quarters of 1990 and 2000. The percentage change shown in the table supports the assessment that Allen County's

economy and employment base has been transitioning away from manufacturing, and towards health care and service-related businesses.

Table 16. Employment for Allen County

Non-Agricultural Employment by Primary Sector and Year			
Sector	**1990**	**2000**	**% Change**
Manufacturing	15,588	13,213	-15.3
Wholesale Trade	2,880	2,903	+0.7
Retail Trade	12,173	13,380	+9.9
Health Care & Social Assistance	6,432	9,093	+41.3
Accommodations & Food Services	3,599	4,152	+15.4

Source: Lima-Allen County Regional Planning Commission (2005)

In Allen County, manufacturing is decreasing as a proportion of total employment as the economy diversifies – in 1990, manufacturing employment made up 47.9 percent of the county's total employment.

Health care is a major employer in the county, with St. Rita's Medical Center listed as the largest private employer in the county according to a recent list compiled by the Allen Economic Development Group (AEDG). St. Rita's Medical Center employs 2,700 individuals. Lima Memorial Health System is the third-largest employer, with 1,450 employees.

The agricultural sector has decreased in both Allen and Auglaize counties. The sales of agricultural goods and services in Allen County declined just over 31 percent between 1997 and 2002 (LACRPC, 2005). The number of operating farms also decreased by 9.3 percent during this same time period, from 1,070 in 1997 to 970 in 2002. This corresponds to a four percent decrease in the number of acres in farm use from 201,000 to 193,000 acres (Ohio State University, Extension Data Center, 2005). The number of farms operating in Auglaize County decreased 8.8 percent from 1,130 to 1,030 between 1997 and 2002, with an associated 3,000-acre (1.4 percent) decrease in the number of acres farmed from 217,000 to 214,000 acres (OSUEDC, 2005).

3.3.4.4 Business Locations

Highway-related businesses include gas stations/service stations, convenience stations, restaurants/drive-thru, hotels/motels, and any other type of business that caters to regional traffic. These types of businesses are located at the SR 309/117, SR 65, and SR 81 interchanges. A new restaurant is planned to be located at Dean Avenue at the SR 309/117 interchange ramp, adjacent to I-75. A new hotel is also proposed to be constructed at this interchange in the location of a previous restaurant. A new retail building is planned to be built off of Leonard Avenue.

Community businesses are those that provide a service for a specific neighborhood or community. Community businesses were identified at the SR 65, SR 309/SR 117, and SR 81 interchanges. Industrial parks are located in Fort Shawnee at the Breese Road interchange and on SR 65 (Figure 6). New facilities include Alpla Inc. which opened in 2007 on Fort Shawnee Industrial Drive.

3.3.4.5 Economic Development Plans

To address future economic growth, the LACRPC developed a Community Economic Development Strategy (CEDS) for Allen County with input from the area's various political subdivisions and stakeholders. During this process, the communities formulated long-term visions for their future, and developed strategies to achieve the goals set. The outcome of this process resulted in a list of ten strategic goals, which are presented in Table 17.

Table 17. Community Economic Development Strategy (CEDS) Strategic Goals

Community Economic Development Strategy Goals	
1	Attract, expand, and retain jobs that share wage rates equal to, or greater than, comparative statewide averages.
2	Preserve and enhance agriculture as a competitive industry and way of life.
3	Reduce long-term unemployment and poverty, especially among minority groups.
4	Rehabilitate unsafe, aging, and insufficient infrastructure to include roads, utilities, schools, parks and housing.
5	Increase residents' educational attainment and skill levels through improved access to educational/vocational facilities/programs.
6	Alleviate local government fiscal strain.
7	Monitor and improve Allen County's national, state and regional competitiveness in attracting new business.
8	Promote and increase entrepreneurial spirit within the community.
9	Balance the protection of our natural resources such as ground water, wetlands, and animal habitats with growth and prosperity.
10	Guide controlled residential developments into planned places and encourage urban redevelopment.

Source: LACPRC *Comprehensive Economic Development Strategy for Allen County, Ohio 2007*

Development projects that could have an impact on the region's future economic base were identified by the CEDS. Table 18 presents a list of eight projects identified by the CEDS report as likely to have the greatest impact on the region's economic base.

Table 18. CEDS Recommended Future Economic Projects

Recommended Project Listing Summary	
Project / Sponsor	**Project Summary**
Greater Ohio Ethanol City of Lima	Greater Ohio Ethanol will create 30 new jobs and an investment of $70 million locally. The project requires rail and roadway infrastructure improvements. This facility will be operating in December 2007 and is expected to be at full capacity by March 2008.
Bio Diesel Systems City of Lima	This project would create 20 – 30 jobs and an investment of $30 million. The project requires rail improvements to the site. This project is planned for June 2008.
Ford Motor Company LEP Bath Township	This completed upgrade will bring an additional 100,000 semi-trucks per year to the Lima Engine Plant. Highway access to and from I-75 will need to be addressed for this project; roadway intersection improvements will be required. *Ford's Way Forward* plans for additional business for the plant in the long-term future.
Consumer Products Logistics Center Allen County	This project would create an estimated 300 new jobs and has an approximate value of $100,000,000. On a yearly basis, approximately 250,000 semi-trucks will pick up and deliver to the facility. The project would require roadway and rail upgrades. This warehouse is located on Reservoir Road on the east side of I-75. The main access to and from I-75 will be via SR 81/Thayer Road.

Table 18. CEDS Recommended Future Economic Projects

Recommended Project Listing Summary	
Project / Sponsor	**Project Summary**
Gateway Commerce Park Enhancements Allen County	Gateway Commerce Park is a 280-acre industrial park located off of SR 65 with immediate access to state and interstate routes fully serviced by utilities and interior roadways. The City of Lima and Allen County have invested $3 million to date in site acquisition and development. To fully utilize the Park, however, floodplain and wetland areas must be addressed and rail access established. To facilitate development the Park requires the design and construction of a spur to allow freight service from the Indiana & Ohio Railroad. Project components include environmental survey, engineering, land acquisition, wetland/floodplain remediation, engineering, and construction of the rail spur. Required components are estimated at $7.75 million. This industrial park is immediately adjacent to an additional 325 acres that is currently being made available for development.
Bellefontaine Corridor City of Lima	Project includes infrastructure improvements, such as lighting, signage, landscaping, and right of way improvements from I-75 to Woodlawn Avenue to improve business attraction and new construction on the corridor linking two expanding hospital campuses. Attraction of new medical facilities, services, and retail is anticipated to result in over $10 million in construction and 120 new medically related jobs. The City of Lima has invested $1.2 million over four years in improvements to the corridor. Project cost is anticipated to reach $3.5 million.
Lima South Industrial Site Allen County	Large industrial zoned site with rail service, I-75 visibility and access to SR 65. Project includes acquisition of 250 acres and infrastructure improvements including upgraded rail siding, extension of water/sewer, installation of an electrical substation and wetland mitigation. Project cost is anticipated to reach $9.5 million.

Source: LACPRC *Comprehensive Economic Development Strategy for Allen County, Ohio 2005 and 2007*

In addition to projects identified by the CEDS, Proctor & Gamble is expanding its liquid soap production, which is anticipated to be shipped predominantly by truck. The facility is located on Reservoir Road across from Ferguson Reservoir. Currently Proctor & Gamble averages one truck in and out of their facility every 20 seconds, 24 hours a day, seven days a week (AEDG, 2005) or approximately 1.5 million trips annually.

The growth of industrial parks along I-75 may also lead to the growth of Allen County's economic community and transportation needs. Examples of local efforts to develop these industrial parks along I-75 include the establishment of a Foreign Trade Zone (FTZ) between Breese Road and SR 65, northwest of I-75. The Allen County FTZ consists of 350 acres of ground purchased by the Allen County Commissioners that lies under the economic umbrella of the Rickenbacker International Airport in Columbus, Ohio. The economic benefit of the FTZ is that it is free from customs-derived taxation.

3.3.5 Environmental Justice

Communities have been identified within the study area that will require outreach and consideration as environmental justice populations under Executive Order 12898. According to the US Department of Transportation (USDOT) Order 5610.2, a disproportionately high and adverse effect on minority and low-income population is an adverse effect that, "(1) is predominately borne by a minority and/or a low-income population, or (2) would be suffered by

the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population."

The threshold used to identify target areas is 25 percent greater than the county percentage for each population (EJ Guidance, ODOT 2002). A generalized description of the geographic distribution of these communities within the study area is as follows:

- Low income populations are concentrated in and around the City of Lima, west of I-75. The mobile home communities located east and west of I-75 within the study area may or may not fall within the low income populations.
- The City of Lima contains the largest concentration of minority residents in Allen County. In Lima, African Americans constitute approximately 27 percent of the city's total population (LACRPC, 2005). Minority populations are concentrated in and around the City of Lima, west of I-75.
- Elderly populations, residents who are age 65 and older, are concentrated in neighborhoods north of Fourth Street and east of SR 65 in the City of Lima. No retirement communities are present within the study area.

Table 19 shows the percentage of environmental justice populations by Census tracts in the study area. Percentages highlighted in bold text are target areas. Figures 7 and 8 show the locations of each Census tract.

Table 19. Year 2000 Populations by Census Tract

Census Tract, Block Group	Total Population	Minority (Percent of Total)	Low-Income (Percent of Total)	Over 65 (Percent of Total)
112	3,091	**26.4%**	11%	5.2%
113	7,462	2.5%	5.9%	15.7%
116	2,672	6.7%	7.9%	**20.2%**
119	3,484	4.5%	3.4%	15.2%
126	1,986	16.7%	13.7%	**22.1%**
136	1,523	**37.9%**	**33.5%**	8.3%
138	2,763	**63.4%**	**33.1%**	14.8%
Allen County	108,473	15%	12%	14%
State of Ohio	11,353,140	15.1%	10.6%	13.3%

Source: 2000 Census, US Census Bureau

3.4 Natural Environment

The study area is located within a predominantly urban/suburban setting; however various natural resources are present throughout the study area (Figures 9 and 10A – 10H). A *Level 1 Ecological Survey* (2007) was conducted to evaluate ecological resources. The following sections summarize those resources.

3.4.1 Rivers, Streams, Open Water and Floodplains

The study area includes two named rivers, the Ottawa River and Little Ottawa River, two named streams, Freed Ditch and Lost Creek, and 20 unnamed primary headwater habitat streams (Figure 9). The four named watercourses are classified as warm water habitat (WWH) by the Ohio Environmental Protection Agency (OEPA).

The 20 headwater streams were evaluated using the OEPA's Primary Headwater Habitat (PHWH) methods. These streams are categorized as follows:

- Seven are considered Modified Class I streams, which are ephemeral drainage channels which flow seasonally, support little or no aquatic life, and have been altered from their natural state.
- Five are considered Class I PHWH streams, which are natural ephemeral drainage channels which flow seasonally, and support little or no aquatic life.
- Two are considered Modified Class II streams, which are intermittent channels that have been altered from their natural state, but still support a moderately diverse aquatic community.
- Seven are Class II PHWH streams, which support a moderately diverse aquatic community, flow through mainly wooded areas, and have defined riffle complexes.

There are 18 open water areas within the study area. Most are stormwater retention ponds, borrow pits, or former quarry areas. Floodplains within the study area are associated with the Ottawa River, Little Ottawa River, Lost Creek, and Freed Ditch. Floodways have been identified for Little Ottawa River and Lost Creek. Figure 9 shows the locations of floodplains and floodways within the study area.

3.4.2 Terrestrial Ecology

The study area contains seven upland vegetation communities: urban/mowed lawn, agriculture, new field, old field, successional woods, scrub-shrub, and oak-history forest (Anderson, 1982). The animal species observed are typical of developed and edge areas.

3.4.3 Wetlands

One hundred and sixty-three wetlands are within the study area. Forty-nine appear hydrologically connected to waters of the United States, while 114 wetlands appear to be hydrologically isolated. Most wetlands are Category 1 (low quality) and 2 (average or medium quality) wetlands, but three wetlands are Category 3 (high quality) wetlands due to the presence of the state endangered *Juncus interior* (inland rush). The wetlands are emergent, scrub-shrub, and forested wetlands, or wetlands with a combination of these vegetative communities.

3.4.4 Threatened and Endangered Species

The urban setting of the study area limits the presence of natural habitat for state and federally listed threatened and endangered species. Coordination with the Ohio Department of Natural Resources (ODNR), Division of Natural Areas and Preserves determined there are no accounts of bald eagle nest locations in the study area. The United States Fish and Wildlife Service (USFWS) has stated that the Indiana bat (*Myotis sodalis*) could occur within the study area. However, the ODNR and USFWS have no records of the Indiana bat within five miles of the study area (Appendix D). There are no unique ecological sites, geologic features, breeding or nonbreeding animal concentrations within the study area.

During field survey, the Ohio endangered *Juncus interior* (inland rush) was identified within a disturbed fallow field area and specimens were verified by ODNR, Division of Natural Areas and Preserves.

3.5 Farmland

Farming operations, cropland and prime farmland soils are located within the study area. Agricultural activity in the study area focuses on grain production. Primary cash crops cultivated within the study area include soybeans, corn, wheat, and hay. Three farms within the study area identified during site visits maintain open pastures. All of these farms are located on the eastern side of the study area adjacent to the I-75 mainline.

Much of the study area has the general soil requirements for prime farmland, as defined by the United States Department of Agriculture Natural Resource Conservation Service (USDA-NRCS). Most of the prime farmland, however, is considered to be "prime with conditions" and is prone to occasional flooding and standing water which requires drainage improvements (LACRPC, 2005). Soil types which could be considered both prime and prime with conditions farmland are present within the study area. Available local zoning maps and United States Geological Survey (USGS) Soil Mapping indicate that many areas within the study area are currently zoned as RD (Rural District). However, much of the prime farmland along the I-75 corridor near the City of Lima has been lost to urbanization (USDA, 2002). Currently, there are no Agricultural Districts in Allen County. Therefore, none of the farms in the study area are participants in Agricultural Districts.

3.6 Geology

The study area lies in the Indiana and Ohio Till Plain of the Central Lowlands Province. Glacial drift deposits cover the area and have an average depth of approximately 30 to 40 feet, with the exception of end moraines where depths may exceed 100 feet. Underlying bedrock topography is relatively level consisting of Silurain age limestone and dolostone (USDA, 2002). Sloping topographic relief exists in areas of glacial end moraines and where a stream may cross the study area. Less sloping relief is found between the end moraines in areas known as ground moraines. Blount and Pewamo soils are typically found on the more level ground; while Glynwood and Lybrand soils are found on the more rolling grounds. Poor performance of the soil subgrade is between log points 0.00 and 9.05.

Four quarries, owned by National Lime & Stone Company, are located immediately south of the Ottawa River on the east and west sides of the I-75 mainline. There is a tunnel running under I-75 connecting two of these rock quarries at log point 8.18.

Details of geotechnical investigations are reported in the *Preliminary Geotechnical Exploration* (2007), *Geotechnical Review* (2007) and from the *Red Flag Summary* (2005). Preliminary geotechnical concerns for the alternatives include the following:

- Relatively level topography and deep embankments for ramps and overpasses appear to have created less than adequate drainage as several areas of cattails and ponding were observed.
- Soil profile drawings indicate areas of perched ground water at various locations.
- Natural Resources Conservation Service (NRCS) soil mapping indicates the majority of mapped subgrade soil along the alignment is classified as A-7-6 and A-6.
- According to American Association of State Highway and Transportation Officials (AASHTO) procedures and is "very limited" for use as pavements subgrade. The limiting features include low strength, frost action, shrink/swell susceptibility, and shallow depth to saturation zone.

- Soil profile and laboratory information confirm the soil types mapped by NRCS. Laboratory test data indicates subgrade soil have relatively high moisture contents which are near to or greater than the plastic limit.
- The National Lime and Stone Quarry Tunnel is relatively stable and the bolted steel arch support structure is in fair condition. The highway embankment's close proximity to the rim of the quarry on either side will require further investigation of bedrock conditions prior to any highway reconstruction planning for this segment.
- Karst features are not mapped within the study area.
- Drainage is somewhat sluggish with areas of standing water.
- Bedrock encountered from soil borings is predominantly dolomite, shale, and limestone.

3.7 Cultural Resources

3.7.1 History / Architecture

A *Phase I History/Architecture Survey Report* (2007) was completed to identify and record aboveground resources 50 years old or older within the Area of Potential Effect (APE), which is the same as the study area. The APE is a geographic area within which an activity may directly or indirectly cause changes in the character or use of historic properties. The survey determined there are no properties within the APE listed on the National Register of Historic Places (NRHP), National Historic Landmarks, or in the Ohio Historic Bridge Inventory. The NRHP is a list of documented cultural resources worthy of preservation including districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. National Historic Landmarks are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. The Ohio Historic Bridge Inventory is a list of historic bridges currently existing in the state.

Two properties, ALL-672-12 and ALL-670-12, were recommended for a Phase II History/Architecture Survey to determine if they are eligible for listing on the NRHP. A Phase II History/Architecture Survey was completed for these resources and the results are documented in the *Phase II History/Architecture Investigations of the Sewage Lift Station and the Indiana, Columbus and Eastern Traction Co. Substation* (2007). Resource ALL-672-12 is the Indiana, Columbus & Eastern Traction Company Substation located at 2703 Greely Chapel Road. Resource ALL-670-12 is the Sewage Lift Station located at the southwestern corner of Harding Highway and I-75. Based on the Phase II, survey neither of the two resources were found to be eligible for the NRHP.

The Ohio Historic Inventory (OHI) is a continuing record of the architectural and historic properties currently existing in the state. The OHI files at the Ohio Historic Preservation Office (OHPO) list two previously recorded sites within the APE (Figure 4). The sites, ALL-0572-12 and ALL-0573-12 (demolished), are residences dating to circa 1840 and 1890, respectively. The buildings are vernacular types that present historic associations within the theme of agriculture and early settlement. Neither of these sites is recommended for further investigations because they do not present features of sufficient integrity or significance to meet the criteria for NRHP listing and have no known historic associations. Sufficient integrity or significance is criteria for determining if a property is eligible for the NRHP.

3.7.2 Archaeology

Review of the Ohio Archaeological Inventory files identified two archaeological sites previously recorded in the study area. Table 20 provides a description of each site. The Mill's 1914 Archaeological Atlas of Ohio identifies one village site in the study area. This site is shown along the northern shore of the Ottawa River on the border between Section 29 and Section 28 of Bath Township.

Table 20. Archaeological Sites Recorded within the Study Area

Ohio Archaeological Inventory Number	Site Type	Cultural Classification or Time Period	Reference
33-AL-116	Historic Scatter	19th-20th Century	Campagna, Brent and Herr, Dawn 1994 *A Literature Review and Reconnaissance Survey for the Proposed Road Improvements to Greely Chapel Road in Perry Township, Allen County, Ohio.*
33-AL-117	Historic Scatter	19th-20th Century	Campagna, Brent and Herr, Dawn 1994 *A Literature Review and Reconnaissance Survey for the Proposed Road Improvements to Greely Chapel Road in Perry Township, Allen County, Ohio.*

3.8 Hazardous Materials

An *Environmental Site Assessment Screening Report* (2007) was completed to identify areas or parcels known or potentially thought to contain hazardous materials or petroleum within the study area. The environmental site assessment (ESA) screening process involved a review of secondary source information including various mapping sources to provide information on historical land usage and potential sources of contamination on, or adjacent to, parcels or within the study area.

A review of regulatory database information was conducted to identify known environmental concerns at sites in the study area. Sites with known environmental concerns within a one-mile search radius were identified in the Environmental Data Resources, Inc. (EDR) database search reports (December 2004 and March 2005). The database search identified a total of 49 sites in the study area. The locations of these sites are presented in Figures 11A - E. The following is a summary of these sites identified through the database search:

- A total of 23 Leaking Underground Storage Tank (LUST) sites where documented releases of hazardous materials or petroleum product has been recorded with the Bureau of Underground Storage Tank Regulations (BUSTR) records. These sites include trucking distribution centers, gas/service stations, industrial plants, and other local businesses.
- A total of 12 Underground Storage Tank (UST) sites where BUSTR maintains records for the operation and maintenance of USTs. USTs at these facilities typically contain various petroleum products, including gasoline and fuel oils. Sites containing active USTs include trucking distribution centers, gas/service stations, and other local businesses.
- A total of 24 Resource Conservation and Recovery Act (RCRA) Small Quantity Generators (SQG). RCRA-SQG generate between 100 and 1,000 kilograms (kg) of hazardous waste, or less than one kg of acutely hazardous waste, per month. Typical RCRA-SQGs identified within the study area include industrial facilities, trucking distribution centers, and gas/service stations.

- One RCRA Large Quantity Generator (LQG) was identified in the study area. RCRA-LQGs generate over 1,000 Kg of hazardous waste, or over one Kg of acutely hazardous waste, per month. Typical RCRA-LQGs within the study area include industrial facilities and the ODOT facility located at the northeast corner of the Breese Road interchange.
- One Solid Waste Facility/Landfill Site was identified in the study area.
- Twenty-two Facility Index System/Facility Identification Program Summary Report (FINDS) were identified in the study area.
- Six Ohio Spills Emergency Response Database (OH Spills) were identified in the study area.
- Three Ohio Leaking UST File (UNREG TANKS) were identified in the study area.
- One Polychlorinated Biphenyl Activity Database System (PADS) was identified in the study area.

During the visual inspection of the study area, additional sites not listed in the regulatory database were found to have potential environmental concerns. A number of sites were identified in the study area as suspect parcels and are recommended for further investigation. Based on review of current and past land use, regulatory databases, and visual inspection, 28 sites are recommended for a Phase I ESA. The type of sites recommended for further investigation include: gas stations, junkyards, wastewater treatment plant, manufacturing sites, electrical transfer station, automotive repair shops, a car wash, abandoned railroad, mining operations, petroleum storage tank farm, pipeline tank farm, and sites with various concerns (underground storage tanks, drums, staining, etc.).

3.9 Transportation

3.9.1 Pedestrian and Bicycle Facilities

There are no sidewalks or other pedestrian pathways within the study area. The Rotary Riverwalk bikeway is located within the City of Lima; however it is located outside of the study area. A new bikeway, Ottawa River Bikeway, is planned for construction in 2008 that will connect the existing Rotary Riverwalk bikeway in Lima to Ottawa Metro Park (Figure 4C). The bikeway will be constructed underneath the existing I-75 railroad underpass north of Reservoir Road.

3.9.2 Transit

Public transportation is provided in and around the City of Lima and Allen County by the Allen County Regional Transit Authority (RTA). The RTA provides a fixed route bus service in the City of Lima and surrounding areas. Two fixed routes go through the study area: Ohio State University - Rhodes State/East Kibby and Northeast (Figure 12). The RTA also provides an alternative service (Uplift) for persons with disabilities who are unable to use the RTA fixed route bus service.

3.10 Noise

The Allen 75 Study is a Type I project in regards to the noise analysis. The noise analysis was accomplished using the Federal Highway Administration's (FHWA) Traffic Noise Model (TNM) Version 2.5 to predict existing and future traffic noise based on the number of vehicles traveling through the I-75 corridor. Certified traffic counts for I-75 for Opening Year (2015) and Design Year (2035) were used in the noise model.

The analysis was performed for the No Build alternative, Alternatives A, B, and D. Design options for the five existing interchanges and one proposed new interchange were also evaluated but not modeled as part of the preliminary noise assessment. Noise measurements and traffic counts were taken at 42 locations along the I-75 corridor. These data formed a baseline for determining the existing average noise levels along I-75. The noise analysis identified existing and potential noise sensitive sites within the study area. It also determined future noise levels for the No Build alternative, conceptual build alternatives, and interchange options. Separate analyses were performed for the future No Build and build alternatives scenarios. The analyses results were compared to the existing (2007) average noise levels to determine the changes in the noise levels resulting from the alternatives.

For the Allen 75 Study, noise is described using the sound level in decibels (dB). Decibels are a unit of measure on a logarithmic scale used to demonstrate the amount of sound pressure at a given location from the general environment or specific sources. The decibel scale includes a range of 0-120.

Environmental noise is measured over a period of interest. If the time period is one hour, the descriptor is the hourly equivalent sound level, [L_{eq} (h)]. Traffic noise impacts occur when the predicted levels approach or exceed the noise abatement criteria (NAC). The FHWA has established five activity categories that must be considered for Noise Abatement Criteria. These five activity categories are shown in Table 21.

Table 21. Noise Abatement Criteria

Activity Category	L_{eq} (h)	L_{10} (h)	Description of Activity Category
A	57 dBA (Exterior)	60 dBA (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 dBA (Exterior)	70 dBA (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 dBA (Exterior)	-	Developed lands, properties or activities not included in Categories A or B above.
D	-	-	Undeveloped land.
E	52 dBA (Interior)	55 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Sites located within the ALL-75 study area are considered to be Category B and C. For this project, Category B consists of single family residential, churches, a clinic and motels. Category C consisted of developed lands, properties or activities which are not included in Categories A or B above (i.e., commercial).

A total of 661 noise-sensitive land use sites were identified within the study area. These are represented in the model as 150 receivers. A receiver is used in the model to represent a given site and can represent one or more structures (e.g. residences).

4.0 EVALUATION OF THE NO BUILD ALTERNATIVE

The No Build alternative maintains the current four-lane configuration of I-75 and consists of minor, short-term safety upgrades and maintenance to the interstate, which would maintain its continuing operation. Current problems identified within the study area roadway network would continue. The No Build would not meet the purpose and need for the Allen 75 Study. The No Build alternative is retained as a baseline for evaluation of the highway build conceptual alternatives.

The No Build alternative would not impact community cohesion, community resources, environmental justice populations, ecological resources or historic resources. Land use will not change as a result of the No Build alternative. The No Build alternative will not displace or alter access to community and highway-related businesses. Accessibility to businesses would become worse as traffic increases and the levels of service become worse. The No Build alternative is not expected to directly impact employment and business districts in the study area.

5.0 EVALUATION OF CONCEPTUAL BUILD ALTERNATIVES

Studies completed for the conceptual build alternatives included traffic analyses, environmental impacts, and cost estimates. The following discussions present the results of the analyses conducted for the four-lane and six-lane alternatives. Each mainline alternative includes rehabilitation of existing interchanges within the project length.

As described in Section 2.3, the conceptual build alternatives are as follows:

- Alternative A: A four-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards.
- Alternative B: A four-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards and provides provisions for future upgrade to a six-lane facility.
- Alternative C: A four-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards, provides auxiliary lanes where necessary in areas of level of service D or worse, and provides provisions for future upgrade to a six-lane facility.
- Alternative D: A six-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards.

Interchange design options are also proposed for each of the existing interchanges at Breese Road, SR 65, Fourth Street, SR 309/117, and SR 81. A new interchange located on the abandoned railroad corridor between Fourth Street and SR 309/117 is also evaluated. The interchange options can be applied in different combinations to each of the conceptual alternatives.

5.1 Traffic

Traffic capacity analyses for the conceptual build alternatives were completed for the opening year (2015) and design year (2035) traffic by examining the levels of service. Level of service (LOS) is an assessment of roadway and intersection performance, expressed as LOS A – LOS F. LOS A is defined as free-flow; LOS E is defined as using all available capacity; and LOS F defined as exceeding available capacity. The Ohio Department of

Transportation (ODOT) level of service criteria are based on the volume/capacity ratio, which is a measure of traffic density. The four conceptual alternatives scenarios plus the No Build alternative were considered for the capacity analysis.

5.1.1 I-75 Mainline Methodology

Alternatives A, B, C and D were divided into 22 basic freeway segments. These are the uninterrupted sections of freeway. Capacity analyses were completed for each basic freeway segment using Highway Capacity Software (version HCS+) and the results are an indicator of performance on the mainline. Certified traffic data were provided by ODOT in 2007 for the peak traffic hours. The PM peak hour was found to have higher volumes than the AM peak hour at all mainline locations. The PM peak hour was thus used for all analyses. Truck volume percentages for the design hour were also provided by ODOT as described in Table 22.

Table 22.Truck Volume Percentages

Location	Truck Percentage
South of Breese Road	28%
Breese Road to SR 65	23%
SR 65 to Fourth Street	24%
Fourth Street to SR 117	26%
SR 117 to SR 81	24%
North of SR 81	25%

There are two area-type definitions that are used to determine levels of service in an area, rural and urban. Conditions with rural free flow speeds were evaluated for the entire I-75 corridor. Rural areas are typically evaluated with a desired performance of LOS C. A 70 mile per hour (mph) mainline and 35 mph ramp free flow speed, which is generally used for rural areas, was used in the capacity analysis calculations for this project. Based on these assumptions, the maximum lane capacity of the highway is considered to be 2,400 passenger cars per lane per hour (pc/ln/hr). With all other factors being equal, the conditions with the higher lane capacity will show better operational levels of service.

5.1.2 I-75 Mainline Results

Traffic analysis for years 2015 and 2035 determined that LOS A, B, or C can be achieved along the mainline for Alternatives A and B. Because of these results, Alternative C, which would include auxiliary lanes where needed to achieve LOS C or better, was determined not necessary for the project. Therefore, it was eliminated from further consideration.

5.1.2.1 Year 2015 Results

In the year 2015, analyses indicate that all segments for all conceptual alternatives would operate at LOS A, B, or C in the peak hours. Table 23 summarizes the resulting densities and LOS for the year 2015 peak hour analyses in the northbound and southbound directions. Density is reported as passenger cars per mile per lane.

Table 23. 2015 Peak Hour Traffic Capacity Analysis Results

Segment Name	Segment Type	Segment Number	2015 Peak Hour							
			No Build Alternative		Alternative A 4 Lane		Alternative B 4 Lane		Alternative D 6 Lane	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS
NORTHBOUND										
Auglaize County Line to Breese Road	BASIC*	1	19.5	C	19.5	C	19.5	C	13.0	B
Breese Road	OFF RAMP	2	19.0	B	15.4	B	15.4	B	10.1	B
Breese Road	BASIC	3	14.3	B	14.3	B	14.3	B	9.5	A
Breese Road	ON RAMP	4	20.4	C	14.1	B	14.1	B	8.1	A
Breese Road to SR 65	BASIC	5	16.2	B	16.2	B	16.2	B	10.8	A
SR 65	OFF RAMP	6	19.2	B	15.6	B	15.6	B	10.1	B
SR 65	BASIC	7	15.3	B	15.3	B	15.3	B	10.2	A
SR 65	ON RAMP	8	21.3	C	15.0	B	15.0	B	8.6	A
SR 65 to 4th Street	BASIC	9	17.5	B	17.5	B	17.5	B	11.6	B
4th Street	OFF RAMP	10	20.8	C	17.2	B	17.2	B	11.1	B
4th Street	BASIC	11	16.3	B	16.3	B	16.3	B	10.9	A
4th Street	ON RAMP	12	21.7	C	15.4	B	15.4	B	8.6	A
4th Street to SR 117/309	BASIC	13	17.9	B	17.9	B	17.9	B	11.9	B
SR 117/309	OFF RAMP	14	21.3	C	17.7	B	17.7	B	11.7	B
SR 117/309 EB	ON RAMP	15	19.7	B	13.4	B	13.4	B	7.0	A
SR 117/309	BASIC	16	15.9	B	15.9	B	15.9	B	10.5	A
SR 117/309 WB	ON RAMP	17	23.6	C	17.3	B	17.3	B	10.7	B
SR 117/309 to SR 81	BASIC	18	19.6	C	19.6	C	19.6	C	13.1	B
SR 81 EB	OFF RAMP	19	23.4	C	19..8	B	19..8	B	13.1	B
SR 81	BASIC	20	17.4	B	17.4	B	17.4	B	11.6	B
SR 81 WB	OFF RAMP	21	20.8	C	17.2	B	17.2	B	11.5	B
SR 81	ON RAMP	22	20.0	B	13.7	B	13.7	B	7.5	A
SR 81 to Bluelick Road	BASIC	23	16.2	B	16.2	B	16.2	B	10.8	A
SOUTHBOUND										
Breese Road to Auglaize County Line	BASIC	46	18.5	C	18.5	C	18.5	C	12.3	B

Table 23. 2015 Peak Hour Traffic Capacity Analysis Results

Segment Name	Segment Type	Segment Number	2015 Peak Hour							
			No Build Alternative		Alternative A 4 Lane		Alternative B 4 Lane		Alternative D 6 Lane	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS
Breese Road	ON RAMP	45	22.4	C	13.9	B	13.9	B	7.8	A
Breese Road	BASIC	44	16.3	B	16.3	B	16.3	B	10.9	A
Breese Road	OFF RAMP	43	22.6	C	19.0	B	19.0	B	12.5	B
SR 65 to Breese Road	BASIC	42	18.4	C	18.4	C	18.4	C	12.2	B
SR 65	ON RAMP	41	22.7	C	16.2	B	16.2	B	9.0	A
SR 65	BASIC	40	17.2	B	17.2	B	17.2	B	11.5	B
SR 65	OFF RAMP	39	22.3	C	18.7	B	18.7	B	12.1	B
4th Street to SR 65	BASIC	38	18.6	C	18.6	C	18.6	C	12.4	B
4th Street	ON RAMP	37	22.7	C	16.4	B	16.4	B	9.2	A
4th Street	BASIC	36	17.2	B	17.2	B	17.2	B	11.5	B
4th Street	OFF RAMP	35	22.1	C	18.5	B	18.5	B	12.0	B
SR 117/309 to 4th Street	BASIC	34	18.6	C	18.6	C	18.6	C	12.4	B
SR 117/309	ON RAMP	33	22.5	C	16.2	B	16.2	B	9.6	A
SR 117/309 EB	OFF RAMP	32	21.5	C	17.9	B	17.9	B	11.9	B
SR 117/309	BASIC	31	18.0	C	18.0	C	18.0	C	12.0	B
SR 117/309 WB	OFF RAMP	30	22.8	C	19.2	B	19.2	B	12.3	B
SR 81 to SR 117/309	BASIC	29	19.0	C	19.0	C	19.0	C	12.7	B
SR 81	ON RAMP	28	22.9	C	16.6	B	16.6	B	10.7	B
SR 81	BASIC	27	14.3	B	14.3	B	14.3	B	9.6	A
SR 81	OFF RAMP	26	20.6	C	11.6	B	11.6	B	6.1	A
Bluelick Road to SR 81	BASIC	25	17.3	B	17.3	B	17.3	B	11.5	B

* Basic = Uninterrupted sections of freeway

5.1.2.2 Year 2035

Forty-five segments were analyzed for the No Build alternative, including all mainline sections and merge and diverge sections. Only two of those sections were found to operate below LOS C:

- The on-ramp from SR 117 / 309 to northbound I-75 is expected to operate at LOS D (28.1 passenger cars per mile per lane) in the peak hour of year 2035 and
- The off-ramp from I-75 northbound to SR 81 eastbound is expected to operate at LOS D (28.5 passenger cars per mile per lane) in the peak hour of year 2035.

All segments of both Alternatives A and B are expected to operate at LOS B or C during the peak hour in year 2035. Since LOS B and C can be achieved in Alternative B by improving acceleration / deceleration lane lengths and distances between successive ramps, Alternative C was determined not necessary and therefore not analyzed. Auxiliary lanes are not necessary in order to achieve LOS C or better. All segments of Alternative D are expected to operate at LOS A or B during the peak hour in year 2035.

Table 24 summarizes the resulting densities and LOS for the year 2035 peak hour analyses in the northbound and southbound directions. Density is reported as passenger cars per mile per lane.

Table 24. 2035 Peak Hour Traffic Capacity Analysis Results

Segment Name	Segment Type	Segment Number	2035 Peak Hour							
			No Build Alternative		Alternative A 4 Lane		Alternative B 4 Lane		Alternative D 6 Lane	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS
NORTHBOUND										
Auglaize County Line to Breese Road	BASIC*	1	19.5	C	19.5	C	19.5	C	13.0	B
Breese Road	OFF RAMP	2	23.3	C	19.7	B	19.7	B	12.8	B
Breese Road	BASIC	3	17.5	B	17.5	B	17.5	B	11.7	B
Breese Road	ON RAMP	4	24.3	C	18.1	B	18.1	B	10.6	B
Breese Road to SR 65	BASIC	5	19.7	C	19.7	C	19.7	C	13.1	B
SR 65	OFF RAMP	6	23.4	C	19.8	B	19.8	B	12.8	B
SR 65	BASIC	7	18.7	C	18.7	C	18.7	C	12.5	B
SR 65	ON RAMP	8	25.1	C	18.8	B	18.8	B	11.1	B
SR 65 to 4th Street	BASIC	9	21.0	C	21.0	C	21.0	C	14.0	B
4th Street	OFF RAMP	10	25.0	C	21.4	C	21.4	C	13.8	B
4th Street	BASIC	11	19.6	C	19.6	C	19.6	C	13.1	B
4th Street	ON RAMP	12	25.6	C	19.3	B	19.3	B	11.0	B
4th Street to SR 117/309	BASIC	13	21.5	C	21.5	C	21.5	C	14.3	B
SR 117/309	OFF RAMP	14	25.6	C	22.0	C	22.0	C	14.5	B
SR 117/309 EB	ON RAMP	15	23.4	C	17.1	B	17.1	B	9.3	A
SR 117/309	BASIC	16	19.3	C	19.3	C	19.3	C	12.8	B
SR 117/309 WB	ON RAMP	17	28.1	**D**	21.8	C	21.8	C	13.8	B
SR 117/309 to SR 81	BASIC	18	24.1	C	24.1	C	24.1	C	15.8	B
SR 81 EB	OFF RAMP	19	28.5	**D**	21.6	C	21.6	C	16.2	B

Table 24. 2035 Peak Hour Traffic Capacity Analysis Results

Segment Name	Segment Type	Segment Number	2035 Peak Hour							
			No Build Alternative		Alternative A 4 Lane		Alternative B 4 Lane		Alternative D 6 Lane	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS
SR 81	BASIC	20	21.1	C	21.1	C	21.1	C	14.0	B
SR 81 WB	OFF RAMP	21	25.2	C	25.2	C	25.2	C	14.3	B
SR 81	ON RAMP	22	24.0	C	17.7	B	17.7	B	10.1	B
SR 81 to Bluelick	BASIC	23	19.9	C	19.9	C	19.9	C	13.3	B
SOUTHBOUND										
Breese to Aug Co Line	BASIC	46	22.8	C	22.8	C	22.8	C	15.1	B
Breese Road	ON RAMP	45	26.9	C	20.6	C	20.6	C	12.1	B
Breese Road	BASIC	44	20.1	C	20.1	C	20.1	C	13.4	B
Breese Road	OFF RAMP	43	27.6	C	24.0	C	24.0	C	15.7	B
SR 65 to Breese Road	BASIC	42	22.6	C	22.6	C	22.6	C	15.0	B
SR 65	ON RAMP	41	26.9	C	20.6	C	20.6	C	11.5	B
SR 65	BASIC	40	21.1	C	21.1	C	21.1	C	14.0	B
SR 65	OFF RAMP	39	26.9	C	23.3	C	23.3	C	15.0	B
4th Street to SR 65	BASIC	38	22.6	C	22.6	C	22.6	C	15.0	B
4th Street	ON RAMP	37	26.9	C	20.6	C	20.6	C	11.7	B
4th Street	BASIC	36	20.9	C	20.9	C	20.9	C	13.9	B
4th Street	OFF RAMP	35	26.8	C	23.2	C	23.2	C	15.0	B
4th Street to SR 117/309	BASIC	34	22.7	C	22.7	C	22.7	C	15.0	B
SR 117/309	ON RAMP	33	26.7	C	20.5	C	20.5	C	12.1	B
SR 117/309 EB	OFF RAMP	32	26.3	C	22.7	C	22.7	C	15.0	B
SR 117/309	BASIC	31	22.2	C	22.2	C	22.2	C	14.7	B
SR 117/309 WB	OFF RAMP	30	28.0	C	24.4	C	24.4	C	15.6	B
SR 81 to SR 117/309	BASIC	29	23.6	C	23.6	C	23.6	C	15.6	B
SR 81	ON RAMP	28	27.6	C	21.3	C	21.3	C	13.8	B
SR 81	BASIC	27	18.0	C	18.0	C	18.0	C	12.0	B
SR 81	OFF RAMP	26	25.4	C	16.4	B	16.4	B	9.1	A
Bluelick Road to SR 81	BASIC	25	21.4	C	21.4	C	21.4	C	14.2	B

* Basic = Uninterrupted sections of freeway

5.2 Preliminary Maintenance of Traffic Alternatives Analysis

A preliminary maintenance of traffic alternative analysis (MOTAA) was completed for the I-75 mainline (*Maintenance of Traffic Alternatives Analysis Report,* March 2007). The MOTAA was prepared in accordance with *Section 630-5 of the Traffic Engineering* (Ohio Department of Transportation, October 2002, Revised 2007) and the ODOT's *Guidelines for Performing Maintenance of Traffic Alternatives*. Part-width, crossover, and contra-flow construction methods were investigated and each scheme was detailed, summarized and costs calculated. The analysis assumed a four-lane alternative with auxiliary lanes and a six-lane alternative. For information purposes, the cost comparison summary for the preliminary MOTAA is shown in Appendix E. Additional analysis will be completed in the next step of the Project Development Process for feasible alternatives.

5.2.1 Four-Lane Alternative

Cost estimates for the MOTAA determined that there would likely be a significant cost savings realized with contra-flow construction verses crossover, and a modest savings verses part-width (Appendix E). A large part of the cost savings is the reduction of temporary pavement required for contra-flow. This factor not only saves money, but also time in the Pre-Phase stages of construction. Contra-flow has many of the same issues associated with part-width construction since it uses part-width methods to achieve completion.

The contra-flow method uses at least one lane operating in a direction opposite to the normal flow. This means that three lanes would be maintained on one side of the median and only one lane on the other. This would allow a wider proposed construction area to be built on the side with one lane. The bi-directional lane is restricted to the thru movements only and is separated from the two opposite flow lanes by a 50-inch tall portable concrete barrier. The crossover method uses temporary physical lane shifts across the median to put two-way traffic on one side of the median while the other side is being constructed. Bi-directional lanes are separated by a 50-inch tall portable concrete barrier and some ramp access may be restricted. The part-width method maintains travel lanes in each direction on both sides of the median. Traffic is shifted to either the outside or inside shoulders and lanes during construction of the remaining partial width of accessible proposed pavement area.

Contra-flow construction was recommended as the preferred method for the four-lane alternative based on the analysis. Generally, contractors in Ohio, and the traveling public, are less familiar with the contra-flow maintenance of traffic method use in work zones on interstates. There are safety issues with this method concerning lane assignment and ramp access. Adequate signage of lane assignments must be handled properly to assure smooth operation.

5.2.2 Six-Lane Alternative

Based on the analysis of advantages and disadvantages, costs, and constraints of each MOT method for construction of the six-lane alternative, part-width construction was recommended as the preferred method. Cost estimates for the MOTAA determined that there would be a significant savings with part-width construction (Appendix E). A large part of the cost savings is the lack of additional bridge structure (widening of existing bridges) required for part-width. This factor not only saves money, but also time for design and complexity of construction, particularly at I-75 bridges over railroads. While part-width construction has negative features, such as contractor access issues and potential quality issues, there are ways to mitigate and decrease their impacts.

Generally, contractors and the traveling public are familiar with part-width construction work zones on interstates. Most major contractors have many years of experience using this method of construction which should help to maintain quality and productivity in spite of the potential access and constructability issues. Some of these issues can be further mitigated in design. One form of mitigation would be the selection of a flexible pavement design for the mainline.

For the purposes of comparing the current conceptual alternatives in the area of maintenance of traffic costs, part-width construction methods were assumed for all alternatives based on the generally accepted and widespread use of this method on interstate projects. Preliminary maintenance of traffic costs have been included in the construction cost estimates for each conceptual build alternative.

5.3 Cost Estimates

Based on information available, planning level cost estimates were prepared for the No Build alternative, Alternatives A, B, and D and the interchange options. The Project Development Process Right of Way Cost Estimator was used to determine acquisition costs (Appendix F). For construction costs, Estimator Version 2.3a and the ODOT *Procedure for Budget Estimating* (January 2007) were used.

The construction cost estimates include items such as materials, labor, equipment, inflation, and contingencies. The construction costs in Table 25 provide a present-day estimate and inflated cost as prices will increase between the present and the actual construction year. A mid-range inflation rate of 48.8 percent was used to estimate construction costs of the conceptual alternatives and interchange options. The right of way costs for interchange options are additional costs to Alternatives A, B, or D and are noted in 2007 dollars.

The estimated present (2007) day right of way costs range from $15 million to $19 million for Alternatives A, B and D. The estimated construction costs, with a mid-range inflation rate of 48.8 percent, range from approximately $203 million to $247 million for Alternatives A, B, and D, including costs to rehabilitate existing interchanges. Alternative A is the least expensive, as it requires less right of way and has fewer pavement requirements than Alternatives B and D. The abandoned railroad interchange options are estimated to be the most expensive in terms of right of way and construction. Right of way and construction cost estimates are provided in Table 25.

Table 25. Planning Level Cost Estimates

Alternative	Construction Cost	Right of Way Cost
No Build	$8,716,171	N/A
Low Inflation (29.4%)	$10,948,672	-
Mid Inflation (48.8%)	$12,349,656	-
High Inflation (82.8%)	$14,756,677	-
Alternative A	$136,740,425 *	$15,675,208
Low Inflation (29.4%)	$178,721,327	-
Mid Inflation (48.8%)	$203,430,158	-
High Inflation (82.8%)	$250,025,044	-
Alternative B	$157,427,288 *	$18,557,634
Low Inflation (29.4%)	$205,486,348	-
Mid Inflation (48.8%)	$234,206,219	-
High Inflation (82.8%)	$287,850,243	-

Table 25. Planning Level Cost Estimates

Alternative	Construction Cost	Right of Way Cost
Alternative D	$165,706,174 *	$18,557,634
Low Inflation (29.4%)	$216,197,713	-
Mid Inflation (48.8%)	$246,522,804	-
High Inflation (82.8%)	$302,987,894	-
Interchange Options for Alternative A		
Breese Road		
Breese Road Rehabilitation	$5,020,381 †	N/A
Breese Road Option 1	$10,484,036	$673,830
Breese Road Option 2	$7,025,622	$268,723
Breese Road Option 3	$5,893,086	$316,023
SR 65		
SR 65 Rehabilitation	$3,791,078†	N/A
Fourth Street		
Fourth Street Rehabilitation	$5,386,309 †	N/A
Fourth Street Option 1	$6,293,951	$240,569
Abandoned Railroad		
Railroad Option 1	$21,667,973	$14,883,335
Railroad Option 2	$21,495,899	$15,775,635
Railroad Option 3	$26,078,277	$13,157,504
Railroad Option 4	$24,703,918	$13,870,612
SR 309 / SR 117		
SR 309 Rehabilitation	$11,109,153 †	N/A
SR 309 Option 1	$13,916,978	$1,945,086
SR 309 Option 2	$12,676,390	$686,914
SR 117 Option	$19,986,882	$6,456,862
SR 81		
SR 81 Rehabilitation	$12,287,444†	N/A
SR 81 Option 1	$12,746,152	$1,924,600
SR 81 Option 2	$12,877,590	$1,924,600
Interchange Options for Alternatives B and D		
Breese Road		
Breese Road Rehabilitation	$5,020,381 †	N/A
Breese Road Option 1	$10,484,036	$673,830
Breese Road Option 2	$7,025,622	$268,723
Breese Road Option 3	$5,893,086	$316,023
SR 65		
SR 65 Rehabilitation	$3,791,078 †	N/A
Fourth Street		
Fourth Street Rehabilitation	$5,386,309 †	N/A
Fourth Street Option 1	$6,293,951	$203,747
Abandoned Railroad		
Railroad Option 1	$22,353,779	$13,087,442
Railroad Option 2	$22,181,705	$13,941,400
Railroad Option 3	$26,969,475	$11,297,402
Railroad Option 4	$25,595,071	$12,041,624
SR 309 / SR 117		
SR 309 Rehabilitation	$11,638,691 †	N/A
SR 309 Option 1	$14,485,117	$1,566,747
SR 309 Option 2	$13,144,268	$267,493
SR 117 Option	$20,438,051	$5,706,014

Table 25. Planning Level Cost Estimates

Alternative	Construction Cost	Right of Way Cost
SR 81		
SR 81 Rehabilitation	$13,356,882 †	N/A
SR 81 Option 1	$12,746,152	$1,867,024
SR 81 Option 2	$12,877,590	$1,867,024

Note: * = These costs include the rehabilitation cost of interchanges shown above with a †.

5.4 Environmental Consequences

The Allen 75 Study extends through the City of Lima and townships in Allen County. Environmental impacts were determined for conceptual build Alternatives A, B, and D and the proposed interchange options. Alternative C was not evaluated since it was eliminated from further consideration based on the traffic analysis. Potential environmental impacts are primarily due to property impacts, relocations and displacements, and access changes.

5.4.1 Social Environment

5.4.1.1 Community Cohesion

Impacts to neighborhoods or effects on community cohesion are not anticipated in Alternatives A, B, or D. At the south end of the project, the mobile home community located adjacent to right of way at Breese Road is not expected to be impacted by the project. No neighborhoods are located in the study area near SR 65.

The SR 81 interchange options are not expected to impact existing neighborhoods since proposed improvements would be along or within existing right of way. A mobile home community is located adjacent to the right of way in this area; however no disruption to this neighborhood is expected. Improvements at SR 309/117 have the potential to impact neighborhoods and community cohesion. Residences could potentially be displaced near the SR 309/117 interchange options. Existing connectivity would remain between communities that use the interstate for local trips between SR 81 and SR 309/SR 117.

5.4.1.2 Land Use

Land use changes would occur where land is converted to highway right of way. Project improvements would not extend beyond the estimated right of way limits. The estimated right of way limits used may be refined as detailed design moves forward. Therefore, changes in land use may be revised with the actual alternative footprint, resulting in less land being converted to highway right of way.

Alternative A is expected to impact land use the least of all alternatives. Alternatives A, B, and D would impact land uses adjacent to existing right of way. Alternatives B and D intersect the quarry located south of SR 81. The majority of land use impacts will result from the interchange options, which are applicable to each of the mainline alternatives.

Breese Road interchange options would convert agricultural and industrial land uses to highway right of way. Breese Road Option 1 would convert more farmland and industrial uses to right of way than Options 2 or 3. Land use impacts at the SR 65 interchange include commercial, industrial, and agricultural properties. The Abandoned Railroad Options would convert the most land use to right of way; approximately 48 to 54 acres as the options are on new alignment. These options would use vacant land identified for commercial uses, in addition to existing retail properties. The SR 309/117 interchange options would convert

commercial, residential and government land uses to right of way. The SR 81 interchange option would convert vacant, residential, and industrial land to right of way. Table 26 lists land use conversions for right of way by land use type.

Table 26. Right of Way Conversion by Land Use (Number of Acres)

Alternative	Agricultural	Commercial	Industrial	Residential	Total
Alternative A	27.33	31.39	17.00	14.05	89.77
Alternative B	27.53	34.01	24.27	18.13	103.94
Alternative D	27.53	34.01	24.27	18.13	103.94
Interchange Options for Alternative A*					
Breese Road 1	22.36	0.19	5.92	0	28.47
Breese Road 2	7.33	0.01	2.08	1.06	10.48
Breese Road 3	7.20	0.34	0.7	1.06	9.3
Fourth Street	0	0	2.94	0	2.94
Railroad Option 1	1.92	38.04	0.16	6.2	46.32
Railroad Option 2	1.92	39.82	0.67	6.2	48.61
Railroad Option 3	1.92	33.85	0.02	5.2	40.99
Railroad Option 4	1.92	35.21	0.78	5.03	42.94
SR 309/117 Option 1	0	2.04	0	2.21	4.25
SR 309/117 Option 2	0	1.05	0	1.62	2.67
SR 117 Option 1	0	8.66	0	4.19	12.85
SR 81 Option 1 &2	0	4.34	1.08	0.58	6.0
Interchange Options for Alternatives B and D*					
Breese Road 1	22.36	0.19	5.92	0	28.47
Breese Road 2	7.33	0.01	2.08	1.06	10.48
Breese Road 3	7.20	0.34	0.7	1.06	9.3
Fourth Street	0	0	2.49	0	2.49
Railroad Option 1	1.92	34.43	0.80	5.41	42.56
Railroad Option 2	1.92	36.11	0.03	5.47	43.53
Railroad Option 3	1.92	30.09	0.66	4.32	36.99
Railroad Option 4	1.92	31.51	0.15	4.31	37.89
SR 309/117 Option 1	0	2.01	0	1.69	3.7
SR 309/117 Option 2	0	1.05	0	1.17	2.22
SR 117 Option 1	0	7.77	0	3.53	11.3
SR 81 Option 1 & 2	0	4.34	0.64	0	4.98

*Note: SR 65 interchange is included as part of the mainline alternatives.

5.4.1.3 Community Resources

Facilities and Services

No cemeteries, medical facilities, schools or government offices would be affected or displaced by Alternatives A, B, or D. The roadway alignment at SR 65 would be modified in the area of the Lima Missionary Baptist Church located on Yoder Road, but access would not be eliminated to this community resource. Travel patterns would be altered to the Lost Creek Country Club golf course with the removal of access to Dean Avenue from the on-ramp by the SR 309/117 interchange options. No other community facilities and services would be impacted by the conceptual build alternatives.

There are also concerns about access to hospitals and emergency medical services in Lima being negatively impacted by interchange improvements that are proposed in the Abandoned Railroad interchange options. The relocation of interchanges proposed in Abandoned Railroad options 1 – 4 could impact emergency response times due to changes in access at Fourth Street and SR 309/SR 117. These same options would also change access to the State Highway Patrol Post as access to I-75 from Fourth Street would be eliminated. The SR 117 interchange option would change travel patterns to the Lost Creek Country Club golf course and additional recreational facilities located in Bath Township currently accessible off SR 309. The SR 309 and SR 81 interchange options would not impact access to community resources.

Parks and Recreation
None of the Alternatives A, B, or D nor any of the interchange options would directly impact recreational facilities and parks in the study area. No Section 4(f) or 6(f) resources would be affected by the conceptual build alternatives or interchange options.

5.4.1.4 Economic and Employment Impacts

Employment may be affected by business displacements, if a business is not able to be relocated in the Lima area. In such circumstances, employees would either have to relocate or obtain work from a new employer. The businesses that could be displaced are discussed in Section 5.4.1.5. The removal of residential and commercial land from government tax tolls will cause a loss of property tax revenue. Proximity impacts of the Abandoned Railroad interchange options to Sam's Club #6375 and Lucas Ford automotive dealership could reduce property values since some right of way would be required.

For Alternatives A, B, and D, economic activity would not be affected since most roadway improvements will be within the existing right of way. Access from I-75 to downtown Lima will remain for all conceptual build alternatives.

No community-related businesses are expected to be impacted by the conceptual build alternatives. A change in access would be anticipated for the Speedway/SuperAmerica service station on SR 65 as a result of proposed improvements. The Allen County Community Economic Development Strategy (CEDS) has identified areas in Fort Shawnee with the potential for development. Some project stakeholders are concerned that the Breese Road interchange options may result in delayed delivery times to industrial facilities due to the reconfigured interchange. Access to the Fort Shawnee Industrial Park and Foreign Trade Zone may be affected by the Breese Road interchange options. None of the structures within the industrial park would be displaced. The Gateway Commerce Park and Central Point Business Park would not be directly affected by any of the conceptual build alternatives. Planned business districts on SR 65 are not expected to be impacted by any of the conceptual build alternatives or interchange options. Near the SR 309/117 interchange, highway-related businesses could be displaced or have a change in access.

5.4.1.5 Displacements

The *Relocation Assistance Program Survey* (2007) identified potential displacements of the conceptual build alternatives and interchange options and available properties for relocations. Appendix A shows the location of potential residential and commercial displacements.

Table 27 lists potential residential and commercial displacements for each conceptual build alternative and interchange option. It is anticipated that local businesses could be relocated within the Lima area. Alternative A is not expected to displace residences but would displace three businesses, while Alternatives B and D would displace the same three businesses and five residences as well (Table 27). These displacements would occur in the vicinity of the SR 309/117 interchange.

The numbers of displacements vary for the interchange options at SR 309/117 and SR 117 Table 27). For example, Alternative A with SR 309/117 Option 1 would displace 11 residences and 4 businesses. With the Abandoned Railroad option, no displacements are expected for the mainline conceptual alternatives since the interchange at SR 309/117 would be removed and not require rehabilitation. No other interchange options would require displacements.

Table 27. Potential Displacements

Alternative	Potential Residential Displacements	Potential Commercial Displacements	Facility and Notes
Alternative A	0	3	Panera Bread, Kennedy Graphics, Lost Creek Offices (711 Dean Avenue)
Alternative B	5	3	Panera Bread, Kennedy Graphics, Lost Creek Offices (711 Dean Avenue)
Alternative D	5	3	Panera Bread, Kennedy Graphics, Lost Creek Offices (711 Dean Avenue)
Interchange Options			
Breese Road 1 (Alternative A)	0	0	No additional displacements beyond Alternatives A, B, and D requirements
Breese Road 1 (Alternative B and D)	5	3	
Breese Road 2 (Alternative A)	0	3	No additional displacements beyond Alternatives A, B, and D requirements
Breese Road 2 (Alternative B and D)	5	3	
Breese Road 3 (Alternative A)	0	3	No additional displacements beyond Alternatives A, B, and D requirements
Breese Road 3 (Alternative B and D)	5	3	
SR 65 (Alternative A)	0	3	No additional displacements beyond Alternatives A, B, and D requirements
SR 65 (Alternative B and D)	5	3	
Fourth Street Option 1 (Alternative A)	0	3	No additional displacements beyond Alternatives A, B, and D requirements
Fourth Street Option 1 (Alternative B and D)	5	3	
Abandoned Railroad Option 1	0	0	Residential and commercial displacements required in Alternatives A, B, and D are not required with this interchange option.
Abandoned Railroad Option 2	0	0	Residential and commercial displacements required in Alternatives A, B, and D are not required with this interchange option.

Table 27. Potential Displacements

Alternative	Potential Residential Displacements	Potential Commercial Displacements	Facility and Notes
Abandoned Railroad Option 3	0	0	Residential and commercial displacements required in Alternatives A, B, and D are not required with this interchange option.
Abandoned Railroad Option 4	0	0	Residential and commercial displacements required in Alternatives A, B, and D are not required with this interchange option
SR 309/117 Option 1 (Alternative A)	11	4	Commercial Facilities: Panera Bread, Kennedy Graphics, TPC (trucking company), Binkley's Performance (auto repair)
SR 309/117 Option 1 (Alternative B and D)	11	4	
SR 309/117 Option 2 (Alternative A)	7	2	Commercial Facilities: TPC (trucking company), Binkley's Performance (auto repair)
SR 309/117 Option 2 (Alternative B and D)	7	2	
SR 117 Option 1 (Alternative A)	7	6	Commercial Facilities: Panera Bread, Kennedy Graphics, TPC (trucking company), Binkley's Performance (auto repair), Motel 6, Jiffy Lube
SR 117 Option 1 (Alternative B and D)	7	6	
SR 81 Option 1 (Alternative A)	0	3	No additional displacements beyond Alternatives A, B, and D requirements
SR 81 Option 1 (Alternative B and D)	5	3	
SR 81 Option 2 (Alternative A)	0	3	No additional displacements beyond Alternatives A, B, and D requirements
SR 81 Option 2 (Alternative B and D)	5	3	

5.4.1.6 Environmental Justice

Impacts to environmental justice populations would be the same for Alternatives A, B, or D since the majority of work will be within existing right of way. Existing environmental justice populations are discussed in Section 3.3.5.

Displacements

No displacements are expected to low-income mobile home communities. Minority residents are not expected to be displaced by Alternatives A, B or D or any of the interchange options. Potential business displacements would not remove businesses that serve the community from areas with high environmental justice populations.

Community Cohesion

Project improvements are not expected to divide existing neighborhoods and communities. Improvements involve widening and upgrading existing roadways and interchanges. The railroad interchange options utilize an abandoned railroad corridor and mostly vacant and agricultural land. The connector between Fourth Street and Kibby Road (SR 309/117) in the Abandoned Railroad interchange option would increase connectivity between communities along Fourth Street and SR 309/117.

Land Use
New development may occur in census tracts with high environmental justice populations near SR 309/117 and north of SR 65. This development is not expected to have a negative effect on these populations. Businesses within new developments could provide more jobs to environmental justice populations in local neighborhoods.

Community Resources
Environmental justice populations are not expected to lose access to existing community resources. Access to bus service will remain. Communities will have access to the planned Ottawa River Bikeway and connection to the Riverwalk through the City of Lima. The bikeway will also serve as a connection to reservoirs and Metro parks.

Economy
Business displacements may result in a loss of employment for low income and minority workers. It is not known if any employees that could be displaced are low-income or minorities. Access to places of employment and businesses will remain. The Abandoned Railroad interchange option would result in a reconnection of previously separated communities across I-75.

Summary
Proposed improvements are not expected to disproportionately impact environmental justice populations since the majority of work will be within the existing right of way and access to and from the noted populations would not be eliminated. Impacts to environmental justice populations near SR 309/117 would be, in large part, due to impacts to community resources that serve these citizens. These impacts are not disproportionate because they are not only applicable to environmental justice populations.

5.4.2 Natural Environment

Impacts to aquatic, terrestrial and wetland habitats are anticipated for Alternatives A, B, and D and the interchange options (Tables 28 - 30). The majority of impacts are expected to be temporary due to construction; however loss of the functions and values of resources could affect the overall water quality and habitat of the study area (Figures 10A – 10H).

Table 28. Summary of Ecological Resources Impacts by Alternative

Resource	Alternative A	Alternative B	Alternative D
Non-isolated Wetlands (acres)			
Category 1	3.48	3.90	3.90
1-2 Gray	0.05	0.05	0.05
Modified 2	0.002	0.002	0.002
Category 2	0.13	0.13	0.13
Non-isolated Total	**3.65**	**4.08**	**4.08**
Isolated Wetlands (acres)			
Category 1	0.24	0.29	0.29
1-2 Gray	0.17	0.17	0.17
Modified 2	-	-	-
Category 2	0.08	0.82	0.82
Isolated Total	**0.49**	**1.27**	**1.27**
Total Wetland	**4.14**	**5.35**	**5.35**
Streams (linear feet)			
Ephemeral Stream	3170.7	3226.4	3226.4
Intermittent Stream	986.4	1026.7	1026.7

Table 28. Summary of Ecological Resources Impacts by Alternative

Resource	Alternative A	Alternative B	Alternative D
Perennial Stream	4231.5	4336.5	4336.5
Total Stream	**8388.6**	**8589.6**	**8589.6**
Open Waters (acres)			
Jurisdictional Open Water	0.43	0.43	0.43
Isolated Open Water	0.07	0.07	0.07
Total Open Water	**0.50**	**0.50**	**0.50**
Terrestrial Habitats (acres)			
Agricultural Field	26.09	28.33	28.33
New Field	14.32	14.97	14.97
Old Field	6.43	9.26	9.26
Oak-Hickory Forest	15.74	16.36	16.36
Scrub-Shrub	0.56	0.56	0.56
Successional Forest	2.25	3.33	3.33
Urban	426.83	434.31	434.31
Total Habitats	**492.21**	**507.12**	**507.12**

Table 29. Summary of Ecological Resources Impacts by Interchange Option for Alternative A[1]

Resource	Breese Road			Fourth Street	Abandoned Railroad				SR 309/117		SR 117	SR 81	
	1	2	3		1	2	3	4	1	2	1	1	2
Non-isolated Wetlands (acres)													
Category 1	0.45	0.35	0.35	-	0.05	0.05	0.05	0.05	-	-	-	-	-
1-2 Gray	0.07	-	-	-	0.004	-	0.004	-	-	-	0.01	-	-
Modified 2	0.09	0.02	0.01	-	-	-	-	-	-	-	-	-	-
Category 2	0.47	0.04	-	-	-	-	-	-	-	-	-	-	-
Non-isolated Total	**1.09**	**0.42**	**0.36**	-	**0.05**	**0.05**	**0.05**	**0.05**	-	-	**0.01**	-	-
Isolated Wetlands (acres)													
Category 1	-	-	-	-	0.05	0.05	0.05	0.05	-	-	-	-	-
1-2 Gray	-	-	-	-	-	-	-	-	-	-	-	-	-
Modified 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Category 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Isolated Total	-	-	-	-	**0.05**	**0.05**	**0.05**	**0.05**	-	-	**-**	-	-
Total Wetland	**1.09**	**0.42**	**0.36**	-	**0.10**	**0.10**	**0.10**	**0.10**	-	-	**0.01**	-	-
Streams (linear feet)													
Ephemeral Stream	-	-	-	-	-	-	-	-	-	-	-	-	-
Intermittent Stream	-	-	-	-	-	-	-	-	-	-	-	40.3	40.3
Perennial Stream	-	-	-	-	2020.3	1997.9	2020.3	1997.9	-	-	140.3	-	-
Total Stream	-	-	-	-	**2020.3**	**1997.9**	**2020.3**	**1997.9**	-	-	**140.3**	**40.3**	**40.3**
Open Waters (acres)													
Jurisdictional Open Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Isolated Open Water	0.18	-	-	-	-	-	-	-	-	-	-	-	-
Total Open Water	**0.18**	-	-	-	**-**	**-**	**-**	**-**	-	-	**-**	**-**	**-**

Table 29. Summary of Ecological Resources Impacts by Interchange Option for Alternative A[1]

Resource	Breese Road			Fourth Street	Abandoned Railroad				SR 309/117		SR 117	SR 81	
	1	2	3		1	2	3	4	1	2	1	1	2
Terrestrial Habitats (acres)													
Agricultural Field	13.65	3.61	3.61	-	15.4	10.75	12.11	7.36	-	-	0.70	3.75	3.75
New Field	-	-	0.01	-	3.01	3.01	1.82	0.95	-	-	0.01		
Old Field	-	-	-	-	-	-	-	-	-	-	-	0.07	0.07
Oak-Hickory Forest	13.47	2.94	1.31	2.91	0.66	0.66	0.73	0.73	-	-	-	0.18	0.18
Scrub-Shrub	-	-	-	-	-	-	-	-	-	-	-	-	-
Successional Forest	-	0.31	0.31	-	7.02	7.02	5.65	5.51	-	-	0.09	0.55	0.55
Urban	2.46	2.88	3.51	0.035	22.30	24.29	22.38	24.32	10.22	9.24	27.63	3.52	3.52
Total Habitats	**29.58**	**9.74**	**8.75**	**2.94**	**48.38**	**45.73**	**42.68**	**38.87**	**10.22**	**9.24**	**28.43**	**8.07**	**8.07**

[1] Ecological resource impacts at the SR 65 interchange are included in the mainline alternatives impacts shown in Table 28.

Table 30. Summary of Ecological Resources Impacts by Interchange Option for Alternatives B and D[1]

Resource	Breese Road			Fourth Street	Abandoned Railroad				SR 309/117		SR 117	SR 81	
	1	2	3		1	2	3	4	1	2	1	1	2
Non-isolated Wetlands (acres)													
Category 1	-	-	-	-	0.17	0.17	0.17	0.17	-	-	-	-	-
1-2 Gray	-	-	-	-	0.004	-	0.004	-	-	-	0.01	-	-
Modified 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Category 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-isolated Total	-	-	-	-	**0.17**	**0.17**	**0.17**	**0.17**	-	-	**0.01**	-	-
Isolated Wetlands (acres)													
Category 1	0.45	0.35	0.35	-	0.002	0.002	0.002	0.002	-	-	-	-	-
1-2 Gray	0.07	-	-	-	-	-	-	-	-	-	-	-	-
Modified 2	0.09	0.02	0.01	-	-	-	-	-	-	-	-	-	-
Category 2	0.47	0.04	-	-	-	-	-	-	-	-	-	-	-
Isolated Total	**1.09**	**0.42**	**0.36**	-	**0.002**	**0.002**	**0.002**	**0.002**	-	-	**-**	-	-

Table 30. Summary of Ecological Resources Impacts by Interchange Option for Alternatives B and D[1]

Resource	Breese Road			Fourth Street	Abandoned Railroad				SR 309/117		SR 117	SR 81	
	1	2	3		1	2	3	4	1	2	1	1	2
Total Wetland	**1.0887**	**0.4164**	**0.3592**	-	**0.17**	**0.17**	**0.17**	**0.17**	-	-	**0.01**	-	-
Streams (linear feet)													
Ephemeral Stream	-	-	-	-	-	-	-	-	-	-	-	-	-
Intermittent Stream	-	-	-	-	-	-	-	-	-	-	-	-	-
Perennial Stream	-	-	-	-	1915.3	1892.9	1915.3	1892.9	-	-	139.9	-	-
Total Stream	-	-	-	-	**1915.3**	**1892.9**	**1915.3**	**1892.9**	-	-	**139.9**	-	-
Open Waters (acres)													
Jurisdictional Open Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Isolated Open Water	0.18	-	-	-	-	-	-	-	-	-	-	-	-
Total Open Water	**0.18**	-	-	-	-	-	-	-	-	-	-	-	-
Terrestrial Habitats (acres)													
Agricultural Field	13.65	3.61	3.61	-	13.66	9.14	10.33	5.69	-	-	0.17	3.75	3.75
New Field	-	-	0.01	-	2.55	2.55	1.35	1.35	-	-	0.020	-	-
Old Field	-	-	-	-	-	-	-	-	-	-	-	-	-
Oak-Hickory Forest	13.47	2.94	1.31	2.47	0.21	0.21	0.29	0.29	-	-	-	-	-
Scrub-Shrub	-	-	-	-	-	-	-	-	-	-	-	-	-
Successional Forest	-	0.31	0.31	-	6.60	6.60	5.19	5.10	-	-	0.09	0.55	0.55
Urban	2.46	2.88	3.51	0.02	21.66	23.81	21.74	23.87	9.14	5.90	26.28	3.13	3.13
Total Habitats	**29.58**	**9.74**	**8.75**	**2.49**	**44.68**	**42.31**	**38.90**	**36.30**	**9.14**	**5.90**	**26.56**	**7.42**	**7.42**

[1] Ecological resource impacts at the SR 65 interchange are included in the mainline alternatives impacts shown in Table 28.

5.4.2.1 Aquatic

Methods used to assess streams within the study area are in conformance with and adhere to those stated in the ODOT *Ecological Manual* (ODOT, 2005), *Manual of OEPA Surveillance Methods and Quality Assurance Practices* (OEPA, 1991) and *Biological Criteria for the Protection of Aquatic Life, Volumes I-V* (OEPA, 1987, updated January 1989). The conceptual build alternatives would impact streams and rivers in the study area by replacing or improving existing roadway structures. Short-term impacts would include sedimentation and sediment runoff into streams and wetlands during construction. Long-term impacts would include loss of habitat in areas filled by highway construction improvements. Other long-term impacts would be changes in the patterns of precipitation, runoff, and evaporation that affect water bodies. Streams within the conceptual mainline alternatives are mainly of low to moderate quality and no high quality streams will be impacted.

For Alternatives A, B, and D, the greatest stream impacts would occur north of Fourth Street in the area of the Abandoned Railroad interchange options. The least stream impacts would occur between Breese Road and SR 65. Proposed impacts to ponds would only affect man-made stormwater and borrow pit ponds. These ponds are low quality waters and are located between Breese Road and SR 65.

5.4.2.2 Terrestrial

Impacts to terrestrial habitats by Alternatives A, B, or D are expected to be minor, because the highway improvements will occur within the existing right of way, which is mostly urban/mowed lawn. Small areas of oak-hickory and successional forest may be cleared. Successional forest are areas where the type of plants present have changed over time due changes in environmental conditions. Clearing these areas would result in loss of habitat and displacing animals that live in these areas.

5.4.2.3 Endangered Species

The federally threatened bald eagle does not nest in the study area; therefore neither Alternatives A, B, nor D should impact this species. Potential roost trees for the federally endangered Indiana bat may be cleared by construction of the conceptual build alternatives, but such clearing activities should be minor. None of the conceptual build alternatives would impact the wetlands in which the state threatened inland rush is located; therefore no impacts to this species are expected.

5.4.2.4 Wetlands

Category 1 (low quality) and Category 2 (average or medium quality) wetlands would be impacted by the conceptual build alternatives. Impacts may include partial to full fill of wetlands which would replace or reduce the size of these resources. Filling of these wetlands would result in a loss of habitat, vegetation, and a change of patterns of precipitation, runoff, infiltration, and evaporation to water bodies. Impacts to the conceptual build alternatives range between four and six acres. Impacts to wetlands would be less than one acre by the interchange options, except for Option 1 of Breese Road.

5.4.2.5 Floodplain

Impacts to the 100-year floodplain by the conceptual build alternatives would occur at the crossings of the Little Ottawa River, Freed Ditch, Lost Creek and the Ottawa River. Impacts to floodways would occur at the crossings of Little Ottawa River and Lost Creek. Breese Road and SR 309/117 interchanges would impact the Little Ottawa River and Lost Creek

floodplains, respectively. Figure 9 shows the proximity of the floodplains and floodways to the study area.

5.4.3 Geotechnical

For the purpose of the preliminary geotechnical exploration, the conceptual build alternatives were consolidated into one study corridor and separated into five segments. This study corridor represents the impact area of the I-75 mainline. The ODOT *Geotechnical Bulletin 1* (GB1) outlines a procedure for estimating the method and quantity of plan subgrade treatment required during construction of any of the conceptual build alternatives. The subgrade treatment requirements are based upon the results of laboratory testing and boring tests completed to evaluate soil conditions.

The results of the subgrade treatment analysis showed that 14 segments need to be made stable to enhance pavement performance. The suggested methods of subgrade treatment are undercut and replacement. The use of chemicals to stabilize soils below the surface, or chemical stabilization, is also a suggested method. Since subgrade treatment analysis is based on general testing methods, the limits of stabilization were located between boring locations. The limits may be further refined with additional field exploration.

The length of the roadway that would need to be stabilized is 29,500 feet, or approximately 62 percent, of the overall length of any of the conceptual build alternatives. Recommendations are based on the results of the preliminary geotechnical exploration and laboratory testing. Recommendations are that the subgrade be stabilized with cement to a depth of 14 inches for the length of the conceptual build alternatives.

5.4.4 Cultural Resources

None of the conceptual build alternatives or interchange options would impact any Ohio Historic Inventory (OHI) sites or historic sites listed on or eligible for the National Register of Historic Places (NRHP).

Archaeological resources are not expected to be impacted between the southern project limits and south of Fourth Street for any of the alternatives. One archaeological site is located in the area of the SR 81 interchange. Two archaeological sites are located between Fourth Street and SR 309/117. None of these resources are expected to be impacted by the conceptual build alternatives.

5.4.5 Hazardous Materials

Based on review of current and past land use, regulatory databases, and visual inspection, 28 sites in the study area were identified as having potential hazardous material concerns. These sites were recommended for a Phase I Environmental Site Assessment (ESA). The number of sites recommended for each conceptual build alternative and interchange option is presented in Table 31. Detailed information on each site is available in the *Environmental Site Assessment Screening Report* (2007).

Table 31. Sites Recommended for Phase I Environmental Site Assessment

Alternative	Phase I ESA Recommended Sites	Map ID[1]	Land Uses
Alternative A	26 sites	16, 22, 39, 68, 70, 71, 72, 74, 75, 76, 78a, 101, 102, 104, 108, 110, 112, 117, 125, 230, 231, 247, 392, 393, 395, F43	On-site waste water treatment plant, industrial plants, truck operations, automotive service and repair, gas stations, state garage operations, junkyard, abandoned farm, limestone quarry, dump site
Alternative B	26 sites	Same as Alternative A	Same as Alternative A
Alternative C	26 sites	Same as Alternative A	Same as Alternative A
Interchange Options			
Breese Road 1	0 sites	NA	NA
Breese Road 2	1 site	22	On-site waste water treatment plant
Breese Road 3	1 site	22	On-site waste water treatment plant, vacant gas station, automotive repair
SR 65[2]	NA	NA	NA
Fourth Street Option 1	0 sites	NA	NA
Abandoned Railroad Option 1	5 sites	108, 110, 117, 125, 230	Natural gas distributor, industrial plants, truck operations, automotive service, gas station, state garage operations
Abandoned Railroad Option 2	6 sites	108, 110, 117, 125, 219, 230	Natural gas distributor, industrial plants, truck operations, automotive service, gas station, state garage operations
Abandoned Railroad Option 3	5 sites	108, 110, 117, 125, 230	Natural gas distributor, industrial plants, truck operations, automotive service, gas station, state garage operations
Abandoned Railroad Option 4	7 sites	108, 110, 112, 117, 125, 219, 230	Natural gas distributor, industrial plants, truck operations, automotive service, gas station, state garage operations
SR 309 Option 1	1 site	230	Abandoned farm, natural gas distributor, industrial plants, truck operations, automotive service and repair, gas station, state garage operations
SR 309 Option 2	3 sites	125, 230, 231	Abandoned farm, natural gas distributor, industrial plants, truck operations, automotive service and repair, gas station, state garage operations
SR 117 Option 1	4 sites	110, 125, 219, 230	Abandoned farm, natural gas distributor, industrial plants, truck operations, automotive service and repair, gas station, state garage operations
SR 81 Option 1	1 site	247	Industrial, surface mining, residential, automotive sales, vacant commercial

1. The Map ID is found on Figure 11A-C and represent sites recommended for a Phase I Environmental Site Assessment Survey.
2. Sites located at SR 65 are included in the mainline alternative totals.

5.5 Aesthetics

The majority of the study area is rural with open landscape, except for the area between SR 309 and SR 81 which is urban. Existing views from I-75 include mobile homes, tree lines, farmland, highway-related businesses, and industrial facilities.

The conceptual build alternatives would have minimal impacts on existing views since the proposed improvements involve widening of an existing facility and correcting geometric deficiencies of interchanges. The Abandoned Railroad interchange options would alter existing views by replacing two interchanges with one interchange.

Local community leaders, stakeholders, and ODOT are working together to develop a signature theme for the City of Lima, which would portray the community's history, character, and future. This signature theme will be reflected in the aesthetic plan for the I-75 corridor, which would be used for all conceptual build alternatives and interchange options. These features may include a landscaping plan, aesthetic treatment for noise walls, gateway treatments at interchanges, and murals. Specific aesthetic design features will be developed for the I-75 corridor in future steps of the project development process.

5.6 Transportation

There are no existing pedestrian or bicycle facilities in the study area. Coordination between the Johnny Appleseed Metropolitan Park District and ODOT is ongoing so that the widening of I-75 will not prevent future plans for extending the Ottawa River Bikeway from Lima to the Ottawa Metro Park. This bikeway is planned for construction in the spring of 2008. The bikeway will be constructed underneath the existing I-75 railroad underpass north of Reservoir Road. None of the mainline conceptual build alternatives are expected to impact this bikeway.

None of the conceptual build alternatives proposed for this project are expected to directly impact public transportation. None of the stops on the fixed bus routes are within the proposed right of way of the conceptual build alternatives.

5.7 Noise Analysis

The noise analysis modeling results indicate that for the No Build alternative Opening Year (2015) traffic-related noise exceeds the noise abatement criteria (NAC) at 284 sites. Under the No Build alternative in the Design Year 2035, 316 sites would exceed the NAC. Alternatives A and B move traffic closer to the noise-sensitive land use sites between Fourth Street and SR 81. The proximity of the alternatives to noise sensitive sites, along with future traffic increase projections in other areas, results in 436 sites exceeding the NAC in the Design Year 2035 for Alternatives A and B. This is 120 more sites than the No Build alternative. Alternative D adds an additional lane of traffic in both directions to the existing highway and also moves traffic closer to the noise-sensitive land use sites. Under Alternative D in the Design Year 2035, 460 sites would exceed the NAC, which are 144 more sites than under the No Build alternative.

Structural noise abatement (i.e. noise walls) was considered for mitigation of noise impacts associated with the conceptual build alternatives at the following locations:

- Adjacent to the Indian Village Mobile Home Community along northbound lanes of I-75;

- Along the eastern and western sides of I-75 between SR 309 and Reservoir Road (Bryn Mawr area); and
- Adjacent to the Oak Haven Mobile Home Community.

The noise analysis also determined that noise walls are needed at the Breese Road and SR 309/117 interchanges, regardless of the preferred interchange design.

In addition to the Type I project analysis completed for the Allen 75 Study, ODOT performed a Type II retrofit noise barrier analysis in 2002, for the area between SR 309/117 and SR 81. This analysis was conducted for both the east and west sides of I-75, which includes the Bryn Mawr area. The Type II analysis was performed in response to a property owner request. The analysis revealed that both locations east and west of I-75 north of the SR 309/117 interchange area could qualify for Type II funding pending the outcome of a detailed noise analysis and a test for reasonableness. Coordination between the Allen 75 Study and the potential Type II noise mitigation efforts will continue throughout project development.

Based on the noise analyses, noise abatement measures (i.e. noise barriers) are feasible and reasonable at each of the three identified locations for all of the conceptual build alternatives. Selection of feasible interchange options could vary the barrier lengths at the SR 309/117 interchange. Therefore, final wall locations and lengths will be determined in future steps of the project development process.

Noise from construction activities will add to the average noise level during the construction phase of the project. Direct impacts of construction are temporary and are expected to largely occur during daytime hours. Construction operations are to adhere to any local construction noise ordinances. Noise may be generated by increase in heavy truck traffic to and from the project area. This noise impact would also be temporary. Mitigation measures that may be used to minimize noise impacts include:

- Limit operation of heavy equipment and other noise related activities to daylight hours whenever possible;
- Install and maintain effective mufflers on equipment;
- Locate equipment and vehicle staging areas as far from noise sensitive land uses as possible; and
- Limit unnecessary idling of equipment.

5.8 Indirect and Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations define the impacts and effects that must be addressed and considered by federal agencies in satisfying the requirements of the NEPA process. Direct, indirect and cumulative impacts can be defined as follows:

- A direct effect is caused by an action and happens at the same time and place.
- Indirect effects, or secondary effects, are likely to happen but are after the action or away from the place of the action. Examples of indirect effects could be changes in land use patterns, population density or growth rate, and related effects on air, water, and other natural systems.
- Cumulative impacts occur as a result of the action plus other past, present, and future actions.

5.8.1 Methodology

This analysis will assess relevant past, present, and future actions that have had and may have reasonably foreseeable environmental consequences as a result of the Allen 75 Study. Reasonably foreseeable actions are those that are likely to occur, rather than those that are merely possible. Indirect and cumulative impacts as described in the following sections are expected to be the same for Alternatives A, B, and D since all involve highway and interchange improvements to the same 12-mile section of the I-75 corridor.

5.8.1.1 Geographical Boundary

The boundary for this assessment was determined through a collection of different overlays. This analysis considered the study area boundaries, natural boundaries and political boundaries. The City of Lima is the major city that is served by I-75 in Allen County and would be impacted by foreseeable actions. The geographic area for analysis is the original study area from Steps 1 through 4 of the Project Development Process, which includes eastern portions of the City of Lima (Figure 13). This area encompasses all of the conceptual alternatives that have been considered to date.

5.8.1.2 Temporal Boundary

The temporal boundary is based on projections and the dates of plans considered for this analysis and the Design Year 2035 for the Allen 75 Study.

5.8.1.3 Impacts Evaluated

For this analysis the following indirect and cumulative impacts will be evaluated: land use, socioeconomic, environmental justice, ecological, cultural resources, hazardous waste, and visual quality. While there may not be direct impacts to some of the resources, there still is the potential for indirect and cumulative impacts.

5.8.2 Projects and Plans Considered

This analysis uses data from projects or plans that identify future development and transportation plans related to the Allen 75 Study. The following is a summary of the plans that are partially or completely within the study area for this analysis.

Comprehensive Economic Development Strategy for Allen County (2007), Lima-Allen County Regional Planning Commission (LACRPC)

The Comprehensive Economic Development Strategy (CEDS) is the result of a continuing participatory economic development planning effort completed by participants representing the diverse interests of the community. The following lists the recommended development plans in the vicinity of the Allen 75 Study.

- Lima South Industrial Site – Industrial site visible from I-75 and accessible to SR 65
- Bellefontaine Corridor - Corridor improvements between I-75 to Woodlawn Avenue
- Gateway Commerce Park - Industrial Park is located on the east side of I-75 between exits for SR 65 and Breese Road
- Wetlands Repository – located near $30 million reservoir site

Transportation Improvement Program FY 2008-2011, LACRPC

The following highway projects listed in the Transportation Improvement Program (TIP) are in the study area. The Allen 75 study is also listed in the TIP.

- SR 117/309 (MP 17.52/15.04) PID 75467 – Improve safety of corridor by signal coordination, raised concrete curb median east of I-75 along SR 309, driveway definition through curb and gutter, developing public roadway system within Eastgate area, addition of sidewalks.
- I-75 PID 23835 – Resurfacing, divided system. Minor rehabilitation, grind and pave from north of SR 81 to the SR 235 junction in Hancock County.
- I-75 PID 81447 - Resurface all ramps at the interchanges of Breese Road, SR 65, Fourth Street, SR 117 and SR 81.
- Lima-Bellefontaine Avenue PID 82137 - Upgrade existing signals at the Lima-Bellefontaine Avenue intersections of SR 117 and Shawnee Road and SR 117 and Dana Avenue.

The goals of the projects listed above are to improve existing roadways to accommodate needs of the community and to make the region more enticing to growth. None of the projects involve new roadways that would have an effect on existing land uses. The cumulative impact of these projects would be positive to the community and region as a whole.

Bellefontaine Gateway and Corridor Master Plan (2007), LACRPC
This corridor plan of Bellefontaine Avenue is between I-75 and Woodlawn Avenue in Lima. Structures that have recently been improved are identified, as well as areas with future redevelopment or rehabilitation potential. The Gateway and Healthcare/Commercial Zones are within the study area of this analysis. The plan shows the interchange area at I-75 and Bellefontaine Avenue, including the Bath Leonard Neighborhood, as having rehabilitation/ redevelopment potential. The area between I-75 and Dewey Avenue is designated as the Gateway Zone. Within the Gateway Zone, redevelopment potential is identified in areas along Bellefontaine Avenue near Collins and Dana Avenues. The Healthcare/Commercial Zone, located immediately to the west between Dewey Avenue and Elm Street, has two recently improved structures. Redevelopment or rehabilitation potential is identified in areas along Bellefontaine Avenue near the Lima Memorial Hospital.

2030 Long Range Transportation Plan (2005), LACRPC
The purpose of the 2030 Long Range Transportation Plan is to ensure that required transportation needs are identified and resources made available to address future demands. The following lists recommended transportation projects that are within the study area for this analysis.

- I-75 right of way at SR 81 – landscape modification enhancement.
- SR 81 – landscape modification enhancement.
- St. John's Road (SR 65) – Reconstruct two lanes with turn-lanes, curbs, sidewalks and drainage from Breese Road to Pine Street.
- Kibby Street and Bellefontaine Road – Reconstruct and realign with access management from Bellefontaine Avenue to Roberts Avenue.
- Metcalf Street and Kibby Street – Rebuild intersection.
- Hanthorn Street – SR 65 intersection improvement. Implement access management, signalization and lighting as warranted.
- Bellefontaine Avenue Corridor Development – Install decorative lighting, and trees and landscaping in park areas from Kibby Street to Union Street.
- I-75 – Remove existing pavement and reconstruct three 12-foot lanes in each direction with beams as required from interchange 127 to Auglaize County line.

- Fourth Street – Extend Fourth Street to SR 117. Acquire right of way. Widen to three 12-foot lanes for 4,800 linear feet with shoulders and drainage improvements as warranted.
- Pedestrian and bicycle trail systems - Most facilities are located within local and metropolitan parks. The community would like increased connectivity between existing parks and extend trails that are already developed. Parks that would be connected include Heritage Park in Shawnee Township, Allen County Farm Park in Bath Township, and the Ottawa Metro Park.
- Ottawa River Corridor – Multi-modal bicycle/pedestrian trail from Lima Lake Park to Metzger Lake Park.
- Ottawa River Bikeway Phase III - Connects to City of Lima riverwalk system on North Street, crossing I-75 parallel to railroad and continues to Ottawa Metro Park through conservation easements. This bikeway is planned for construction in Spring 2008.

Projected generalized future land use is depicted in the 2030 Long Range Transportation Plan. Within the study area, future land use is predicted to be predominantly commercial and industrial west of I-75. East of I-75, land use is projected to be commercial, industrial, and agricultural. Residential land uses are projected to increase by 2030 in Bath Township.

Comprehensive Economic Development Strategy for Allen County (2005), LACRPC
Redevelopment of one city center industrial park and three new parks occurred from 1995 to 2005. The following lists the development plans in the vicinity of the Allen 75 Study.

- Several industrial parks have been planned near I-75 since 2004
- Central Point Business Park (South edge of Lima - bounded on South by Hanthorn Road, East by SR 65/St. John's Road and West by Lima Corporation Line)
- Allen County Industrial Park/Gateway Commerce Park (Industrial Park is located on the east side of I-75 between exits for SR 65 and Breese Road)
- Foreign Trade Zone/Fort Shawnee Industrial Park (south of Lima in Fort Shawnee - Bounded on south by Shawnee Industrial Center, east by I-75 and west by CSX Railroad)
- Multi-modal Rail Project (Allen County)
- Ford Motor Company Lima Engine Plant (Bath Township)

Bath Township Comprehensive Plan (2005), LACRPC
This comprehensive plan identifies future plans for Bath Township in Allen County. Projected planned subdivisions near I-75 include Autumn Ridge and Pine Lakes Subdivision located north of Bible Road on the east side of I-75 and on Dixie Highway. There are projected mixed-use development plans on both sides of I-75 in the area of Bluelick Road. A redevelopment zone has been designated between Neubrecht Road, Norfolk Southern Railroad, Sugar Street, and SR 81. Land zoned for commercial and residential uses are planned near I-75 north of SR 81. Increased residential developments are planned near I-75 by 2030, although a goal of the plan is also to preserve the rural character of the township.

Transportation corridor plans exist along SR 81, SR 309, and Dixie Highway. Fixed route transit service is planned to extend into Bath Township. The comprehensive plan states a desire for improved aesthetics of existing roadways to serve as an incentive for further investments in the area. Current conditions give an unfavorable impression to the community. Aesthetically pleasing corridors would create a favorable impression and provide gateways to the area.

Northwest Perry Neighborhood Assessment Report (2005), LACRPC
The Northwest Perry Neighborhood is located in Perry Township and is bound by McClain Road, Hanthorn Road, Reese Road, and Tenth Street. The population of the neighborhood has dropped approximately 50 percent since 1970 and is a predominantly low-income population. Vacant and unkempt properties are an issue for the neighborhood. The community has expressed concern that through traffic and commercial traffic be monitored for safety reasons in the residential area.

Bath Leonard Neighborhood Assessment Report (2004), LACRPC
The Bath Leonard Neighborhood is bound by Reservoir Road, Roberts Avenue, Harding Highway (SR 309/117) and I-75. The neighborhood's proximity to I-75 and Bellefontaine Avenue (SR 117) has lead to a residential to commercial transition as well as increased commercial investment within the neighborhood. Roads are currently operating at an overall LOS C, however 2025 projections indicate that the traffic flow conditions will deteriorate.

5.8.3 Assessment of Impacts

5.8.3.1 Land Use
The conceptual build alternatives would have minimal indirect and cumulative impacts on land use in the study area. The alternatives would be within the existing right of way of I-75 therefore land uses surrounding the roadway network are not likely to change as a result of the project. Interchange improvements may have indirect and cumulative impacts to surrounding land uses. Land use surrounding proposed improvements near Breese Road and SR 65 is planned for commercial or zoned for industrial use. This type of development is likely to occur in close proximity to these segments. Future industrial and commercial development in this area would benefit from improvements to interchanges and the local road network.

Areas at the SR 309/SR 117 interchange are already built out; therefore changes in land use would come through redevelopment. This corridor has been identified for potential redevelopment. Improved access at this interchange and along Bellefontaine Avenue could indirectly cause new development to occur. Planned projects would potentially help future development plans be implemented through improved access and safety.

Increased traffic could occur along Bellefontaine Avenue since there are re-development plans for this corridor along with the proposed improvements to the interchange at SR 309/117. Indirect impacts may occur to the Bath Leonard neighborhood from increased through and commercial traffic and possible changes in land use if zoning controls are not effectively used (as evidenced by current vacant properties in the neighborhood) as the major access route to I-75 will be improved.

5.8.3.2 Economics
The Fort Shawnee Industrial Park is the focus of development at the Breese Road interchange and Dixie Highway. The Alpla, Inc. building in this industrial park plans to expand facilities and has purchased a 100,000 square foot site. New industrial parks at SR 65 and near Breese Road have the potential to generate large volumes of truck traffic. The Benjamin Steel Company is planning on expanding their facility at the SR 65 interchange. An improved I-75 and SR 65 interchange would help ease the traffic problems resulting from facility expansions and new development. The extension of Fort Shawnee Industrial Drive

to McClain Road is being funded to encourage development of the industrial park. This extension is depicted as a possible element of the Breese Road interchange options in this area. This extension would open up parcels for development in the industrial park.

Companies considering relocating to the area may find safety and access improvements to the interstate and interchanges attractive. Industrial parks also have a higher visibility to interstate and regional traffic. Access improvements will indirectly help promote the east side of the City of Lima. New companies that may relocate to the area would bring new employees, therefore increasing population. Procter and Gamble recently constructed a new logistics facility on Reservoir Road. They have indicated that truck traffic will eventually use SR 81 to access I-75 versus SR 309, therefore relocating more traffic to SR 81.

5.8.3.3 Population and Community Resources

Population trends show a slow decline in the City of Lima, reflective of out migration from the central city and loss of jobs by the traditional manufacturing sector. Although, Allen County's population has declined over the past 30 years a slight reversal has begun as of late in the areas outside the city limits. Increased population in neighborhoods near I-75 could occur in the future due to interchange improvements and potential growth in the area.

The removal of residential and commercial land, due to displacements, from government tax tolls may cause a loss in property tax revenue, but this impact is expected to be minimal.

The project could indirectly spur new development along local roads with improved interchanges at SR 65, SR 81, and Breese Road. Development plans show a desire by the community to increase residential and commercial development in these areas. Interchange configurations can improve access to community resources, commercial development and employment centers, and thereby increasing patrons to points of interest. Neighborhoods in the vicinity of I-75 could see long-term improvement to traffic capacity and safety and attractiveness of the improved interstate access. Recreational facilities are not expected to be indirectly impacted.

5.8.3.4 Cultural Resources

There are 13 identified NRHP-listed properties within the geographical boundary, three of which have been demolished. Additionally, seven NRHP-eligible architectural sites, two of which have been demolished, have been identified. No indirect impacts are expected to occur to these resources as a result of the proposed improvements. Ground-disturbing activities for roadway improvements may result in archaeological site discoveries throughout the study area.

5.8.3.5 Hazardous Waste

Indirect and cumulative effects for all conceptual build alternatives include an overall reduction of hazardous materials sites. The hazardous waste material sites listed in Section 5.4.5 will be assessed and monitored as needed throughout project development. The indirect and cumulative impacts would be the same for all of the conceptual alternatives and interchange options.

5.8.3.6 Visual Quality

The City of Lima is developing a signature theme for the community, which will be reflected by various means throughout the area. As stated in the plans for Allen County, townships, and the City of Lima, streetscape and corridor plans will improve the aesthetics and image

of the area. Interchange improvements and planned corridor improvements, specifically the Bellefontaine Avenue corridor, would provide a positive effect on the image of the city and region. These improvements and plans could provide gateways and corridor development along SR 65, Fourth Street, SR 309/SR 117, and SR 81. Transportation improvements can also be a catalyst for land development and re-development of areas that currently portray negative images of the city and county.

5.8.3.7 Environmental Justice

Overall, neighborhood and township plans in the area are not dependent on the completion of improvements to I-75. Any new residential and commercial development, while providing new services and resources, could increase property values in environmental justice communities. This may result in low-income populations needing to move elsewhere in the City of Lima for affordable housing.

The Bath Leonard neighborhood currently has many vacant homes. Improved access to the interstate at SR 309/117 could encourage new residents to relocate to the area. This could also increase property values in the neighborhood. The Northwest Perry neighborhood would experience minimal indirect impacts due to it being located at the edge of the study area.

5.8.3.8 Wetlands

Construction activities associated with the project will directly impact wetland areas by reducing their size or filling. Wetlands directly impacted will require mitigation as part of the US Corps of Engineers (USACOE) and Ohio Environmental Protection Agency (OEPA) 404/401 permitting process. Wetland areas adjacent to filling activities may also be indirectly impacted by sedimentation from runoff during construction. Surrounding wetland areas may also dry out over time if drainage patterns are changed by construction. The wetlands that could be indirectly impacted are low-quality, small wetlands.

In general wetlands within the study area are low to average quality wetlands. Many of the existing wetlands between Breese Road and SR 65 that are within the highway right of way were formed as a result of the original construction of I-75 in the 1950s. In the same way, new wetlands may form after the current proposed improvements and planned development near I-75 are completed. Plans for future development in the area of SR 81 may cause new wetlands to form in similar areas and conditions of existing wetlands.

5.8.3.9 Streams/Rivers/Waterbodies/Groundwater

As stated in Section 3.4, the study area includes two named rivers, two named streams, and 20 unnamed primary headwater habitat streams (Figures 9 and 10A - 10H). The four named watercourses are classified as warm water habitat (WWH) by the Ohio Environmental Protection Agency (OEPA). The headwater streams are low to average quality resources. The study area includes 18 open water areas. Most are stormwater retention ponds, borrow pits, or former quarry areas.

Erosion and sedimentation are the most frequent indirect effect of construction on water quality. Construction activities generally cause wearing away and residue due to a clearing and grubbing phase. This is when the natural vegetation is removed from a site. This loss of plant life and ground cover can result in soil washed into surrounding surface waterways from rain. These impacts do not occur nonstop throughout construction activities. These

impacts typically happen only during rain storms. The greatest potential for suspended sediment concentrations to occur is after heavy rainfalls.

Similarly, in-stream erosion (scouring) increases as water rapidly drains from nearby agricultural fields and unpaved surfaces. The majority of drainage ditches in the study area receive runoff from agricultural fields. The runoff contains sediments, herbicides, and pesticides. Moderate-sized and large-sized streams already carry large amounts of sediment following heavy rains or snowmelts. Therefore, the relative contribution of silt-laden runoff from smaller construction sites is minimized. Impacts to smaller streams, however, can be damaging. Since small streams carry smaller sediment loads, the impacts of siltation can be greater by runoff from construction sites. If these sedimentation impacts are severe enough, small streams can be buried under a thick layer of silt throughout construction. However, these changes are usually temporary and conditions eventually return to preconstruction levels. Best management practices can be used to limit or prevent runoff.

A long-term concern is channelization of streams that can happen as a result of highway construction. This change to the natural path of streams can speed up the time it takes to damage a stream. Channelization is known to reduce the different types of aquatic habitat in streams. Channelization also is known to lower groundwater levels, increase the cloudiness of water and sedimentation through erosion. Aquatic animals can be destroyed by increased pollution levels and solar heating of the water.

Indirect effects to groundwater include contamination due to hazardous materials (i.e. leaks and spills) and runoff of salt and other deicing chemicals. Adherence to ODOT's *Construction and Material Specifications Manual* will minimize the potential for indirect effects due to leaks and spills during construction. Lane and/or pavement additions for improvements will require additional deicing chemicals for snow and ice in the winter months. While an increase of deicing chemicals is expected to occur, the design of the roadside drainage and use of best management practices during construction are likely to have a minor indirect impact to groundwater.

Cumulative effects to streams, rivers, waterbodies, and groundwater are expected to be minor within the study area because of the low quality of the resources and the state and federal regulations which protect water resources. Stream impacts require mitigation as part of the USACOE and OEPA 404/401 permitting process. The use of best management practices during construction will also reduce potential impacts.

5.8.3.10 Floodplains

I-75 currently crosses the 100-year floodplain at the Little Ottawa River, Freed Ditch, Lost Creek and the Ottawa River (Figure 9). Indirect effects to floodplains include increased speed of stormwater runoff due to the conversion of undeveloped land to impervious surface (constructed surfaces such as roadways and driveways) for the conceptual alternatives. The increased speed and water volume can affect the hydraulic staging of floodwaters within the project area.

Cumulative effects to the floodplains in the area are not expected. Current regulations prevent development within the 100-year floodplain. Development can only occur within the 100-year floodplain if it can be demonstrated that there will not be a net effect on the 100-year flood elevation for nearby streams. Floodplain regulations are implemented at the local

level, through review of site development plans. Development plans of industrial parks (near Breese Road) and a bikeway (between SR 309/117 and SR 81) are outside of the 100-year floodplain within the study area.

5.8.3.11 Woodlots

Direct impacts to terrestrial communities by the conceptual build alternatives are expected to be minor, because the highway improvements will occur within the existing right of way, which is mostly urban/mowed lawn. Small areas of oak-hickory and successional forest may be cleared.

An indirect effect of highway construction is wildlife habitat fragmentation. Fragmentation is the subdivision of formerly continuous habitat into smaller, disconnected areas. Fragmentation of forested areas increases the amount of edge habitat and decreases the amount of forest interior. Such a change in habitat could alter wildlife species populations, which live in an area. Certain species prefer edge habitats and other species prefer forest interior habitats. This fragmentation can result in wildlife displacement due to loss of or change in habitat.

Highways may also cause adverse impacts to wildlife. Losses in form of road kills, especially where the highway already bisects tracts of natural habitats, are also expected. The highway and local roadways may serve as a barrier to wildlife movement and migration activities. Construction noise may initially affect the amount and breeding success of wildlife along highways.

Cumulative effects to woodlots are unavoidable. The project area was cleared of trees in the 1800s for agriculture. Today there are small woodlots scattered in and around the project area. As ethanol production is increased as a result of creating automobile fuel, these woodlots are likely to be removed to increase acreage of corn production. The construction of the roadway could remove up to 17 acres of woodlots, depending on the alternative. Overall, woodlots are scarce and therefore species that are woodlot dependent for habitat are not commonly encountered in the area. Plans for continued development at the Fort Shawnee Industrial Park near Breese Road would cumulatively reduce the acreage of woodlots in the study area.

5.8.3.12 Farmland

Agricultural land, or farmland, accounts for approximately 23 percent of the land use in the study area. Farmland would likely experience the second greatest land use impact, behind urban/mowed lawn. Secondary impacts to farmlands include reducing the size of existing agricultural fields. This would be a result of converting agricultural land to highway right of way. The smaller, irregular fields may be more difficult to farm because they would take more time to plant, maintain, and harvest. This additional work may increase labor costs and reduce profit margins.

Cumulative effects to farmland are likely to be minor. While development near and around roadway access to the highway is planned, farmland in and around the project area is likely to remain in production to provide ethanol fuel sources for alternative fuel sources. Farmland has the greatest potential for cumulative effects between Breese Road and SR 65 due to plans for industrial development and agricultural land for sale.

6.0 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

Public involvement goals for the Allen 75 Study include the following:

- A public involvement plan that creates a clear understanding of the project needs, and identified conclusions, among the project team and stakeholders
- Review and consideration of all public comments in regard to this project
- Active participation and input in the project development process of the stakeholders and public
- Consensus on conceptual alternative solutions identified for consideration
- Inclusion of all people in the community, specifically environmental justice populations

6.1 Stakeholders

Stakeholders for the Allen 75 Study were identified by the Ohio Department of Transportation (ODOT) District 1. The stakeholders include city, township and county officials, emergency service providers, the Lima-Allen County Regional Planning Commission (LACRPC), Ohio State University-Lima, neighborhood associations, senior homes and mobile home parks along the proposed alignment, the Ottawa River Coalition, utilities, local businesses, and representatives of CSX Transportation, Inc. and Norfolk Southern Corporation. A total of five stakeholder meetings have been held for the Allen 75 Study (Table 32).

Table 32. Stakeholder Meetings

Date	Location	Purpose
February 17, 2005	Lima Senior High School 1 Spartan Way Lima, Ohio	To introduce the project team, present the project study area, and establish project goals and measures of success to be used as a guide in making recommendations throughout the study.
July 14, 2005	Lima-Allen County Regional Planning Commission 130 West North Street, Lima Ohio	To present the conceptual alternative solutions that were identified and assessed for the Allen 75 Study and to obtain comments.
August 4, 2005	Bath Township House 2880 Ada Road, Lima, Ohio	To present the conceptual alternative solutions that were identified and assessed for the Allen 75 Study and to obtain comments.
March 29, 2006	Holiday Inn Lima, Ohio	To provide an overview of project activities, present conceptual alternative solutions, and obtain comments
December 19, 2006	Lost Creek Country Club 2409 Lost Creek Boulevard, Lima, Ohio	To present the conceptual interchange alternatives and their options and to obtain comments.

The first stakeholder meeting was held on February 17, 2005. A total of 34 people attended the meeting. The purpose of this meeting was to introduce the project team, present the project study area, and establish project goals and measures of success to be used as a guide in making recommendations throughout the study.

As a result of the February stakeholder meeting, ODOT expanded the study area to include SR 65, the railroad corridor, SR 117 and Fourth Street. The expanded study area provided a wider range of options for providing access to I-75. Measures of project success based on input from stakeholders were developed for the project. These measures of success were sorted into the following six categories, which will be used throughout the project development process:

- Safety/Traffic
- Community Impacts
- Economic Development
- Environmental
- Constructability/Fiscal Constraint
- Maintenance

The second stakeholder meeting was held on July 14, 2005. A total of 20 people attended the meeting. The purposes of this meeting were to present to the stakeholders the conceptual alternative solutions that were identified and assessed for the Allen 75 Study and to obtain stakeholder comments.

A third stakeholder meeting was held on August 4, 2005, to present the conceptual alternative solutions to stakeholders. A total of 35 people attended the meeting. The format and content of the meeting was the same as the stakeholder meeting held on July 14, 2005.

The fourth stakeholder meeting was held on March 29, 2006. This meeting was a combined stakeholder and public involvement meeting to present conceptual alternative solutions for the I-75 corridor. Section 6.2 describes this meeting in detail.

The fifth stakeholder meeting was held on December 19, 2006, to present conceptual interchange alternatives and their options for review and comment. A total of 83 people attended the meeting. Conceptual interchange designs for six locations along the I-75 corridor were presented and discussed with the stakeholders. Table 33 summarizes the stakeholder comments from this meeting.

Table 33. Summary of Stakeholder Comments From the December 19, 2006 Meeting

Interchange	Comments
Breese Road	• The Breese Road Relocated Diamond design with Breese Road bridge open for emergency medical services (EMS), Fire, and school bus access is preferred. This interchange design would provide connectivity with the construction of an extension of Reed Road to Commerce Parkway. It would also provide two options for existing and future businesses and industry to access I-75 either at Reed Road or SR 65. This option would result in easy access and exit to I-75 and additional developable land. • Widening to McClain Road and a McClain Road overpass was suggested to service existing industries. • The McClain Road/Commerce Parkway connection is preferred because it would facilitate traffic distribution. • The Breese Road Diamond (southbound split option 2) is preferred. • Keeping McClain Road open to alleviate traffic volumes on Fort Shawnee Industrial Drive was recommended. • The Breese Road Diamond with Breese Road separated at the railroad is both preferred and opposed. The connection of Fort Shawnee Industrial Drive to Dixie Road is acceptable. • A relocated interchange is opposed because it would create undesirable traffic patterns in the areas west of the highway. • A direct north access from Fort Shawnee to I-75 was recommended. • Breese Road should remain open as an east-west route, which bypasses congested areas. • The Breese Road Diamond southbound split option is not favored because it would conflict with a proposed rail spur and Alpla expansion. A rail spur will be installed off the CSX line to service the Alpla building, which has plans to expand in 2007.
SR 65	• Relocating the intersection of SR 65 and Yoder Road away from the interchange is preferred. • Keeping the CSX crossing where it currently exists is preferred over the option of extending Commerce Parkway through to Yoder Road and creating another railroad crossing. • The interchange option in combination with the Reed Road extension would provide for continuous travel from Shawnee Road to Yoder Road and would create a southern loop around the city. • The easterly extension of Commerce Parkway to Yoder Road is acceptable.
Fourth Street	• The Fourth Street Diamond option is preferred. • It was suggested that if the Abandoned Railroad Corridor interchange is not constructed, the Fourth Street interchange should be improved, the SR 309/117 interchange closed, and Greely Chapel Road improved to SR 309. • Development of a hybrid interchange of the two options was recommended. • Fourth Street should remain open as an east-west route, which bypasses congested areas. • Fourth Street should remain an interchange because it services several transport companies.

Table 33. Summary of Stakeholder Comments From the December 19, 2006 Meeting

Interchange	Comments
Abandoned Railroad Corridor	• The compressed single-point urban interchange (SPUI) option is preferred because it contains the potential for multiple north-south connector roads from SR 309 to Fourth Street, opens up areas to development, facilitates the flow of traffic, and benefits businesses by maintaining their accesses. • An extension of Roschman Avenue to the west behind the Holiday Inn and a connector road north to Dean Avenue and then to Bryn Mawr was suggest to serve as a continuous north-south connector east of I-75. • The Compressed Diamond option is preferred. • It was suggested that Greely Chapel Road be improved between Fourth Street and SR 309; connect to Fourth Street and SR 309 on the west side on the interchange; and construct a new intersection to handle the five legs of the intersection where the new road connects to Kibby Street. • This interchange concept is opposed because it would create more congestion and the railroad corridor would be bettered served as a local boulevard/parkway road that would alleviate traffic on Fourth Street and Harding Highway by providing an uninterrupted alternate route from one side of I-75 to the other. An easterly extension of this road to SR 117 was recommended.
SR 309/117	• Opposition expressed for both interchange options because they would add more traffic to an already congested area; and because they would negatively impact visibility of and client access to office properties on Dean Avenue. • Both the SR 309/117 Upgrade Existing concept and Compressed Diamond concept are acceptable. • A new interchange option was recommended, which provides traffic management for the interchange while maintaining flow to established businesses on the SR 309 corridor. • Attention to aesthetics and the addition of sidewalks and bike paths are requested.
SR 81	• The proposed interchange design is acceptable. • SR 81 should be constructed with five lanes through the interchange. • The southbound ramp onto I-75 should be improved. • Right of way not used for the new interchange should be offered for development.

6.1.1 SR 309/117 Interchange Roundabout Option

During refinement of the conceptual alternatives, City of Lima officials requested that a roundabout option be developed and evaluated at the SR 309/117 interchange. A conceptual roundabout was designed at the northbound I-75 ramp terminal intersecting with SR 309/117. The roundabout design included the following:

- Two entering lanes per approach
- Two circulating lanes on the roundabout
- Speed limits of 45 miles per hour on each approach of the roundabout
- A center island with an inscribed diameter of 300 feet

A traffic analysis was conducted on the roundabout to determine if it would facilitate traffic flow at the SR 309/117 interchange. The aaSIDRA roundabout analysis software program was used to analyze the roundabout capacity at this location. In order to determine the capacity of the roundabout in the design year (2035), planning level traffic volumes were

used. The analysis of the future capacity of the roundabout was performed for three scenarios: 8, 10, and 12 percent of the average annual daily traffic (peak hour volumes). Peak hour volumes typically fall within a range of eight to 12 percent of the average daily traffic volume on any given roadway. Based on this assumption, estimated peak hour volumes with the eight to 12 percent range were analyzed for the roundabout option. Peak hour volumes were determined by applying the peak hour percentages to daily traffic volumes. A 10 percent truck volume was assumed for all traffic within, approaching, and exiting the roundabout.

Two of the three peak hour volume scenarios used in the traffic analysis would result in a level of service (LOS) where traffic uses all available capacity of the two-lane roundabout. The levels of service would be LOS E and F for the 10 and 12 percent scenarios. The eight percent scenario would be able to handle traffic in 2035 with LOS of B or C. The roundabout approaches would be able to hold traffic below capacity. The next scenario is when the peak hour volume is 10 percent or more of the average annual daily traffic. Results for this scenario showed that the traffic in the southwest and northeast approaches to the roundabout would exceed the roadway's capacity. In the 12 percent peak hour scenario, all but the west approach to the roundabout would be at or above the capacity of the roadway.

Peak hour volumes are expected to exceed eight percent of the design hourly volume (DHV) at some, if not all, approaches to the roundabout. Therefore, it is expected that a two-lane roundabout would not meet future traffic needs at the SR 309/117 interchange. Based upon these results, the roundabout at SR 3097/SR 117 and the I-75 northbound ramps was eliminated from further consideration.

6.2 Public Meetings

There has been one public involvement meeting for the Allen 75 Study. This meeting was held for Concurrence Point #1 on March 29, 2006. A total of 70 people (not including consultants and ODOT staff) attended the meeting. Kirk Slusher of ODOT District 1 conducted a presentation which provided an overview of project activities, conceptual alternative solutions, project aesthetics committee, and next steps of the project. A question and answer session followed the presentation. Topics discussed included pavement problems, geometric deficiencies, capacity, safety, access roads, and the inclusion of this project in planning documents.

A two-week comment period followed the meeting. Comments were submitted by e-mail and in writing. The majority of comments supported the study or one or more of the three recommended six-lane conceptual alternatives. Some individuals requested additional information, or asked to be added to the mailing list for future meeting notifications. Other comments included:

- Requests for consideration of a new interchange at Reservoir Road
- Requests for various local road improvements
- Concerns regarding access to commercial properties near the Breese Road interchange
- Suggestions of re-routing SR 117 along Hanthorn Road to the SR 65 interchange
- Noise and air quality concerns in the Bryn Mawr Avenue area adjacent to I-75
- Concerns about the temporary closure of Breese Road interchange, and the configuration of the reconstructed interchange
- Requests for a new interchange at McClain Road
- Concerns regarding individual properties that may or may not be impacted

6.3 Web Site

The project team developed a project web site to highlight on-going activities. Information is updated periodically to include a project summary, projected schedule/timeline, project updates, public meeting schedules, approved documents, copies of fact sheets and newsletters, and other information to keep the public aware of activities. To maximize awareness of the site, a link to the site has been posted on the ODOT homepage.

6.4 Newsletter

The project team issued the first of several newsletters in May 2006. The newsletter summarized project background and purpose and need. The newsletter also presented alternatives development, description of alternatives recommended for further evaluation, next steps in the Project Development Process and continued public involvement.

The second newsletter was issued in September 2007. This newsletter summarized work completed through Step 5 and on-going activities. Topics covered include public involvement, environmental investigations, description of conceptual alternatives, and future project activities. The newsletters are also available on the project web site.

6.5 Agency Coordination

Agency coordination was conducted in 2004, 2005, and 2006 for the *Red Flag Summary* (May 2005), *Existing and Future Conditions Report* (December 2005), environmental site assessment screening, Phase I history/architecture survey, Phase II history/architecture investigations, and Level I ecological survey. As the project progresses, alternatives and potential impacts will be coordinated with federal, state, and local agencies. Table 34 provides a summary of agency coordination conducted to date for the Allen 75 Study.

Table 34. Agency Coordination

Agency	Coordination Purpose
Natural Resources Conservation Service	Contacted for soil survey geographic data.
US Fish and Wildlife Service, Reynoldsburg, Ohio Field Office	Contacted to determine the presence of unique or significant ecological resources such as threatened and endangered species, geologic features, breeding or nonbreeding animal concentrations, and rare habitat.
Ohio Department of Natural Resources, Division of Natural Areas and Preserves and Division of Wildlife	Contacted to determine the presence of unique or significant ecological resources such as threatened and endangered species, champion trees, geologic features, natural preserves, state parks, forested or wildlife areas, breeding or nonbreeding animal concentrations, and rare habitat.
Ohio Department of Natural Resources, Division of Geological Survey	Contacted for oil and gas well location data.
Ohio Environmental Protection Agency	Contacted for river mile and water quality data.

Table 34. Agency Coordination

Agency	Coordination Purpose
Ohio Historic Preservation Office	Contacted to determine the presence of significant historic and archaeological resources such as properties listed or eligible for the National Register of Historic Places, National Historic Landmarks, historic bridges, and Ohio Historic Inventory properties. Coordinated the Phase I and Phase II history/architecture survey with the State Historic Preservation Officer.
Ohio Rail Commission	Contacted for information regarding railroad owners, which include Norfolk Southern Corporation; CSX Transportation, Inc., and Indiana & Ohio Railway.

6.6 Utility Coordination

Coordination with Ohio Utility Protection Service (OUPS) was completed on December 12 and 13, 2006 requesting information on utility companies that had facilities in the study area (Appendix G). Locations of facilities were also identified where available (Figure 14). The following companies have been identified as having facilities in the in the study area.

- Qwest – fiber optic cable
- BP Pipeline – pipelines
- City of Lima – sanitary sewers
- City of Lima – water
- Midwest Electric – overhead distribution lines
- TEPPCO – pipelines
- Marathon Ashland – pipelines
- Telephone Service Company – buried fiber optic cable
- Columbia Gas Transmission – gas lines
- American Electric Power Company – power lines
- Midvalley Pipeline – pipelines
- Indiana Michigan Power (AEP) – transmission and sub-transmission lines

The following utility companies may have facilities in the study area. Attempts to obtain information were made through OUPS but requests were not returned.

- Buckeye Pipeline Company
- Village of Cridersville
- Dominion East Ohio
- Embark (formally Sprint local)
- Time Warner Cable
- Wood River Pipeline
- New Knox Telephone and Cable

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 No Build Alternative

The No Build alternative maintains the current four-lane configuration of I-75 and consists of minor, short-term safety and maintenance to the interstate, which would maintain its continuing operation. Current safety problems and geometric deficiencies of the roadway network would continue to exist and could possibly become worse over time as traffic volumes increase in the I-75 corridor. According to the traffic analysis, levels of service (LOS) along I-75 will decline in the future, as traffic volumes increase. As presented in Table 23, levels of service on I-75 and interchange ramps would be LOS B and C in 2015. The level of service on certain mainline segments and interchange ramps would decrease over time. In 2035, the level of service would be LOS C along the I-75 corridor with the exception of three locations:

- The Breese Road northbound mainline segment of I-75 would operate at LOS B (17.5 passenger cars / mile / lane) in the peak hour of year 2035.
- The on-ramp from SR 117 / 309 to northbound I-75 is expected to operate at LOS D (28.1 passenger cars / mile / lane) in the peak hour of year 2035.
- The off-ramp from I-75 northbound to SR 81 eastbound is expected to operate at LOS D (28.5 passenger cars / mile / lane) in the peak hour of year 2035.

The No Build alternative would not impact community cohesion, community resources, environmental justice populations, ecological resources or historic resources. Land use would not change as a result of the No Build alternative. The No Build alternative would not displace or alter access to community and highway-related businesses. Accessibility to businesses would become worse as traffic increases and the levels of service decrease within the I-75 corridor. The No Build alternative is not expected to directly impact employment and business districts in the study area. Under the No Build alternative, 316 noise sensitive sites in the study area would experience noise impacts in 2035.

The No Build would not meet the purpose and need for the Allen 75 Study or the five project goals established by stakeholders. The No Build alternative would not improve pavement performance and roadway deficiencies. The No Build alternative is retained as a baseline for evaluation of the highway build conceptual alternatives.

7.2 Conceptual Build Alternatives

A comparative analysis was conducted for the conceptual build alternatives. The analysis focused on results of the traffic analysis, environmental consequences, and cost estimates. Table 35 presents a summary of the levels of service, environmental impacts and costs associated with Alternatives A, B, and D. Based on the comparative analysis, Alternative A is recommended for further study.

7.2.1 Alternatives A, B, and D

Alternative A is a four-lane alternative that upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards. Alternative B is a hybrid of alternatives A and D. It is a four-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards and provides provisions for future upgrade to a six-lane facility. Alternative D is a six-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards. Details and figures of each alternative are provided in Appendix A.

The conceptual build alternatives would not adversely affect community resources, environmental justice communities, or economic development within the study area. Alternative A would not displace any residences but would displace three businesses. Alternatives B and D would have the same displacements, five residences and three businesses, since both make provisions for a six-lane facility and have the same right of way limits. None of the alternatives are expected to impact pedestrian or bicycle facilities or public transportation within the study area.

Alternative A has the least amount of environmental impacts of the conceptual build alternatives. This is due to the fact that Alternative A would require the least amount of right of way. Alternative A would require approximately 14 acres less right of way than Alternatives B and D. Impacts to the natural environment would be minor for all alternatives because land use in the study area is dominated by commercial, residential, industrial, and transportation development. Alternative A would have less impact to wetlands, streams, and terrestrial habitat than Alternatives B and D. Impacts to floodplains would be the same for all conceptual build alternatives. Expected impacts to wetlands, streams, open water, terrestrial communities, and floodplains are summarized in Table 35.

Historic resources would not be affected by any of the conceptual build alternatives. There are not any resources listed or eligible for listing on the National Register of Historic Places within the study area. There are no known archaeological resources located between the southern project limits and south of Fourth Street. One archaeological site is located in the area of the SR 81 interchange. Two archaeological sites are located between Fourth Street and SR 309/117. It is anticipated that none of these sites would be impacted by the conceptual build alternatives.

Inventories for hazardous material sites identified 28 properties as having potential hazardous materials concerns within proposed right of way limits for Alternatives A, B, and D. Phase I Environmental Site Assessments will be completed for these sites in Step 6 of the Project Development Process.

All conceptual build alternatives would increase noise levels in the study area. Alternatives A and B move traffic closer to the noise-sensitive land use sites between Fourth Street and SR 81. The proximity of Alternatives A and B to noise sensitive sites, along with future traffic increase projections in other areas, result in 436 sites exceeding the noise abatement criteria (NAC) in 2035. Alternative D adds an additional lane of traffic in both directions to the existing highway and also moves traffic closer to the noise-sensitive land use sites. Under Alternative D, 460 sites would exceed the NAC in 2035.

All three conceptual build alternatives would improve traffic capacity within the I-75 corridor. Alternative D is expected to have levels of service of A and B for the years 2015 and 2035. Alternatives A and B would operate at levels of service of B and C during peak hours for both years.

The preliminary construction ($203,430,157) and right of way ($15,675,208) costs for Alternative A are the lowest of the three conceptual build alternatives. The preliminary construction and right of way costs for Alternative B are estimated to be $234,206,219 and $18,557,634, respectively. The preliminary construction and right of way costs for Alternative D are estimated to be $246,522,804 and $18,557,634, respectively. A mid-range

inflation rate of 48.8 percent was applied to the construction costs. The right of way costs reflect 2007 estimates.

7.2.2 Alternative C

Alternative C is a four-lane alternative, which upgrades the existing I-75 mainline and interchange ramps to meet current geometric design standards, provides auxiliary lanes where necessary in areas of level of service D or worse, and makes provisions for future upgrade to a six-lane facility. The traffic analysis determined that LOS B and C can be achieved from Alternative B by improving acceleration/deceleration lane lengths and distances between successive ramps. Therefore, Alternative C was determined not to be necessary and eliminated from further consideration.

7.2.3 Build Alternative Recommendations

Based on construction and right of way cost estimates, environmental impacts, levels of service, and engineering design features, Alternative A is recommended as the feasible alternative to be developed in further detail in Step 6 of the Project Development Process. As shown in Table 35, Alternatives A, B, and D are very similar and would each address the five project goals established through public involvement:

- Improve pavement and bridge conditions on I-75 between mile points 0.21 and 10.00.
- Improve safety by upgrading to current state and federal design standards
- Provide sufficient capacity for future traffic needs
- Assure appropriate access to sustain existing and future economic growth
- Minimize impacts to social, economic and environmental resources

The four-lane Alternative A is the least expensive and has the least amount of environmental impacts of the conceptual build alternatives. This is due to the fact that the typical section of Alternative A on I-75 is not as large as Alternatives B and D. The design features of Alternative A would improve pavement and bridge conditions, improve safety and provide LOS B and C in 2035 within the I-75 corridor.

Alternative B is a hybrid of Alternatives A and D therefore, it reflects elements of the two conceptual build alternatives. Alternative B is a four-lane alternative, which provides a right of way for six travel lanes, therefore, Alternatives B and D have the same proposed right of way limits and environmental impacts. The design features of Alternative B would improve pavement and bridge conditions, provide more room to accommodate future maintenance, improve safety and provide LOS B and C in 2035 within the I-75 corridor. The right of way cost for Alternative B is the same as Alternative D and greater than Alternative A. The estimated construction cost is lower than Alternative D, but higher than Alternative A. This is because the overpasses and other design features would be constructed to accommodate a third travel lane in the future. Based on the traffic analysis, a third future travel lane is not justified, LOS B and C can be achieved with four travel lanes in 2035. Because of the high costs and environmental impacts, Alternative B is not justified as a feasible alternative and is not recommended for further study.

Alternative D is the most expensive to construct of the three conceptual build alternatives, because it would provide six travel lanes on I-75. The six travel lanes would provide LOS A and B on the I-75 mainline and interchange ramps in 2035. The environmental impacts that would result from Alternative D are higher than Alternative A, because of the wider right of

way needed to accommodate a six-lane highway. Alternative D is not recommended as a feasible alternative because of its environmental impacts and high construction cost $246,522,804. Alternatives A and B would satisfy the five project goals for lower costs.

Table 35. Summary of Impacts by Mainline Alternative

Impacts/Issues	No Build	Alternative A	Alternative B	Alternative D
Key Design Features	Safety and maintenance for continuing operation	Upgrade existing four-lane I-75 mainline facility and interchange ramps to meet design standards.	Upgrade existing four-lane I-75 and interchange ramps; provide for future upgrade to a six-lane facility	Widen I-75 mainline to six lanes and upgrade interchange ramps to meet design standards
2035 Level of Service	B, C and D	B and C	B and C	A and B
Estimated Costs				
*Preliminary Construction Costs**	$12,349,656.00	$203,430,157	$234,206,219	$246,522,804
Right of Way Costs	Not applicable	$15,675,208	$18,557,634	$18,557,634
Right of Way Impacts	No impact	89.77 acres	103.94 acres	103.94 acres
Socioeconomic Impacts				
Social and Community Impacts	No impact	No direct impact	No direct impact	No direct impact
Economic Impacts	No impact	No impact	Encourage future economic development; potential commercial displacements	Encourage future economic development; potential commercial displacements
Potential Relocations	None	3 commercial	5 residential; 3 commercial	5 residential; 3 commercial
Environmental Justice	No impact	No disproportionate impacts	No disproportionate impacts	No disproportionate impacts
Land Use Impacts	No impact	Majority commercial and agricultural	Majority agricultural, commercial/office, and industrial	Majority agricultural, commercial/office, and industrial
Ecological Resources Impacts				
100-Year Floodplain	No impact	4 floodplain crossings: Ottawa River, Little Ottawa River, Freed Ditch, Lost Creek	4 floodplain crossings: Ottawa River, Little Ottawa River, Freed Ditch, Lost Creek	4 floodplain crossings: Ottawa River, Little Ottawa River, Freed Ditch, Lost Creek
Threatened and Endangered Species	No impact	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat
Wetlands	No impact	4.14 wetland acres	5.35 wetland acres	5.35 wetland acres
Streams	No impact	8388.6 linear feet	8589.6 linear feet	8589.6 linear feet
Open Waters	No impact	0.50 acres	0.50 acres	0.50 acres
Terrestrial Habitat	No impact	492.6 terrestrial habitat acres	507.12 terrestrial habitat acres	507.12 terrestrial habitat acres
Geotechnical Issues	No impact	Quarry; "Very limited" subgrade soil	Quarry; "Very limited" subgrade soil	Quarry; "Very limited" subgrade soil
Cultural Resources Impacts				
History/Architecture	No impact	No impact	No impact	No impact

Table 35. Summary of Impacts by Mainline Alternative

Impacts/Issues	No Build	Alternative A	Alternative B	Alternative D
Archaeological	No impact	No impact	No impact	No impact
Hazardous Materials (sites recommended for Phase I ESA)	No impact	26 sites	26 sites	26 sites
Visual Quality Impacts	No impacts	Improve landscaping; Establish signature theme throughout corridor	Improve landscaping; Establish signature theme throughout corridor	Improve landscaping; Establish signature theme throughout corridor
Section 4(f) and 6(f) Impacts	No impacts	No impacts	No impacts	No impacts
Noise Impacts (sites above NAC in Design Year)	316	436	436	460
Consistency with local plans	Not consistent with local plans	Improves infrastructure; increases safety	Improves infrastructure; increases safety	Improves infrastructure; increases safety; reduces congestion

Note:
* Mid-inflation rate of 48.8 percent applied

7.3 Interchange Options Comparison

Improvement options are proposed at five existing interchanges along I-75 (Appendix A). All conceptual build alternatives include upgrading geometric deficiencies at Breese Road, SR 65, Fourth Street, SR 309/117, and SR 81. The purpose of the interchange options that are more than rehabilitation was to determine if they could achieve an increased function over the rehabilitation options at comparable costs. If the goals of improved function and comparable costs were not achieved, then rehabilitation of the existing interchange was recommended for further study. Where there are some operational or functional benefits but the interchange option is more expensive than just reconstructing the existing interchange, further study of the design may be required. The Abandoned Railroad interchange options involved a more detailed analysis due to significant costs and operational impacts to determine if the options were feasible.

7.3.1 Breese Road Interchange

The Breese Road interchange options are shown in Appendix A. The rehabilitation of the Breese Road interchange to correct geometric deficiencies is included in the I-75 mainline alternatives. Option 1 provides a new diamond interchange north of the existing interchange with a connection to Fort Shawnee Industrial Drive. Options 2 and 3 shift the southbound ramps to terminate at a re-aligned Fort Shawnee Industrial Drive. Table 36 provides a summary of design features, environmental impacts, traffic data, and costs for each Breese Road interchange option.

Table 36. Breese Road Interchange Summary

Impacts/Issues	Rehabilitation[1]	Option 1	Option 2	Option 3
Key Design Features	Upgrade to correct existing geometric deficiencies	New diamond interchange north of existing interchange	Shift southbound ramps to terminate at re-aligned Fort Shawnee Industrial Drive	Shift southbound off-ramp to terminate at re-aligned Fort Shawnee Industrial Drive
2035 Level of Service	B	B	B	B
Estimated Costs				
Preliminary Construction Costs	Included in mainline	$10,484,035.50	$7,025,622.00	$5,893,086.00
Right of Way Costs	Included in mainline	$673,830.00	$268,723.00	$316,023.00
Right of Way Impacts	No impact	28.47 acres	10.48 acres	9.3 acres
Socioeconomic Impacts				
Social and Community Impacts	No impact	No direct impacts	No direct impacts	No direct impacts
Economic Impacts	No impact	Encourages industrial park and FTZ development	Encourages industrial park and FTZ development	Encourages industrial park and FTZ development
Potential Relocations[2]	None	None	None	None
Environmental Justice	No impact	No disproportionate impacts	No disproportionate impacts	No disproportionate impacts

Table 36. Breese Road Interchange Summary

Impacts/Issues	Rehabilitation[1]	Option 1	Option 2	Option 3
Land Use Impacts	No impact	Majority agricultural	Majority agricultural	Majority agricultural
Ecological Resources Impacts				
100-Year Floodplain	No impact	1 area - Little Ottawa River	1 area - Little Ottawa River	1 area - Little Ottawa River
Threatened and Endangered Species	No impact	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat
Wetlands	No impact	1.09 wetland acres	0.42 wetland acres	0.36 wetland acres
Streams	No impact	No impact	No impact	No impact
Open Waters	No impact	0.18 acres open water	No impact	No impact
Terrestrial Habitat	No impact	29.58 terrestrial habitat acres	9.74 terrestrial habitat acres	8.75 terrestrial habitat acres
Geotechnical Issues	No impact	"Very limited" subgrade soil	"Very limited" subgrade soil	"Very limited" subgrade soil
Cultural Resources Impacts				
History/ Architecture	No impact	No impact	No impact	No impact
Archaeological	No impact	No impact	No impact	No impact
Hazardous Materials (sites recommended for Phase I ESA)	No impact	0 sites	1 site	1 site
Visual Quality Impacts	No impact	Context sensitive design for bridges	Context sensitive design for bridges	Context sensitive design for bridges
Section 4(f) and 6(f) Resource Impacts	No impact	No impact	No impact	No impact
Noise Impacts (sites above NAC in Design Year)	NA	NA	NA	NA
Consistency with local plans	Improves existing infrastructure; Increase safety	Compatible with development plans at Fort Shawnee Industrial Park	Compatible with development plans at Fort Shawnee Industrial Park	Compatible with development plans at Fort Shawnee Industrial Park

Note:
1. Rehabilitation impacts are in addition to those already included in the mainline alternatives.
2. Potential relocations noted are in addition to the relocations for Alternatives A, B, or D.
* = The range of impacts are provided when results differ between Alternatives A, B, and D. Otherwise impacts are the same for Alternative A, B, or D.

Pros

- Level of service maintained at LOS B
- No relocations required
- No Environmental Justice impacts
- No direct community impacts
- No cultural resource impacts
- Encourage industrial parks and Foreign Trade Zone (FTZ) development
- No Section 4(f) or 6(f) resource impacts
- No stream impacts
- Increase safety

- Eliminate access management issues of Fort Shawnee Industrial Drive

Cons

- Wetland impacts
  - Option 1 will impact the most wetland acres (1.09 acres)
- Hazardous material site impacts
  - Option 2 and 3 will impact the most sites (one) recommended for Phase I ESA
- Minor clearing of potential roost trees for Indiana bat
- Right of way impacts
  - Option 1 will require the most right of way (28.47 acres)
- Farmland impacts
  - Option 1 will impact the most farmland (22.36 acres)
- Option 1 is estimated to have the highest right of way and construction costs

Based on impacts to farmland, right of way, wetlands, and streams as well as construction and right of way costs, it is recommended that Breese Road Interchange Options 1 and 2 be eliminated from further consideration. Rehabilitation of the Breese Road interchange and Option 3 are recommended for further study in Step 6 of the Project Development Process (PDP).

7.3.2 SR 65 Interchange

The key design feature for the SR 65 interchange includes reconfiguration of Yoder Road to intersect independently with SR 65. Also, the design will improve the entrance ramp grades and increase merge lengths onto I-75 to current standards. This interchange option is included as part of the I-75 mainline alternatives shown in Appendix A and is recommended for further development in Step 6 of the PDP. Table 37 provides a summary of design features, environmental impacts, traffic data, and costs for the SR 65 Diamond Interchange.

Table 37. SR 65 Diamond Interchange

Impacts/Issues	SR 65 Rehabilitation[1]
Key Design Features	Upgrade geometric deficiencies of the on-ramp acceleration lengths and re-align Yoder Road
2035 Level of Service	C
Estimated Costs	
Preliminary Construction Costs	Included in mainline
Right of Way Costs	Included in mainline
Right of Way Impacts	No impact
Socioeconomic Impacts	
Social and Community Impacts	No impact
Economic Impacts	Access change to highway-related business
Potential Relocations[2]	None
Environmental Justice	No disproportionate impacts
Land Use Impacts	Majority Agricultural and Commercial
Ecological Resources Impacts	
100-Year Floodplain	No impact
Threatened and Endangered Species	Minor clearing of potential roost trees for Indiana bat
Wetlands	No impact
Streams	No impact

Table 37. SR 65 Diamond Interchange

Impacts/Issues	SR 65 Rehabilitation[1]
Open Waters	No impact
Terrestrial Habitat	No impact
Geotechnical Issues	"Very limited" subgrade soil
Cultural Resources Impacts	
History/Architecture	No impact
Archaeological	No impact
Hazardous Materials (sites recommended for Phase I ESA)	No impact
Visual Quality Impacts	Context sensitive design and landscaping
Section 4(f) and 6(f) Resource Impacts	No impact
Noise Impacts (sites above NAC in Design Year)	NA
Consistency with local plans	Meets local plans to encourage growth and increase safety

1. Rehabilitation impacts are in addition to those already included in the mainline alternatives.
2. Potential relocations noted are in addition to the relocations for Alternatives A, B, or D.

7.3.3 Fourth Street Interchange

The key design feature for the Fourth Street Interchange Option 1 is to re-configure the existing northbound ramps to a diamond configuration. The on-ramps and off-ramps will be upgraded to current geometric design standards. Construction of this option would require the largest removal of trees associated with a woodlot adjacent to the existing Ohio State Highway Patrol station. Table 38 provides a summary of design features, environmental impacts, traffic data, and costs for the Fourth Street interchange. Both rehabilitation of the interchange and Option 1 are recommended for further study in Step 6 of the PDP.

Table 38. Fourth Street Interchange Option

Impacts/Issues	Rehabilitation[1]	Fourth Street Option 1
Key Design Features	Upgrade deficient ramp curves and acceleration lengths	Upgrade existing interchange with northbound ramps in a diamond configuration
2035 Level of Service	C	C
Estimated Costs		
Preliminary Construction Costs	Included in mainline	$6,293,951
*Right of Way Costs**	Included in mainline	$203,749 - $240,569
Right of Way Impacts*	No impact	2.49 - 2.94 acres
Socioeconomic Impacts		
Social and Community Impacts	No impact	No impact
Economic Impacts	No impact	No impact
Potential Relocations[2]	None	None
Environmental Justice	No disproportionate impacts	No disproportionate impacts
Land Use Impacts	No impact	Industrial
Ecological Resources Impacts		
100-Year Floodplain	No impact	No impact
Threatened and Endangered Species	No impact	No impact; Minor clearing of potential roost trees for Indiana bat
Wetlands	No impact	No impact
Streams	No impact	No impact
Open Waters	No impact	No impact

Table 38. Fourth Street Interchange Option

Impacts/Issues	Rehabilitation[1]	Fourth Street Option 1
*Terrestrial Habitat**	No impact	2.49 - 2.94 terrestrial habitat acres
Geotechnical Issues	No impact	"Very limited" subgrade soil
Cultural Resources Impacts		
History/Architecture	No impact	No impact
Archaeological	No impact	No impact
Hazardous Materials (sites recommended for Phase I ESA)	No impact	No impact
Visual Quality Impacts	No impact	Improves landscaping
Section 4(f) and 6(f) Resource Impacts	No impact	No impacts
Noise Impacts (sites above NAC in Design Year)	NA	NA
Consistency with local plans	Increases safety	Increases safety

Note:
1. Rehabilitation impacts are in addition to those already included in the mainline alternatives.
2. Potential relocations noted are in addition to the relocations for Alternatives A, B, or D.
* = Range of impacts are provided when results differ between Alternatives A, B, and D. Otherwise impacts are the same for Alternative A, B, or D.

7.3.4 Abandoned Railroad Interchange

Four Abandoned Railroad interchange options are under consideration and are shown in Appendix A. These options are defined by a new interchange at the abandoned railroad corridor and the closure of the Fourth Street and SR 309/SR 117 interchanges. Table 39 provides a summary of design features, environmental impacts, traffic data, and costs for the four Abandoned Railroad interchange options.

Pros

- Level of service C
- No relocations required and removes potential relocations required by SR 309/117
- No Environmental Justice impacts
- No open water impacts
- Improves infrastructure
- Encourages new business growth
- No Section 4(f) or 6(f) resources impacts
- Reduces congestion on the SR 309/117 corridor
- Reduces the total number of ramps to I-75 in the study area

Cons

- 1,893 to 2,020 linear feet stream impacts
- Hazardous material site impacts
    - Five sites for Options 1 and 3
    - Six sites for Option 2
    - Seven sites for Option 4
- Minor clearing of potential roost trees for Indiana bat
- Changes direct access to highway-related businesses
- Farmland impacts total 1.92 acres for all options
- Right of way impacts
    - Options 1 and 2 will require the most right of way acres

- Options 1 and 2 have the highest right of way cost
- Options 3 and 4 have the highest construction cost

The concept of a new interchange at the abandoned railroad corridor was proposed to relieve congestion and improve safety on SR 309/117 by removing multiple access points from these arterials. Access to and from I-75 would thus be shifted to a new arterial and new interchange location, allowing for appropriate arterial roadway design, intersection spacing, and access management. It was assumed that this new interchange could be designed to eliminate many of the safety concerns currently occurring on SR 309 and 117. The traffic analysis analyzed the advantages and disadvantages that a new interchange at the abandoned railroad corridor would provide to the I-75 corridor. The traffic analysis determined that a new interchange at this location and the elimination of the Fourth Street and SR 309/117 interchanges would not provide improvements to safety or capacity on the I-75 mainline that could not be achieved by improving the Fourth Street and SR 309/117 interchanges.

The assessment for the I-75 mainline examined the 2035 queue lengths on the SR 309/117 interchange ramps to determine if vehicles would be backed up on the I-75 mainline as they exit the interstate. A queuing analysis was conducted using 2035 certified peak hour traffic volumes at the SR 309/117 interchange. In 2035, the 95th percentile off-ramp queues are expected to be below the available length of the ramp. Therefore, queuing of traffic back onto the interstate is not expected to be a problem at this interchange in 2035.

A weaving analysis was conducted between the Fourth Street and SR 309/117 interchanges during the PM peak hour of year 2035 to determine if there would be a weaving problem between the two interchanges due to their close proximity. The existing northbound and southbound weave distances are 0.7 miles and 0.59 miles, respectively between the two interchanges. Merging the two interchanges at a single location would eliminate the weaving movement between the two interchanges. Weaving levels of service were calculated from the Highway Capacity Software and were found to be LOS D for the northbound and southbound lanes in the PM peak hour.

The weave analysis further studied how improvements to the Fourth Street and SR 309/117 interchanges would the affect the weave movement between the interchanges. The minimum weave distance under any of the options would be 0.68 miles northbound and 0.49 miles southbound between the Fourth Street and SR 309/117 interchanges. In several interchange options, the ramps are positioned so that the weave segment, which is the distance between the Fourth Street and SR 309/117 ramps would actually be longer than it is currently. The proposed modifications to the Fourth Street and SR 309/117 interchanges such as widening shoulders, and improving lane width and horizontal curvature would improve safety for weaving traffic. Additionally, as a result of flattening the ramp curvature in all of the Fourth Street and SR 309/117 interchange options, vehicles would be able to accelerate and decelerate on the ramps instead of on the interstate. This would improve the weave because vehicles would not have to adjust speeds on I-75 to the extent they do under existing conditions, thereby reducing the number if conflicts that result from traffic traveling at varying speeds.

The traffic analysis and weave analysis determined that safe and uncongested travel on I-75 does not appear to be reliant on the construction of a new interchange at the abandoned railroad corridor. Safety concerns along SR 309 and SR 117 do exist and will continue

Table 39. Abandoned Railroad Interchange Options

Impacts/Issues	Option 1	Option 2	Option 3	Option 4
Key Design Features	New Diamond Interchange at Abandoned Railroad; Close Fourth Street and SR 309/117 Interchanges to I-75; west side connector tie into SR 309 near Turner Street	New Diamond Interchange at Abandoned Railroad; Close Fourth Street and SR 309/117 Interchanges to I-75; connector tie into SR 309 at Bellefontaine Avenue, S. Leonard Avenue, and E. Kibby Street	New Compressed Single-Point Urban Interchange at Abandoned Railroad; Close Fourth Street and SR 309/117 Interchanges to I-75; west side connector tie into SR 309 near Turner Street	New Compressed Single-Point Urban Interchange at Abandoned Railroad; Close Fourth Street and SR 309/117 Interchanges to I-75; connector tie into SR 309 at Bellefontaine Avenue, S. Leonard Avenue, and E. Kibby Street
2035 Level of Service	C	C	C	C
Estimated Costs				
*Preliminary Construction Costs**	$21,667,973 -$22,353,779	$21,495,899 -$22,181,705	$26,078,277 -$26,969,475	$24,703,918 -$25,595,071
*Right of Way Costs**	$13,087,442 -$14,883,335	$13,941,400 -$15,775,635	$11,297,402 -$13,157,504	$12,041,624 -$13,870,612
Right of Way Impacts*	42.56-46.32 acres	43.53-48.61 acres	36.99-40.99 acres	37.89-42.94 acres
Socioeconomic Impacts				
Social and Community Impacts	Change access to neighborhoods and community businesses	Change access to neighborhoods and community businesses	Change access to neighborhoods and community businesses	Change access to neighborhoods and community businesses
Economic Impacts	Eliminates direct access to highway-related businesses	Eliminates direct access to highway-related businesses	Eliminates direct access to highway-related businesses	Eliminates direct access to highway-related businesses
Potential Relocations	None	None	None	None
Environmental Justice	No disproportionate impacts	No disproportionate impacts	No disproportionate impacts	No disproportionate impacts
Land Use Impacts	Majority vacant and commercial	Majority vacant and commercial	Majority vacant and commercial	Majority vacant and commercial
Ecological Resources Impacts				
100-Year Floodplain	1 area - Lost Creek	1 area - Lost Creek	1 area - Lost Creek	1 area - Lost Creek

Table 39. Abandoned Railroad Interchange Options

Impacts/Issues	Option 1	Option 2	Option 3	Option 4
Threatened and Endangered Species	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat
*Wetlands**	0.10 - 0.17 wetland acres	0.10 - 0.17 wetland acres	0.10 - 0.17 wetland acres	0.10 - 0.17 wetland acres
*Streams**	2,020 - 1,915 linear feet	1,998 - 1,893 linear feet	2,020 - 1,915 linear feet	1,998 - 1,893 linear feet
Open Waters	No impact	No impact	No impact	No impact
*Terrestrial Habitat**	48.38-44.68 terrestrial habitat acres	45.73-42.31 terrestrial habitat acres	42.68-38.90 terrestrial habitat acres	38.87-36.30 terrestrial habitat acres
Geotechnical Issues	"Very limited" subgrade soil	"Very limited" subgrade soil	"Very limited" subgrade soil	"Very limited" subgrade soil
Cultural Resources Impacts				
History/Architecture	No impact	No impact	No impact	No impact
Archaeological	No impact	No impact	No impact	No impact
Hazardous Materials (sites recommended for Phase I ESA)	5 sites	6 sites	5 sites	7 sites
Visual Quality	Adds interchange to existing landscape	Adds interchange to existing landscape	Adds interchange to existing landscape	Adds interchange to existing landscape
Section 4(f) and 6(f) Resource Impacts	No impact	No impact	No impact	No impact
Noise Impacts (sites above NAC in Design Year)	NA	NA	NA	NA
Consistency with local plans	Improve infrastructure; encourages new businesses	Improve infrastructure; encourages new businesses	Improve infrastructure; encourages new businesses	Improve infrastructure; encourages new businesses

Notes:
1. This interchange option was not included in the noise model due to traffic not being moved closer to noise sensitive land uses.
* = Range of impacts are provided when results differ between Alternatives A, B, and D. Otherwise impacts are the same for Alternative A, B, or D.

unless addressed. In 2006 (the most recent year for which crash data is available), the segment of SR 117 between SR 65 and Greeley Chapel Road was ranked 54th on the list of Non-Freeway Hot Spots with 479 crashes. An interchange at the abandoned railroad corridor may be considered as a potential way of addressing safety concerns on the local roadways if other, more cost-efficient solutions can not be implemented.

Based on a variety of environmental impacts, community impacts, engineering design issues, excessive costs, and lack of benefit to I-75, none of the Abandoned Railroad options are recommended for further consideration

7.3.5 SR 309/117 Interchange

Three options are under consideration at the SR 309/117 interchange and are shown in Appendix A. These options include upgrading the existing interchange and realigning SR 117. Table 40 provides a summary of design features, environmental impacts, traffic data, and costs for these interchange options.

Table 40. SR 309/117 Interchange Options

Impacts/Issues	Rehabilitation[1]	SR 309 Option 1	SR 309 Option 2	SR 117 Option 1
Key Design Issues	Upgrade deficient curve deceleration and acceleration lengths and remove Dean Avenue from ramp	Upgrade existing interchanges; dead end Dean Avenue at Wellesley Drive	Upgrade existing interchanges; dead end Dean Ave. at Wellesley Dr.; remove left turns for eastbound SR 309/117	Realign SR 117 on historical alignment
2035 LOS	C	C	C	C
Estimated Costs				
*Preliminary Construction Costs**	Included in mainline	$13,916,978 - $14,485,117	$12,676,390 – $13,144,268	$19,986,882 – $20,438,051
*Right of Way Costs**	Included in mainline	$1,566,747 – $1,945,086	$267,493 – $686,914	$5,706,013 - $6,456,862
Right of Way Impacts*	No impact	3.7 – 4.25 acres	2.22 – 2.67 acres	11.3 – 12.85 acres
Socioeconomic Impacts				
Social and Community Impacts	No impact	Displace residences	Displace residences	Displace residences and change access at SR 309
Economic Impacts	No impact	Loss of revenue due to potential displacements	Loss of revenue due to potential displacements	Loss of revenue due to potential displacements
Potential Relocations[2]	None	6 - 11 residential/ 2 business	2 - 7 residential/ 2 business	2 - 7 residential/ 4 business
Environmental Justice	No disproportionate impacts	Possible low-income populations	Possible low-income populations	Possible low-income populations
Land Use Impacts	No impact	Commercial and residential	Commercial and residential	Commercial and residential
Ecological Resources Impacts				
100-Year Floodplain	No impact	1 area - Lost Creek	1 area - Lost Creek	1 area - Lost Creek
Threatened and Endangered Species	No impact	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat
Wetlands	No impact	No impact	No impact	0.01 wetland acres
*Streams**	No impact	No impact	No impact	140.3-139.9 linear feet of stream
Open Waters	No impact	No impact	No impact	No impact

Table 40. SR 309/117 Interchange Options

Impacts/Issues	Rehabilitation[1]	SR 309 Option 1	SR 309 Option 2	SR 117 Option 1
*Terrestrial Habitat**	No impact	10.22-9.13 terrestrial community impacts	9.24-5.9 terrestrial community impacts	28.43-26.56 terrestrial community impacts
Geotechnical Issues	No impact	"Very limited" subgrade soil	"Very limited" subgrade soil	"Very limited" subgrade soil
Cultural Resources Impacts				
History/Architecture	No impact	No impact	No impact	No impact
Archaeological	No impact	No impact	No impact	No impact
Hazardous Materials (sites recommended for Phase I ESA)	No impact	1 site	3 sites	4 sites
Visual Quality Impacts	No impact	Improve landscaping; Establish signature theme throughout corridor	Improve landscaping; Establish signature theme throughout corridor	Improve landscaping; Establish signature theme throughout corridor
Section 4(f) and 6(f) Resource Impacts	No impact	No impact	No impact	No impact
Noise Impacts (sites above NAC in Design Year)	NA	141	141	139
Consistency with local plans	Increases safety	Improve infrastructure; encourages new businesses	Improve infrastructure; encourages new businesses	Improve infrastructure; encourages new businesses

Notes:
1. Rehabilitation impacts are in addition to those already included in the mainline alternatives.
2. Potential relocations noted are in addition to the relocations for Alternatives A, B, or D.
* = Range of impacts are provided when results differ between Alternatives A, B, and D. Otherwise impacts are the same for Alternative A, B, or D.

Pros

- Level of service improved to LOS C
- No farmland impacts
- No wetland, stream or open water impacts
- No Section 4(f) or 6(f) resource impacts
- SR 117 Option 1 provides better traffic flow for SR 117
- Minimizes construction costs
- Improves safety

Cons

- Potential Environmental Justice impacts
- Hazardous materials sites
    - SR 117 Option 1 requires the most sites (four) for Phase I ESA
- Minor clearing of potential roost trees for Indiana bat
- Right of way impacts
    - SR 117 Option 1 will require the most right of way (11.3 - 12.85 acres)
- Potential relocations
    - SR 309 Option 1 will have the most residential displacements
    - SR 117 Option 1 will have the most commercial displacements
- SR 117 Option 1 is the most expensive for right of way and construction costs
- SR 117 Option 1 results in reduced interchange spacing

SR 117 Option 1 is recommended to be eliminated from further consideration based on environmental impacts and right of way costs. This option is the most expensive of the SR 309/117 options. All other options, including rehabilitation, for SR 309/117 are recommended for further consideration. It is recommended that SR 309 Option 2 be carried forward for further study based on overall costs, environmental impacts, and design feasibility. This option uses the majority of existing right of way and is more efficiently designed for addressing cueing problems. SR 309 Option 1 is also recommended for further consideration based on overall costs and design feasibility.

7.3.6 SR 81 Interchange

The key design feature for the SR 81 interchange options includes a new bridge over SR 81 and a five-lane configuration of SR 81 to facilitate efficient traffic movements. Option 2 is the same design as Option 1 with the addition of roundabouts. The options for SR 81 are shown in Appendix A. Options 1 and 2 are recommended for further study in Step 6 of the PDP. Table 41 provides a summary of design features, environmental impacts, traffic data, and costs for the SR 81 interchange options.

Table 41. SR 81 Interchange Option

Impacts/Issues	Rehabilitation[1]	SR 81 Option 1	SR 81 Option 2
Key Design Issues	Check and upgrade geometric deficient acceleration lengths	New bridge over SR 81; five-lane configuration of SR 81	New bridge over SR 81; five-lane configuration with optional roundabout
2035 Level of Service	C	C	C
Estimated Costs			
*Preliminary Construction Costs**	Included in mainline	$12,746,152	$12,877,590
*Right of Way Costs**	Included in mainline	$1,867,024 - $1,924,600	$1,867,024 - $1,924,600
Right of Way Impacts*	No impact	4.98 – 6.0 acres	4.98 – 6.0 acres
Socioeconomic Impacts			
Social and Community Impacts	No impact	No impact	No impact
Economic Impacts	No impact	No impact	No impact
Potential Relocations[2]	None	None	None
Environmental Justice	No disproportionate impacts	No disproportionate impacts	No disproportionate impacts
Land Use Impacts	No impact	Majority commercial	Majority commercial
Ecological Resources Impacts			
100-Year Floodplain	No impact	No impact	No impact
Threatened and Endangered Species	No impact	Minor clearing of potential roost trees for Indiana bat	Minor clearing of potential roost trees for Indiana bat
Wetlands	No impact	No impact	No impact
Streams	No impact	0-40.3 linear feet of stream	0-40.3 linear feet of stream
Open Waters	No impact	No impact	No impact
*Terrestrial Habitat**	No impact	8.07 - 7.42 terrestrial habitat acres	8.07 - 7.42 terrestrial habitat acres
Geotechnical Issues	No impact	“Very limited” subgrade soil	“Very limited” subgrade soil
Cultural Resources Impacts			
History/Architecture	No impact	No impact	No impact
Archaeological	No impact	No impact	No impact

Table 41. SR 81 Interchange Option

Impacts/Issues	Rehabilitation[1]	SR 81 Option 1	SR 81 Option 2
Hazardous Materials (sites recommended for Phase I ESA)	No impact	1 site	1 site
Visual Quality Impacts	No impact	Context sensitive design for bridge	Context sensitive design for bridge
Section 4(f) and 6(f) Resource Impacts	No impact	No impact	No impact
Noise Impacts (sites above NAC in Design Year)	NA	NA	NA
Consistency with local plans	Increases safety	Increases safety	Increases safety

Notes:
1. Rehabilitation impacts are in addition to those already included in the mainline alternatives.
2. Potential relocations noted are in addition to the relocations for Alternatives A, B, or D.
* = Range of impacts are provided when results differ between Alternatives A, B, and D. Otherwise impacts are the same for Alternative A, B, or D.

Pros

- Releases approximately 25 acres of ODOT property to be sold for development
- Lower construction costs than rehabilitation
- No displacements
- No Section 4(f) or 6(f) resource impacts
- No Environmental Justice impacts
- Options 1 and 2 reduce the length of the mainline structure which reduces costs

Cons

- Right of way impacts between 4.98 and 6.5 acres
- One hazardous materials site for Phase I ESA
- Minor clearing of potential roost trees for Indiana bat
- Rehabilitation requires a longer bridge over SR 81

7.4 Summary

In summary, the No Build alternative and Alternative A are recommended for further study in Step 6 of the PDP.

The interchange options recommended for further study in Step 6 of the PDP are:

- **Breese Road:** Rehabilitation and Option 3
- **SR 65**: Rehabilitation
- **Fourth Street**: Rehabilitation and Option 1
- **SR 309/117**: Rehabilitation, SR 309 Option 1, and SR 309 Option 2
- **SR 81**: Option 1 and Option 2

The SR 81 interchange will not be rehabilitated because it is more cost effective to reconstruct the interchange in a diamond design. The rehabilitation option for SR 81 would require a longer bridge than Options 1 or 2 over SR 81, resulting in similar or higher

construction costs. A diamond interchange would also operate more efficiently than the current interchange design.

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