

**DRAFT**  
Preliminary Environmental Assessment

**Proposed Improvements  
to State Route 15**

From County Road 312 to Vicinity of US 72

MDOT Project No. SDP-0022-04(053)V21 / 101633-001000

Tippah County, Mississippi

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## **1.0 PROJECT NEED AND PURPOSE**

### **1.1 Introduction to the Project**

The Mississippi Department of Transportation (MDOT) proposes improvements to a segment of State Route (SR) 15, from County Road (CR) 312 north to just north of the SR 15/US 72 intersection in Tippah County, Mississippi. A general location map is shown in Figure 1-1 and a project location map is shown in Figure 1-2.

The original northern terminus presented to the public was the Mississippi/Tennessee State Line. After the public meeting, a MDOT internal meeting was held and it was decided to modify the northern project terminus to just north of the US 72 and SR 15 intersection. Improvements north of US 72 were dropped from further study. One of the deciding factors was because the Tennessee Department of Transportation has no future plans to improve this north-south route (TN SR 125) within its jurisdiction.

The project is proposed to be assisted with funding from the Federal Highway Administration (FHWA) and is subject to the requirements of the National Environmental Policy Act (NEPA). This Environmental Assessment (EA) has been prepared to meet NEPA requirements. FHWA and the MDOT are the lead agencies for the proposed project.

### **1.2 Description of Project Area**

The project study area is located in Tippah County in northeast Mississippi. The northeast Mississippi region can be defined as the 10-county area comprising the following counties: Tippah, Alcorn, Tishomingo, Prentiss, Union, Lee, Itawamba, Pontotoc, Chickasaw, and Monroe. This region is a relatively rural area, and its county seats are generally the largest towns in the counties. Many small communities are found throughout these counties.

SR 15 serves industrial and residential areas in Tippah County and also serves as a north-south corridor for commuters. The project area is located 14 miles north of Ripley, the county seat of Tippah County. SR 15 is a north-south, two-lane state highway that traverses most of the length of Mississippi. Its southernmost section starts in Biloxi, and its northernmost section crosses the Mississippi/Tennessee line just north of the Town of Walnut, Mississippi.

Tippah County had a population of 22,232 in 2010 and has experienced a 13.9 percent increase in population since 1990. The state of Mississippi experienced a 15.3 percent growth rate during the same period, indicating the relatively slower pace of growth in the project area. The region is within an hour and a half drive of two major universities, including the University of Mississippi and the University of Memphis.



Figure 1-1. General Location Map

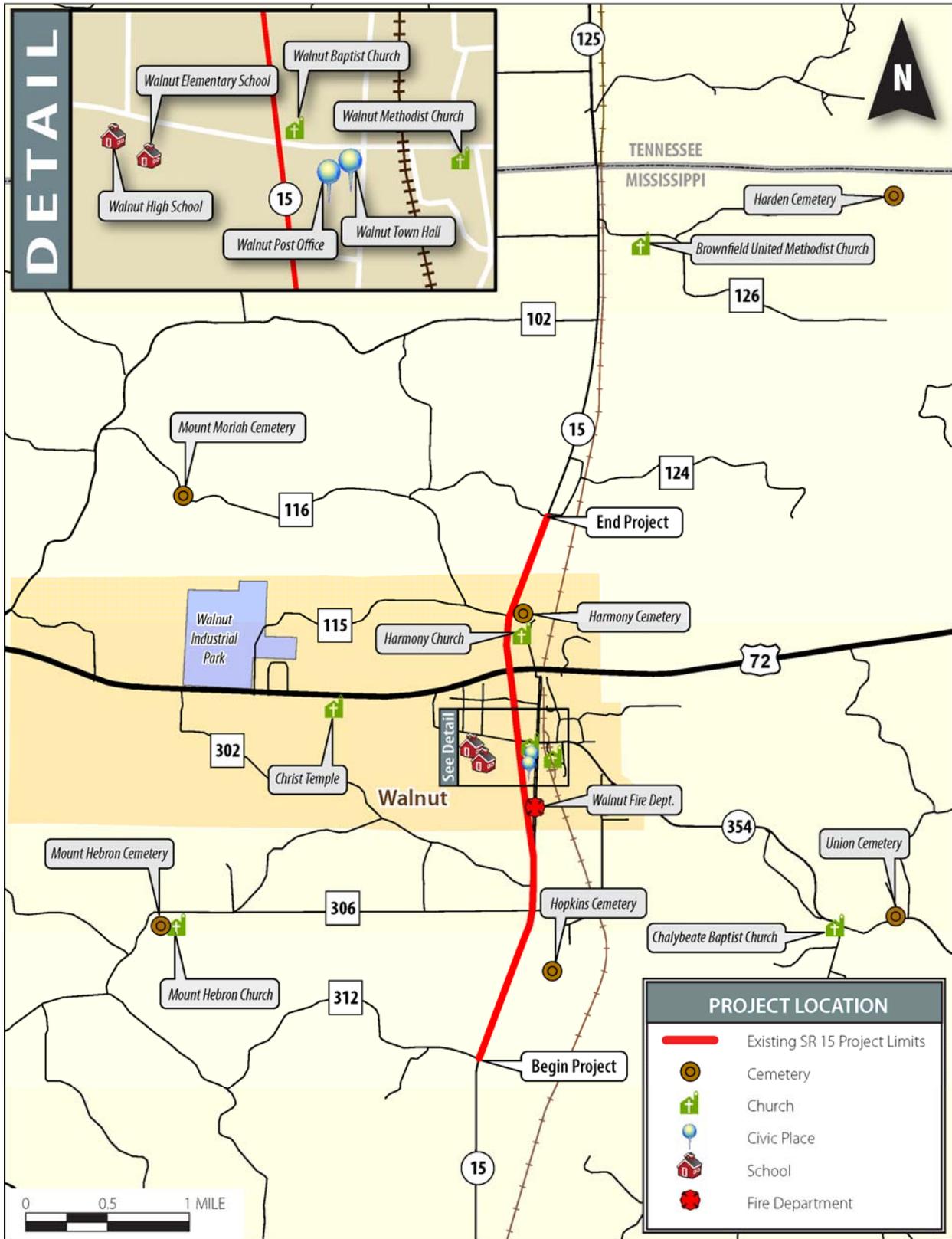


Figure 1-2. Location Map, Existing State Route 15

Growth in the area is expected to continue to increase with the development of a Norfolk Southern intermodal facility approximately 40 miles northwest of the study area in neighboring Fayette County, Tennessee. Norfolk Southern is currently building a \$105 million intermodal facility on 570 acres in Rossville, Tennessee. The facility will include a rail spur from the main line of Norfolk Southern to Tennessee SR 57, and an access road to US 72 in Mississippi. The proposed access to US 72 lies 35 miles to the west of the project area. Overall, the Norfolk Southern intermodal facility will serve as a key component of the railroad's Crescent Corridor, a 2,500-mile, \$2.5 billion public-private rail network linking the southeastern and northeastern US. The facility is designed to take one million long-haul trucks off the road.

Located 45 miles south of Walnut in Blue Springs, Pontotoc County, is the Toyota Motor Corporation's Blue Springs Plant. The first car rolled off the assembly line on November 17, 2011. Located just west of Tupelo, this is Toyota's eighth vehicle assembly plant in North America. The plant is estimated to assemble over 150,000 vehicles annually. It has provided over 2,000 new jobs at the new plant and numerous ancillary jobs within the region.

Historically, furniture manufacturing has been the northeast Mississippi region's largest industry sector. With the second largest furniture trade show in America, many people call nearby Tupelo the "upholstery manufacturing capital of the United States." This industry sector, however, faces challenges from overseas competition and many of the State's losses in manufacturing overall have been attributed to imports from overseas. As a result, jobs brought into the area by Norfolk Southern and Toyota are integral to the economic viability of the region and to Mississippi as a whole.

According to the Tippah County Development Foundation, Tippah County's largest five employers include:

- Ashley Furniture – upholstered furniture (1,050 employees);
- Hill Brothers Construction – major construction company (700 employees);
- Thyssen-Krupp – elevator systems (230 employees);
- Ecowater – water filters (205 employees); and
- Hankins – wood products (150 employees).

The subject segment of SR 15, which is classified as a minor arterial, is part of Phase IV of the 1987 Four-Lane Highway Program (including Vision 21) which provides for a four-lane highway system on SR 15 from the Gulf Coast to the Tennessee state line. A four-lane SR 15 from Pontotoc to Walnut is an important link in the region's transportation system because it connects Interstate 22 (US 78) near Tupelo to US 72 in Walnut. It is used by local and through automobile traffic, through truck traffic, school buses, and emergency vehicles.

### **1.3 Description of Project Need**

MDOT has coordinated the proposed SR 15 project pursuant to the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU), the National Environmental Policy Act (NEPA) and MDOT procedures for public involvement. Early coordination with local officials and agencies and the public was conducted during a stakeholder meeting on April 19, 2011, and a public meeting and an agency scoping meeting both on July 11, 2011. In addition, agencies received Solicitation of Views letters (see section 4.1 of this report). This coordination assisted in identifying the project need.

The project needs are listed below and are described in more detail in the text that follows:

1. Correct geometric deficiencies and improve safety for travelers and truck traffic through the area;
2. Address existing and future traffic needs, particularly as capacity needs occur from the new Norfolk Southern rail yard that is under construction approximately 35 miles to the west of the project area;
3. Provide a linkage route between US 72 and Interstate 22 (US 78); and
4. Fulfill the legislative mandate to develop four-lane highways within the state as defined in the 1987 *Four-Lane Highway Program* and the 2005 *Vision 21*.

### **1.3.1 Correct Geometric Deficiencies and Improve Safety for Travelers and Truck Traffic through the Area**

In its current configuration, SR 15 has several substandard geometric design features that do not meet the state's current design policy. These deficiencies are hazardous not only for drivers traveling along SR 15, but also for those accessing the highway from intersecting local roads:

- Areas with substandard vertical alignment;
- Several areas with little to no shoulders; and
- Areas with steep, non-recoverable slopes immediately adjacent to the road.

Several locations along SR 15 do not provide adequate sight distance due to steep vertical curves that obstruct visibility up and down the highway, creating an uncomfortable and unsafe environment for drivers (including school bus drivers) looking for gaps in a traffic stream that often includes trucks traveling at high speeds. Several crest and sag vertical curves have been identified by previous studies (and this study) as not providing enough sight distance to conform with current design standards. According to crash data provided by the MDOT Traffic Engineering Division, at least seven significant crashes have occurred near a deficient vertical curve in the study area in the past four years. These crashes included three head-on collisions, three rear-end collisions, and one angle crash. Two fatalities and three life-threatening injuries occurred during these seven crashes. Improvements to the vertical alignment would enhance visibility up and down the highway; help bring SR 15 into conformance with the state's current design policy; provide longer and safer distances for drivers to perceive and avoid hazards; allow for safer turns between SR 15 and intersecting roads; and improve driver comfort.

In addition to poor sight distance, several highway segments also have narrow (or no) shoulders and steep roadside slopes, giving drivers little or no recovery area should the vehicle inadvertently leave the roadway while traveling at high speeds. If an incident occurs where no shoulder exists, there may be no place for vehicles to pull safely off the roadway and out of the way of traffic, a condition which may contribute to secondary crashes. Whether an incident occurs during peak hours or any other time of the day, congestion can become a major issue and limit the ability of emergency responders to quickly and safely reach their destinations. Construction of wider shoulders and recoverable roadside slopes would help remedy these hazards and conform with current design standards for a high speed rural, open shoulder highway. Within the Town of Walnut urban limits, installation of curb and gutter would provide more positive separation between the travel lanes and the adjacent roadside area, much of which provides access to residences and businesses with onsite parking close to the highway.

There are additional safety concerns involving the intersection of SR 15 with US 72. This signalized intersection represents the only interruption of traffic flow along an otherwise open 60-mile stretch of US 72 between Cayce Road in Marshall County (near the Tennessee State Line) and US 45 in Corinth, Alcorn County, Mississippi. Such a condition tends to violate driver expectancy and is hazardous for unfamiliar drivers who may be caught off guard by an unexpected red light, despite the presence of advance warning devices (signs and yellow flashers). Drivers of heavy trucks, which require much longer braking distances, are at particular risk. Accounts of several severe crashes at this location, some involving fatalities, were recorded during a 2004 public meeting conducted by MDOT in Walnut. Since that time, MDOT has implemented safety improvements (Fed. Aid Project No. HSIP-0007-01(073)) to mitigate the apparent hazards. These were completed in June 2008 and involved realignment of the US 72 left turn bays and modifications to the signal phasing. Analysis of crash data before and after the improvements found a significant reduction in crash rates and severities, suggesting the safety improvements were beneficial. Still, a majority of crashes occurring at this intersection, both before and after the improvements, involve rear end or angle crashes where a driver failed to slow down or stop. These crash types could be prevented by replacing the signal with a grade-separated interchange allowing uninterrupted traffic flow on US 72.

### **1.3.2 Address Existing and Future Traffic Needs**

Traffic data for this project was developed using information provided by MDOT, including recent traffic counts and the latest Mississippi Statewide Travel Demand Model (MSSTM). Based on MDOT's historical traffic data for the project area for 1998 – 2011, as well as future projections in the MSSTM, an annual growth rate of 1.0 percent was used to forecast future (2040) traffic volumes along SR 15. Similarly, a growth rate of 2.5 percent was used along US 72.

The existing two-lane SR 15 facility is not well suited to accommodate the mix of road users and travel speeds observed today and expected in the future. For example, school buses making frequent stops along the current two-lane route are mixed with through traffic traveling at higher speeds (particularly truck traffic). Also, as noted in Section 1.3.1, when lane-obstructing incidents occur on the existing two-lane highway, congestion can become a major issue. Finally, as the Norfolk Southern Intermodal Facility and Toyota's Blue Springs Plant stimulate further industrial growth, heavy truck traffic will impose greater demands on the region's transportation network and require improved, multi-lane highways to support the efficient movement of industrial goods.

A multi-lane SR 15 facility would better accommodate the mix of commuter, school and truck traffic, and would provide opportunities for drivers to bypass slow-moving vehicles or other lane obstructions. A planning level traffic study (summarized in Section 2.4) found that, with an improved multi-lane facility in place, operating levels of service would improve from LOS C to LOS A and average travel times for the corridor may be reduced by 10-15 percent. The same study found that minor improvements to the SR 15/US 72 intersection could reduce average delay at this traffic signal by about 10 percent. Going a step further and converting this intersection to a grade-separated interchange could improve operations more dramatically, allowing uninterrupted traffic flow on US 72 and reducing intersection delay by about 75 percent. These improvements would save valuable time and money for commuters and local industries.

### **1.3.3 Provide a Linkage between US 72 and Interstate 22 (US 78)**

As previously stated, in addition to serving as a critical connector in Tippah County, SR 15 is a vital link in the regional transportation system. It is a north-south transportation corridor that connects the Gulf Coast to the Tennessee State line. It is also an important link in the region's transportation system because it connects Interstate 22 (US 78) near Tupelo to US 72 in Walnut. Both are four-lane principal arterials running east-west through northern Mississippi and carrying significant truck and through traffic between Memphis, Tennessee, and regional destinations to the south and southeast. Interstate 22 provides direct access to Toyota's Blue Springs Plant, and US 72 will provide access to the new Norfolk Southern Intermodal Facility. The enhanced north-south mobility provided by a high-speed four-lane facility between I-22 and US 72 would save valuable time and money, contribute to the region's "competitive infrastructure" and attract further economic development in northeast Mississippi.

### **1.3.4 Fulfill Legislative Mandate to Develop Four-Lane Highways within the State**

In 1987, the Mississippi Legislature passed a comprehensive long-range highway program. The program was estimated to cost \$1.6 billion and expected to build 1,077 miles of four-lane highways over a 14-year period. The Mississippi Department of Transportation's goal at the inception of the 1987 Program was that every Mississippian would be linked to a four-lane highway within 30 miles or 30 minutes. MDOT has continued to make great strides toward reaching that goal. On April 15, 2002, the Vision 21 bill was signed by the Governor. Vision 21 is a \$3.6 billion highway proposal to upgrade existing highways, or build new highways where they are needed. The legislation reauthorized funding for the four-lane highway construction program at a level that gradually increased to \$200 million a year by fiscal year 2006.

## **1.4 Description of Project Purpose**

The purpose of this project, outlined in the list below, has been developed to meet the project needs as described in Section 1.3:

- Correct geometric deficiencies and improve safety for travelers and truck traffic through the area;
- Provide transportation infrastructure that will accommodate area growth and support economic development opportunities;
- Provide a linkage route for north/south traffic between US 72 and Interstate 22 (US 78); and
- Widen SR 15 to comply with the legislative mandate developed by MDOT in 1987 that every Mississippian would be linked to a four-lane highway within 30 miles or 30 minutes.

## **1.5 Consistency with Local Plans**

Tippah County does not have zoning, nor does it have a comprehensive plan or a land use plan. The proposed project is included in the *2010-2013 State Transportation Improvement Program (STIP)*.

## **1.6 Logical Termini and Independent Utility**

The defined project area is of sufficient size to address environmental concerns of a broad scope. The proposed project has logical termini. The southern terminus of the project at CR 312 connects to a SR 15 roadway improvement project from Falkner to CR 312 that is currently in the right-of-way phase. The northern terminus is just north of US 72. The proposed project does not require the construction of additional projects to be fully usable as a stand-alone project.

## 2.0 DESCRIPTION OF ALTERNATIVES

The process of developing alternatives has taken into account engineering, social and environmental considerations, as well as input from the public and stakeholders. Environmental screening was utilized to develop preliminary corridors for the various alternatives, and the results of technical studies were considered when developing alignments within the corridors selected to move forward in the NEPA document.

In addition to the No Build Alternative, a number of Build Alternatives were examined during the planning process for improving State Route (SR) 15. These alternatives are described below.

### 2.1 No Build Alternative (Alternative A)

The No Build Alternative (Alternative A) involves leaving the segment of existing SR 15 in its current configuration, as shown previously in Figure 1-2. This alternative does not meet the purpose and need of the project as outlined in Chapter 1 of this document. It would not:

- Correct geometric deficiencies and improve safety for travelers and truck traffic through the area;
- Address existing and future traffic needs, particularly as capacity needs will occur from the new Norfolk Southern rail yard that is under construction approximately 35 miles to the west of the project area;
- Provide a linkage route between US 72 and Interstate 22 (US 78); or
- Fulfill the legislative mandate to develop four-lane highways within the state as defined in the 1987 *Four-Lane Highway Program* and the 2005 *Vision 21*.

### 2.2 Preliminary Alternatives Evaluated

#### 2.2.1 Bypass Alternative to the East

This option was discussed and discarded prior to alternatives development due to excessive residential and floodplain impacts.

#### 2.2.2 Alternatives Presented at July 11, 2011 Public Meeting

A public meeting was held for the proposed project on July 11, 2011. Three Build Alternatives for SR 15 from CR 312 north to the Tennessee/Mississippi State Line were presented to the public at that time (see Figure 2-1):

- Alternative A (No Build Alternative) (described in Section 2.1);
- Alternative B-1 (Improve existing SR 15);
- Alternative B-2 (Improve existing SR 15 with a grade-separated interchange at the SR-15/US 72 intersection); and
- Alternative C (Bypass alternative on new location to the west).

Descriptions for Build Alternatives B-1, B-2 and C follow.

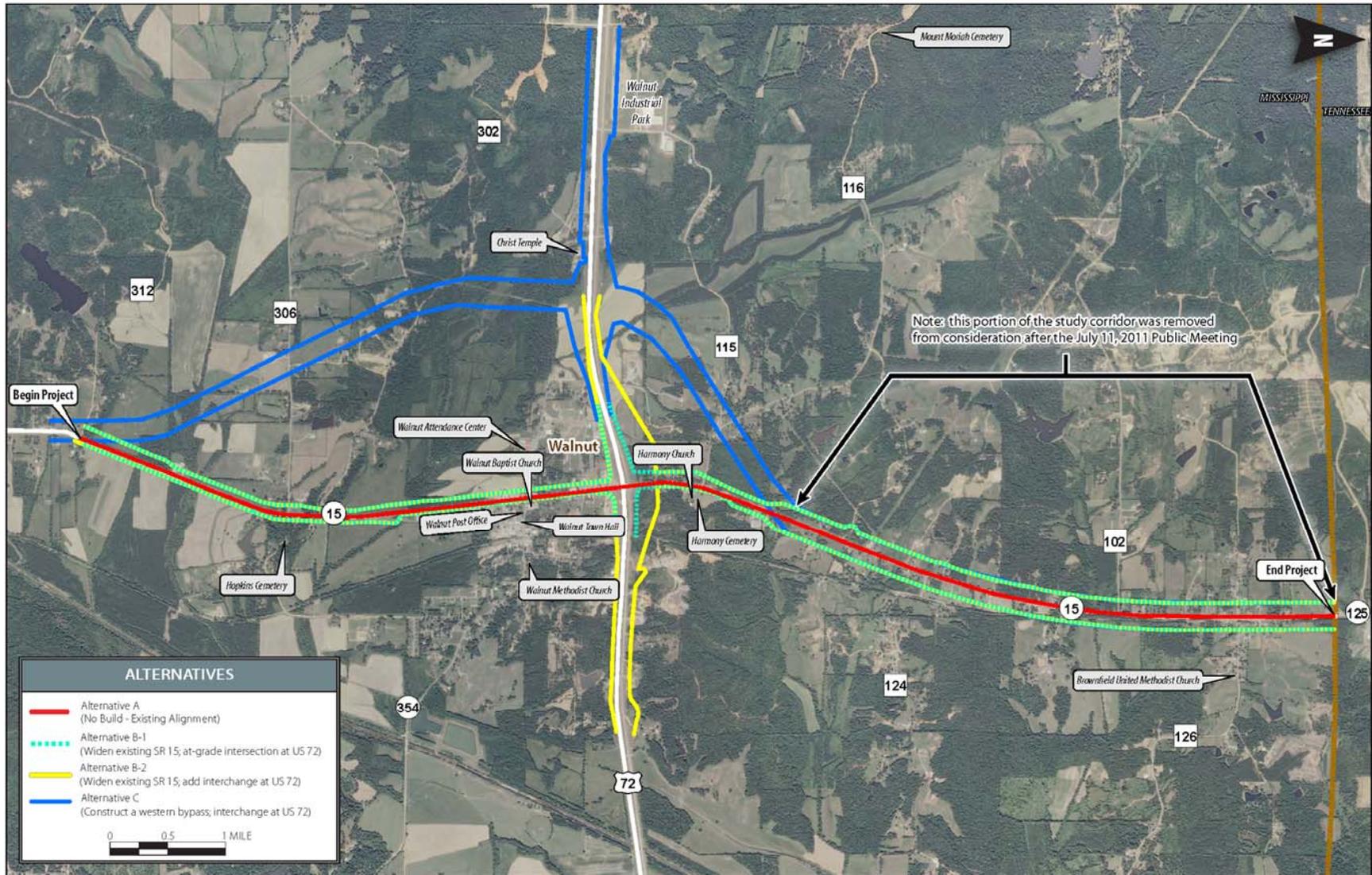


Figure 2-1. Alternatives Presented at July 11, 2011 Public Meeting

**Alternative B-1 (Presented at July 11, 2011 Public Meeting)**

Alternative B-1 would improve the existing two-lane SR 15 to a four-lane and five-lane highway and correct the roadway's vertical deficiencies (see Figure 2-1). It starts at CR 312 and follows existing SR 15 north to the Tennessee/Mississippi State Line. After a MDOT internal meeting, it was decided to modify the northern project terminus to just north of the US 72 and SR 15 intersection. This modified Alternative B-1 is being carried forward in the NEPA process.

**Alternative B-2 (Presented at July 11, 2011 Public Meeting)**

Similar to Alternative B-1, Alternative B-2 would improve the existing two-lane SR 15 to a four-lane and five-lane highway and correct the roadway's vertical deficiencies (see Figure 2-1). In addition, the current SR 15/US 72 at-grade intersection would be replaced by a grade-separated interchange to allow uninterrupted traffic flow on US 72. It starts at CR 312 and follows existing SR 15 north to the Tennessee/Mississippi State Line. After a MDOT internal meeting, it was decided to modify the northern project terminus to just north of the US 72 and SR 15 intersection. This modified Alternative B-2 is being carried forward in the NEPA process.

**Alternative C (Presented at July 11, 2011 Public Meeting)**

Alternative C would bypass Walnut to the west with a divided four-lane section. It starts at CR 312 and begins deviating on new alignment to the west from existing SR 15. It would cross US 72 with a grade-separated interchange west of the existing SR 15/US 72 intersection. Moving northeasterly, the highway would tie back to existing SR 15 near CR 118, and follow existing SR 15 north to the Tennessee/Mississippi State Line. After a MDOT internal meeting, it was decided to modify the northern project terminus to just north of the US 72 and SR 15 intersection. This modified Alternative C is being carried forward in the NEPA process.

### **2.2.3 Comparison of Widening Existing SR 15 Symmetrical and Asymmetrically**

A five-lane urban section is proposed through the City of Walnut in both Alternatives B-1 and B-2. In this area of Walnut, there is a concentration of homes and businesses located near the existing right-of-way (ROW). Due to the potentially high level of impact to adjacent properties, a comparison was made between widening the existing SR 15 symmetrically (to both the east and west) and widening existing SR 15 asymmetrically to the west.

Widening the existing 2-lane SR 15 symmetrically through Walnut displaces an estimated 18 structures. Eight of these impacted structures are to the east of SR 15 and ten of the impacted structures are to the west.

Widening the existing two-lane SR 15 asymmetrically to the west through Walnut displaces an estimated 15 structures. All impacted structures are located on the west side of SR 15. By widening asymmetrically to the west, impacts to community services and resources such as the Walnut Fire Department, Walnut Baptist Church, Harmony Church, and Harmony Cemetery were minimized. Widening to the west also minimized impacts to ThyssenKrupp, a major employer in Walnut (230 employees) and one of the five largest employers in Tippah County.

## 2.2.4 Modification of the North Terminus to Carry Forward in NEPA Process

After a MDOT internal meeting, it was decided to modify the northern project terminus to just north of the SR 15/US 72 intersection. Improvements north of US 72 were dropped from further study because MDOT's intent is to study in the EA only those improvements that are likely to advance to construction. Widening SR 15 north of US 72 would have limited benefit, as the Tennessee Department of Transportation has no future plans to improve this north-south route (TN SR 125) within its jurisdiction. However, technical studies of SR 15 conducted north of US 72 did not point out any problems that would prohibit widening in the future.

## 2.3 Alternatives Carried Forward in the NEPA Process

In addition to the No-Build Alternative, three build alternatives are being carried forward in the NEPA process: Alternatives B-1, B-2, and C. These alternatives are illustrated in Figure 2-2. Alternatives B-1 and B-2 follow the existing SR 15 alignment, while Alternative C is on both new and existing location. The alignments are described below from south to the north:

- Alternative B-1 proposes improving existing two-lane SR 15 to four-lane and five-lane sections of roadway along existing SR 15. It starts at County Road (CR) 312 with a rural four-lane section to just south of the Walnut town limits. Entering the Walnut town limits, a five-lane urban section is proposed to follow existing SR 15 to just north of the current at-grade intersection at US 72. Alternative B-1 is approximately 3.0 miles in length.
- Alternative B-2 proposes improving existing two-lane SR 15 to four-lane and five-lane sections of roadway along existing SR 15 and replacing the current at-grade intersection at US 72 in Walnut with a grade-separated interchange. It starts at CR 312 with a rural four-lane section to just south of the Walnut town limits. Entering the Walnut town limits, a five-lane urban section is proposed to follow existing SR 15 to just north of the current at-grade intersection at US 72. The current at-grade intersection at US 72 would be replaced by a grade-separated interchange. US 72 is relocated approximately 300 feet to the north. Alternative B-2 would terminate just north of the interchange. Alternative B-2 is approximately 3.0 miles in length with an additional 1.1 miles of relocated US 72.
- Alternative C proposes bypassing Walnut to the west with a divided four-lane section. It starts at CR 312 and begins deviating on new alignment to the west from existing SR 15. It would cross US 72 with a grade-separated interchange approximately 0.8 mile west of the existing SR 15/US 72 intersection. Moving northeasterly, the highway would tie back to existing SR 15 near CR 118, approximately 0.9 mile north of the existing SR 15/US 72 intersection. Alternative C is approximately 4.0 miles in length with an additional 3.6 miles of relocated local roads.

Plan and profile sheets for Alternatives B-1, B-2 and C are found in Appendix B.

The ROW width along the corridor of the Build Alternatives is variable. It generally ranges from about 230 feet to over 500 feet. The widest ROW is found in large areas of cut and fill due to the topography. In some areas, ROW needs may exceed 500 feet to accommodate the fill slopes. Alternative B-1 will have Type 3 Access Control along SR 15. Alternative B-2 will have Type 3 Access Control along SR 15 and Type 2B Access Control along US 72. Alternative C will have Type 2B Access Control.

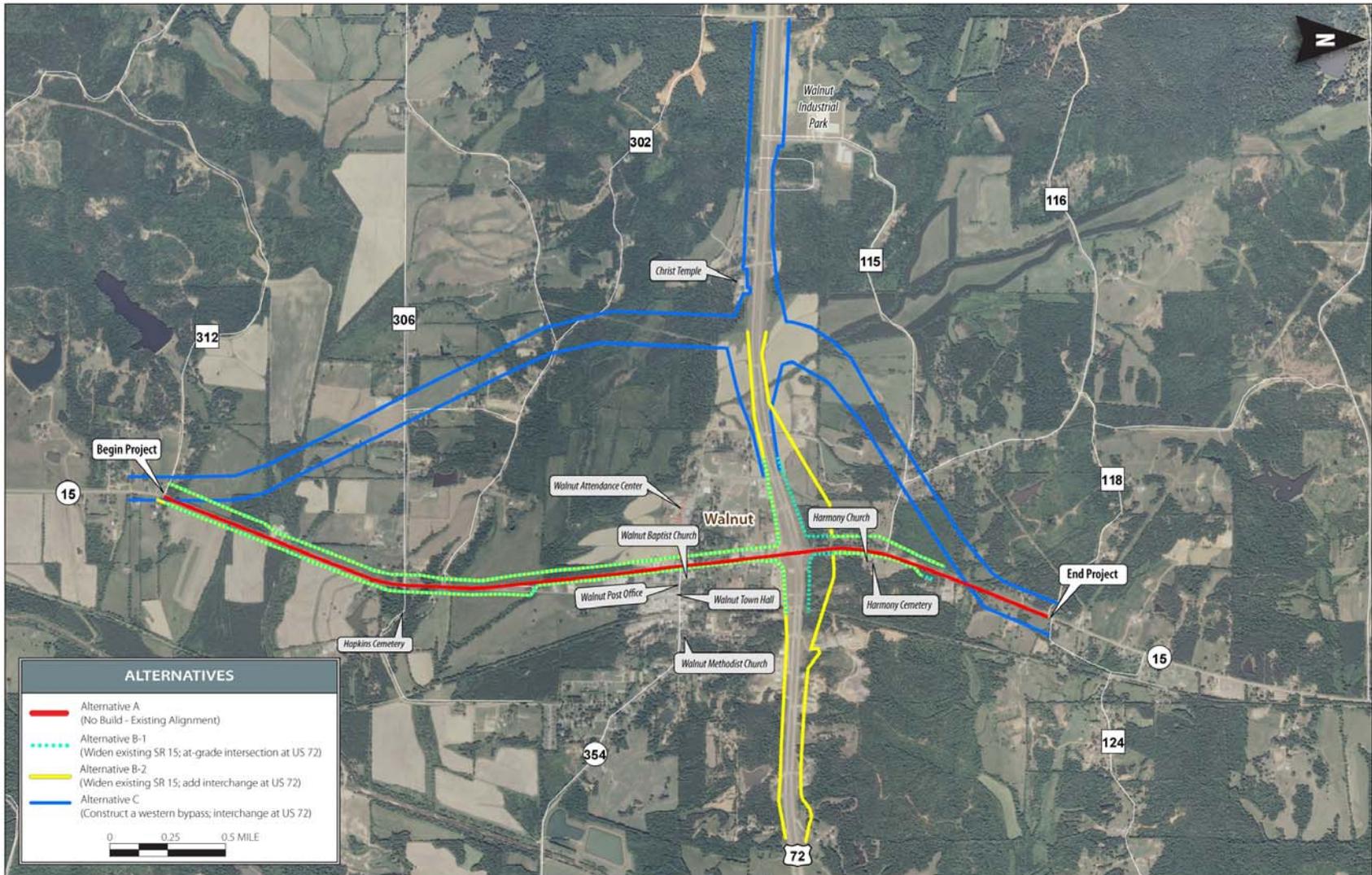


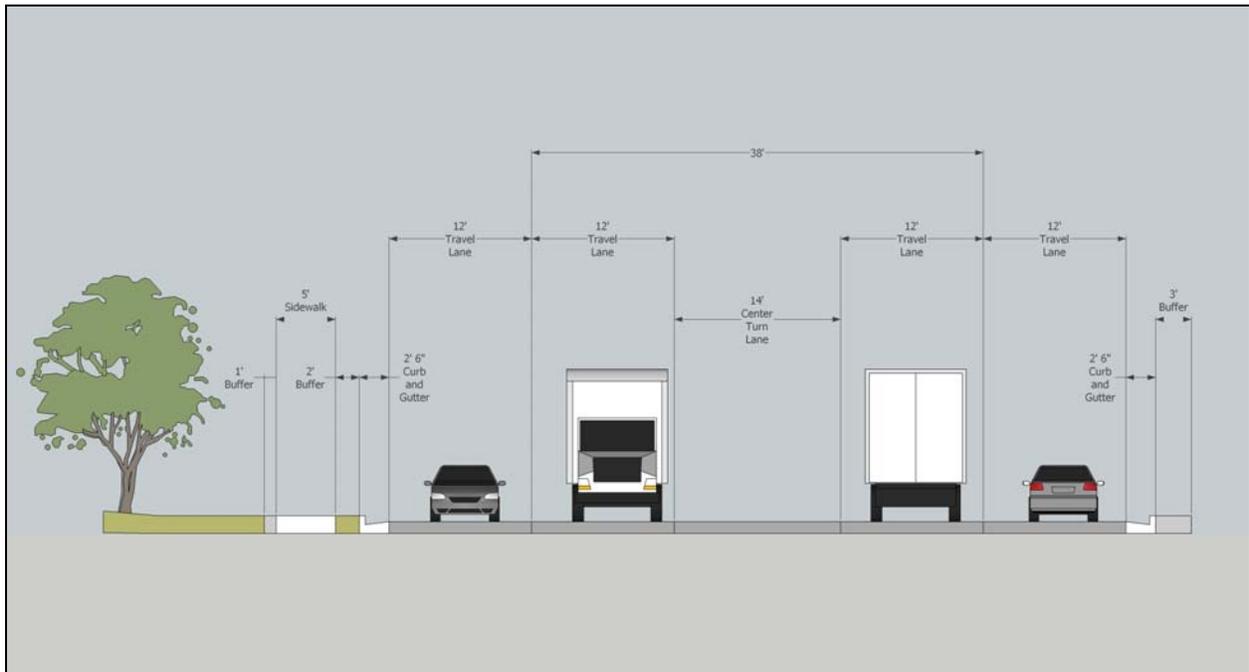
Figure 2-2. Build Alternatives Being Carried Forward in the NEPA Process

### 2.3.1 Alternative B-1

Alternative B-1 was first presented to the public at the July 11, 2011, public meeting (see Figure 2-1). Based on input received at the meeting, a comparison was made between widening existing SR 15 symmetrically through Walnut and asymmetrically to the west. The comparison showed fewer impacts to adjacent property owners by widening asymmetrically to the west through Walnut. Alternative B-1, as shown in Figure 2-2, was shortened to end just north of US 72 based on input from MDOT (see Section 2.2.4).

Alternative B-1, shown in Figure 2-2, is 3.0 miles long. It involves the construction of a four-lane and five-lane roadway adjacent to the existing SR 15 within a variable width ROW, as described above. Estimated total (existing and proposed) corridor acreage for this alternative is 127 acres. Its typical section for the majority of the roadway consists of two 12-foot lanes in each direction separated by a 14-foot two-way left turn lane with curb and gutter. The area behind the curb on the left side is 8 feet, wide enough to accommodate a sidewalk. The area behind the curb on the right side is 3 feet (see Appendix B for station locations). The typical urban section for SR 15 is shown in Figure 2-3 and the typical rural section for SR 15 is shown in Figure 2-4.

Starting on the south end, Alternative B-1 begins at the SR 15 and CR 312 intersection. It follows existing SR 15 crossing bridges over Hurricane Creek and Big Creek. Alternative B-1 forms at-grade intersections with CR 306/CR 215, CR 302, Main Street, Commerce Street/SR 354, Munn Avenue, Frontage Road to US 72 (old US 72), US 72, and CR 115. Improvements to US 72 at the at-grade intersection at SR 15 and US 72 includes left and right turn lanes and acceleration lanes for west bound and east bound traffic. Alternative B-1 ends approximately 2,700 feet north of U.S 72. Culverts or bridges will be used to cross other smaller waterways, including unnamed tributaries.



**Figure 2-3. 5-Lane Urban Arterial, Typical Section, Build Alternative B-1 and B-2 inside Walnut City Limits**

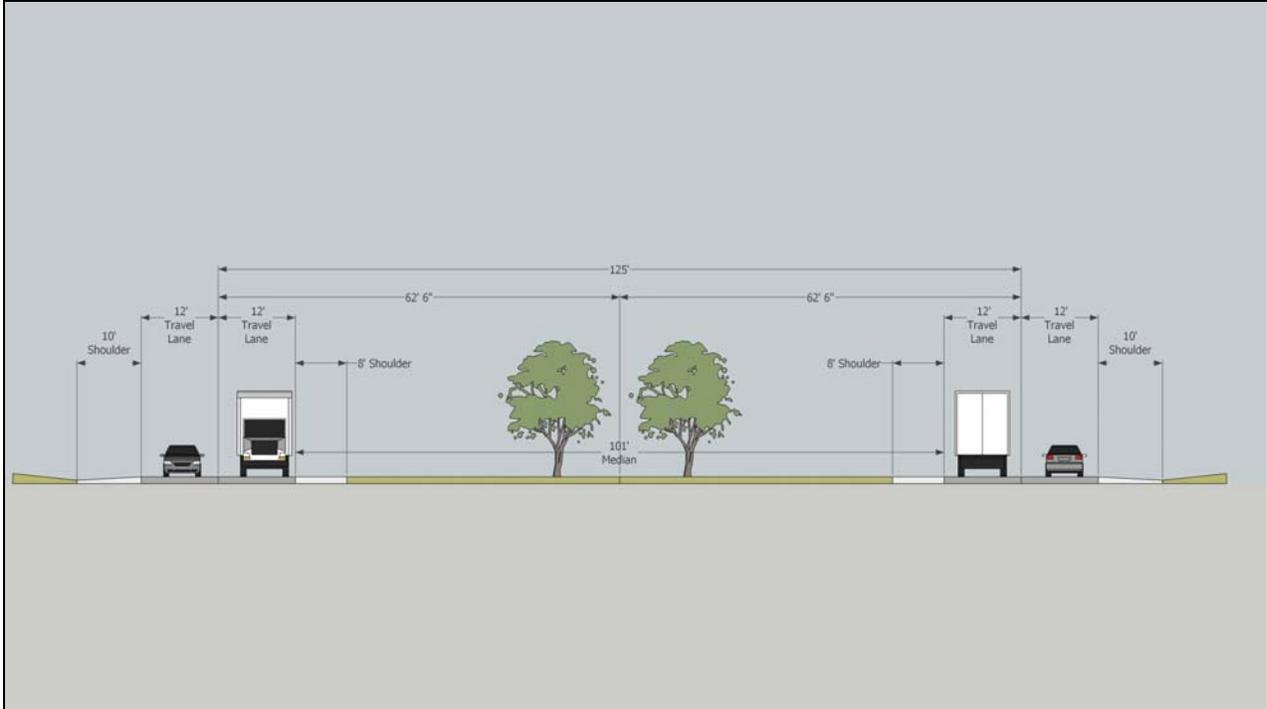
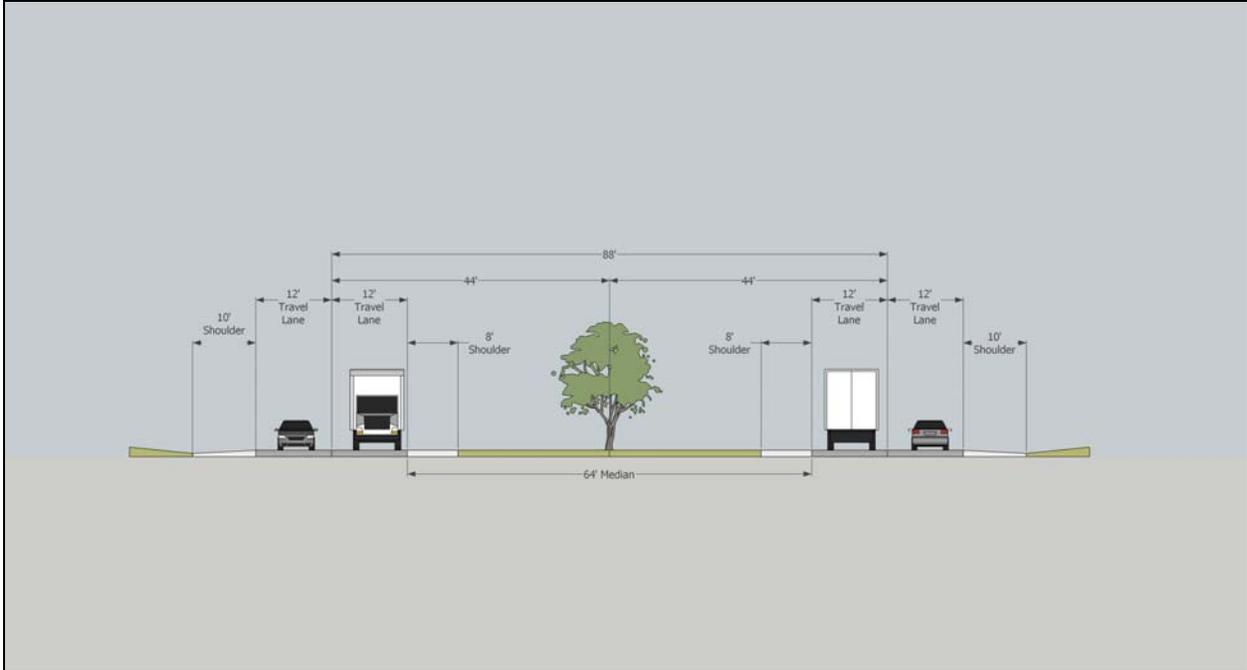


Figure 2-4. 4-Lane Rural Arterial, Typical Section, Build Alternative B-1 and B-2 outside Walnut City Limits and Build Alternative C

### 2.3.2 Alternative B-2

Alternative B-2 was first presented to the public at the July 11, 2011, public meeting (see Figure 2-1). Based on input received at the meeting, a comparison was made between widening existing SR 15 symmetrically through Walnut and asymmetrically to the west. The comparison showed fewer impacts to adjacent property owners by widening asymmetrically to the west through Walnut. Alternative B-2, as shown in Figure 2-2, was shortened to end just north of US 72 based on input from MDOT (see Section 2.2.4).

Alternative B-2, shown in Figure 2-2, is 3.0 miles long with an additional 1.1 miles of relocated US 72. It involves the construction of a four-lane and five-lane roadway adjacent to the existing SR 15 and a relocated four-lane roadway approximately 300 feet north of US 72 within a variable width ROW, as previously described. Estimated total (existing and proposed) corridor acreage for this alternative is 235 acres. The SR 15 typical section for the majority of the roadway consists of two 12-foot lanes in each direction separated by a 14-foot two-way left turn lane with curb and gutter. The area behind the curb on the left side is 8 feet, wide enough to accommodate a sidewalk. The area behind the curb on the right side is 3 feet (see Appendix B for station locations). The US 72 typical section for the majority of the roadway consists of two 12-foot lanes in each direction separated by a 64-foot median. The typical sections for SR 15 are shown in Figure 2-3 and 2-4. The typical section of the four-lane relocated US 72 is shown in Figure 2-5.



**Figure 2-5. 4-Lane Rural Arterial, Typical Section, Relocated US 72 (Build Alternative B-2)**

Starting on the south end, Alternative B-2 begins at the SR 15 and CR 312 intersection. It follows existing SR 15 crossing bridges over Hurricane Creek and Big Creek. Alternative B-2 forms at-grade intersections with CR 306/CR 215, CR 302, Main Street, Commerce Street/SR 354, Munn Avenue, Frontage Road to US 72 (old US 72) and CR 115. Alternative B-2 includes a new grade-separated interchange at US 72. The interchange would include bridges on US 72 over SR 15 and entrance and exit ramps that would provide access to US 72 from SR 15. Alternative B-2 ends approximately 2,700 feet north of US 72. Along US 72, in the vicinity of the interchange, several median crossings will be closed and frontage roads provided for access. Both directions of relocated US 72 and the US 72 westbound exit ramp cross the abandoned Kansas City Southern Railroad. These abandoned railroad crossings will be made by embankment rather than by bridge. Culverts or bridges will be used to cross other smaller waterways, including unnamed tributaries.

### 2.3.3 Alternative C

Alternative C was first presented to the public at the July 11, 2011, public meeting (see Figure 2-1). Alternative C, as shown in Figure 2-2, was shortened to end just north of US 72 based on input from MDOT (see Section 2.2.4).

Alternative C, shown in Figure 2-2 is 4.0 miles long with an additional 3.6 miles of relocated local roads. It involves the construction of a four-lane roadway on new location within a variable width ROW, as described above. Estimated total (existing and proposed) corridor acreage for this alternative is 418 acres. The SR 15 typical section for the majority of the roadway consists of two 12-foot lanes in each direction separated by a 101-foot median. The typical section for SR 15 is shown in Figure 2-4.

Starting on the south end, Alternative C begins just south of the SR 15 and CR 312 intersection. It follows existing SR 15 for approximately 300 feet, then continues northward on new location, west of existing SR 15. After approximately 1,900 feet, it turns northwest and has an at-grade

intersection providing access to existing SR 15. After approximately 1,100 feet, it crosses the Hurricane Creek bridge then continues northwest where it forms an at-grade intersection with CR 306 and then with CR 302/CR 304. At the at-grade intersection with CR 302/CR 304, it turns north for approximately 4,000 feet and forms an interchange with US 72. Alternative C provides a bridge over US 72 with ramp connections to US 72. It immediately turns northeast and crosses Big Creek by bridge. After approximately 3,000 feet, it forms an at-grade intersection with CR 115/CR 116. Turning north, approximately 3,700 feet, it ties into existing SR 15. Alternative C ends approximately 3,200 feet north of the existing SR 15/US 72 intersection. Along US 72, in the vicinity of the interchange, several median crossings will be closed and frontage roads provided for access. Ramps on the east side of the interchange cross Big Creek by bridge. In the southwest quadrant of the interchange, an approximate 500-foot long and approximate 20-foot high retaining wall is used to avoid impacts to a church. Culverts or bridges will be used to cross other smaller waterways, including unnamed tributaries.

## 2.4 Traffic Analysis

A planning level traffic study was conducted for the No-Build Alternative and the three Build Alternatives, for existing conditions (2011) and for the project's design year (2040). This section is based upon the findings of the study, a copy of which can be found in Appendix A.

Existing and forecasted Annual Average Daily Traffic (AADT) volumes for 2011 and 2040 are shown on Figures 2-6, 2-7, and 2-8 for the roadway segments of the No Build Alternative (Alternative A) and the three Build Alternatives. Based on the analyses documented in Appendix A, the present and future deficiencies of existing SR 15 would be adequately addressed by all of the Build Alternatives. Major findings are further specified below:

- The primary deficiencies of the existing facility involve geometric design features that fail to meet the state's current design policy, including several vertical curves with poor sight distance and many highway segments with little or no shoulders and steep drop-offs. These represent safety hazards, a finding supported by analysis of the facility's crash history. All Build Alternatives would eliminate or mitigate the hazards. Secondly, the capacities of the highway segments and intersections could be improved and travel times/delays reduced by implementing any of the Build Alternatives.
- For Alternatives B-1 and B-2, all SR 15 highway segments would operate at LOS A during 2040 peak hours. For Alternative C, all segments of the proposed SR 15 Bypass would operate at LOS A and all segments of "old" Hwy. 15 would operate at LOS B. All represent significant improvement over the No Build Alternative, in which the existing facility would operate at LOS C and continue to degrade as traffic demand grows. Additionally, all Build Alternatives could reduce corridor travel times by 10-15 percent relative to the No Build Alternative.
- For Alternative B-1, the currently signalized SR 15/US 72 intersection would operate at LOS C with a 10 percent reduction in average delay relative to the No Build Alternative.
- Should the grade-separated interchange proposed under Alternative B-2 be constructed, traffic operations would improve more dramatically than under Alternative B-1. The interchange would allow uninterrupted traffic flow on US 72, enable stop or yield control of turning movements on the ramps between SR 15 and US 72, and reduce overall delay at this location by about 75 percent relative to the No Build Alternative.

- For Alternative C, the proposed SR 15 Bypass/US 72 interchange would operate at LOS C or better with stop control in place at the ramp intersections on the bypass. However, analysis of the expected traffic patterns and distribution between the bypass and “old” Hwy. 15 found that traffic volumes would still be sufficient to warrant a signal at the existing SR 15/US 72 intersection. This may be an undesirable outcome given the cost of constructing the new bypass and interchange at US 72.
- For the No Build and all Build Alternatives, all minor / stop-controlled intersections within the study area would operate at an acceptable LOS during 2040 peak hours.

The analyses documented herein are based on rates of traffic growth anticipated in the project area over the next 28 years; 1 percent annual growth in the SR 15 corridor and 2.5 percent annual growth on US 72. Should the actual growth exceed expectations, the safety and efficiency of the existing facility would be further compromised. For example, under a slightly higher growth scenario (1.5 percent annual growth on SR 15 and 3.0 percent growth on US 72), operation of the existing SR 15/US 72 signal would soon degrade below MDOT’s minimum efficiency standard (LOS C) for this facility type. In almost every respect, the capacity and safety enhancements proposed by each Build Alternative would provide safer, more efficient operations to accommodate both the average and high growth scenarios. However, it should be noted that for Alternative B-1, a high growth scenario may also cause the SR 15/US 72 signal to fall below minimum efficiency standards before the facility’s design year (2040), suggesting that a grade-separated interchange should still be considered as part of a future phase of improvements, even if an at-grade signalized intersection is maintained in the short term.

## 2.5 Costs

A planning level cost estimate has been prepared for the three Build Alternatives: B-1, B-2, and C. A comparison of the costs is presented in Table 2.1 below. The individual estimates are shown in Tables 2-2, 2-3 and 2-4.

**Table 2-1. Cost Comparison, Build Alternatives B-1, B-2, and C**

	Alternative B-1	Alternative B-2	Alternative C
<b>Project Length</b>	3.0 miles	3.0 miles	4.0 miles
<b>Corridor-Acreage</b>	127 acres	235 acres	418 acres
<b>Right-of-Way</b>	\$5,929,545	\$7,713,636	\$10,062,045
<b>Construction (includes engineering and contingencies)</b>	\$20,700,575	\$34,553,318	\$43,852,689
<b>Total Project Cost</b>	<b>\$26,630,120</b>	<b>\$42,266,955</b>	<b>\$53,914,734</b>
<b>Cost Per Mile</b>	\$8,876,707	\$14,088,985	\$13,478,683

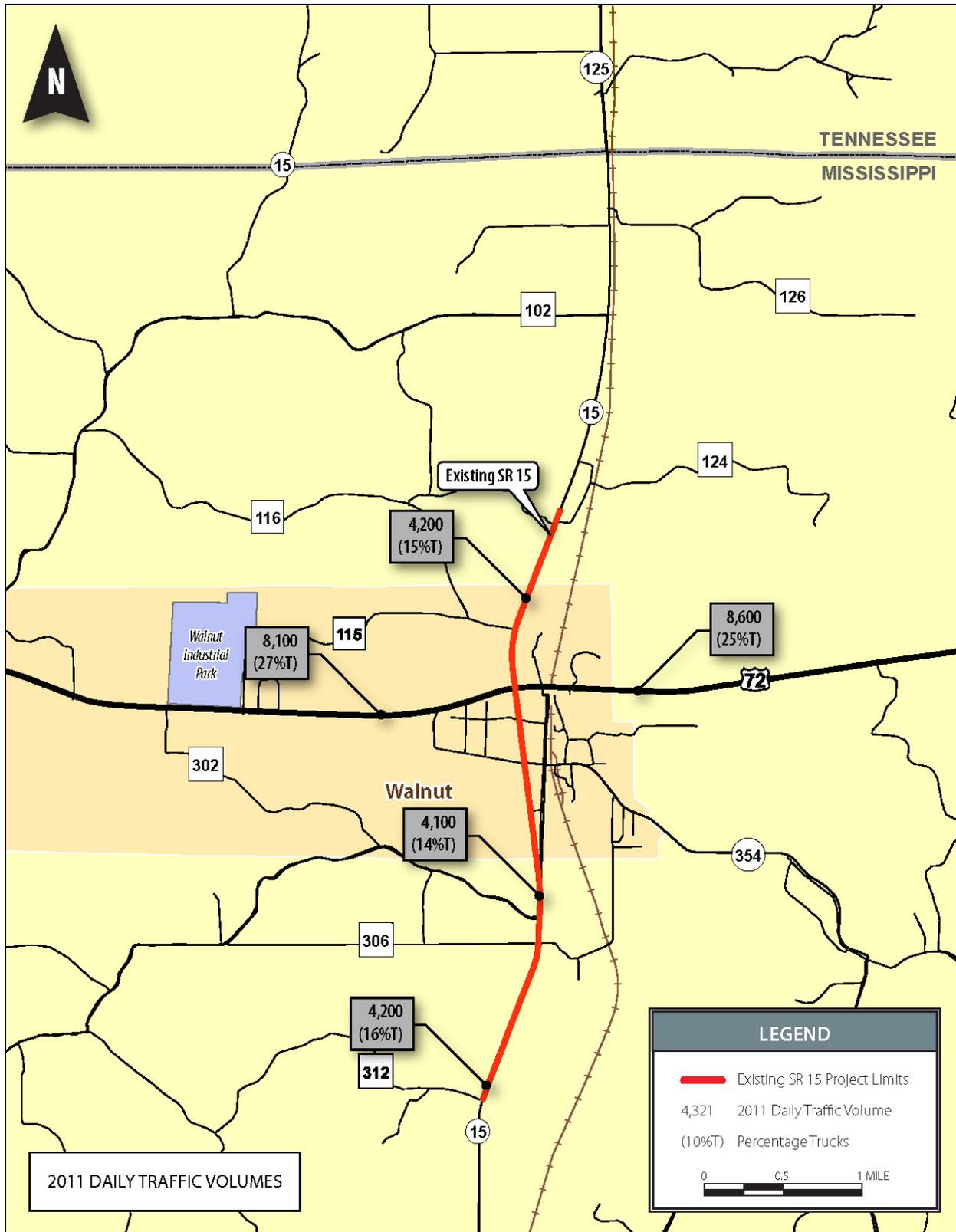


Figure 2-6. 2011 Daily Traffic Volumes

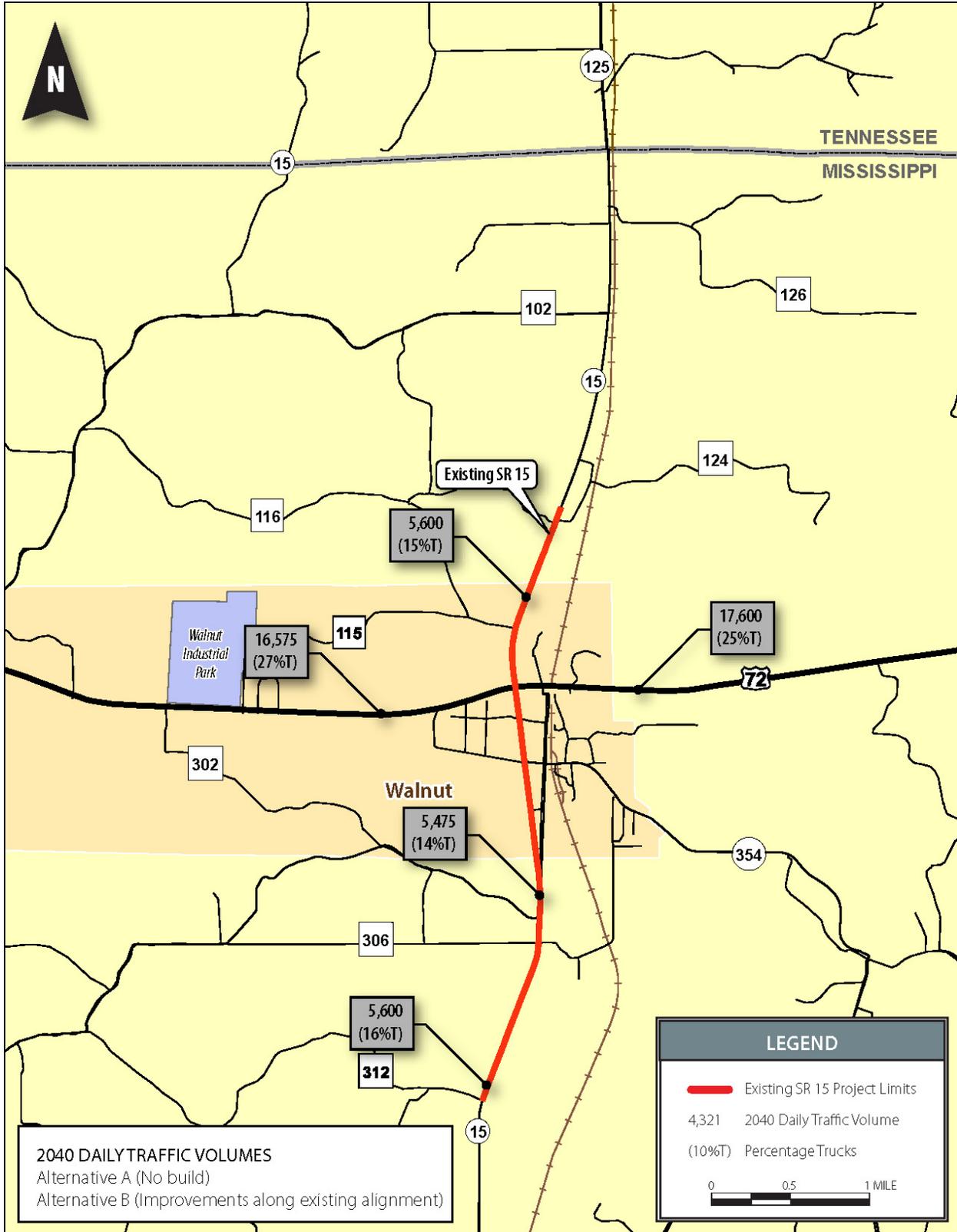


Figure 2-7. 2040 Daily Traffic Volumes, Alternatives A, B-1, and B-2

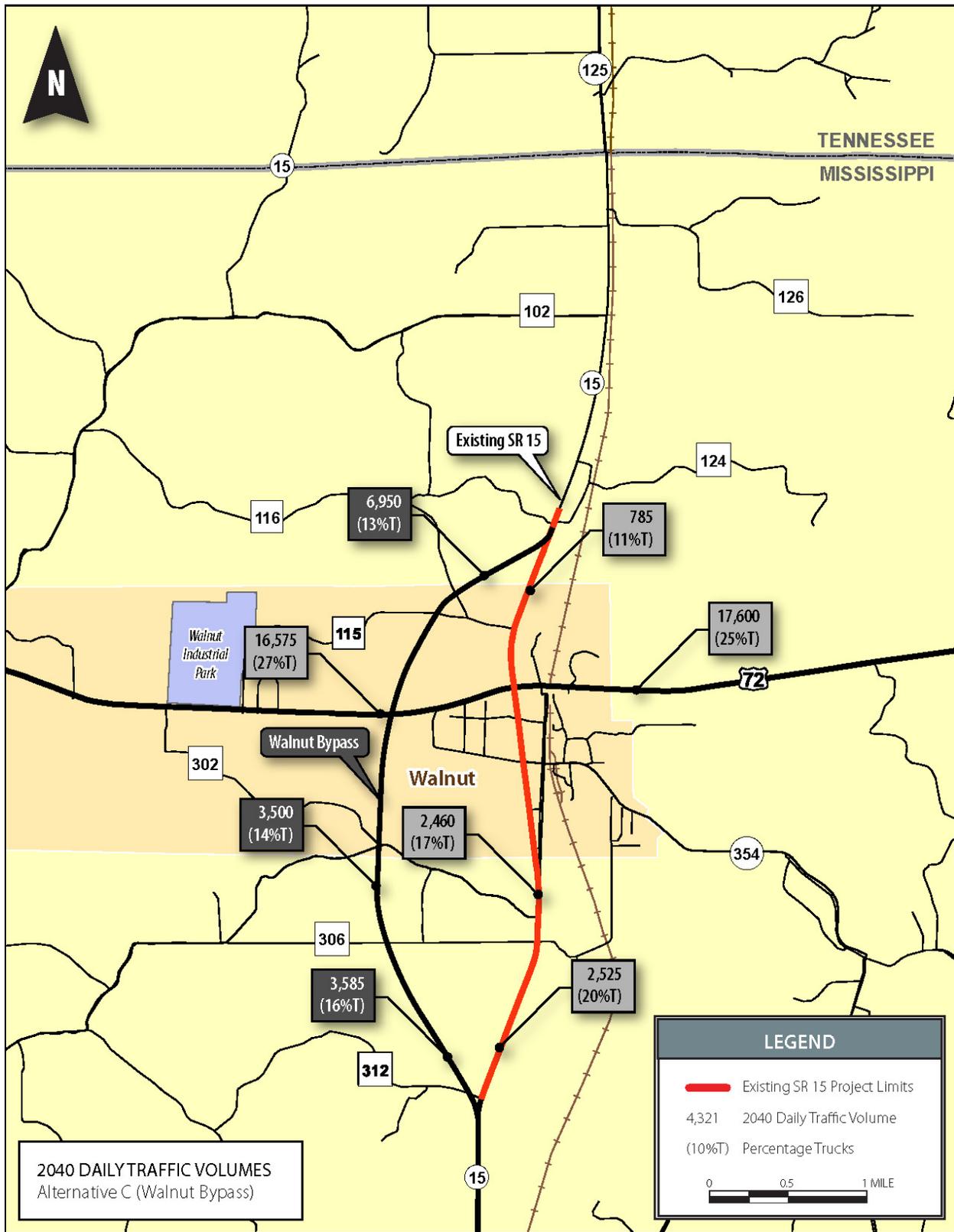


Figure 2-8. 2040 Daily Traffic Volumes, Alternative C

**Table 2-2. Planning Level Cost Estimate for Build Alternative B-1**

ITEMS	UNIT	QUANTITY	* UNIT PRICE	TOTAL	
<b>CONSTRUCTION COST ESTIMATES</b>					
<b>ROW</b>					
	SR15 - RURAL WIDENING	MI	2.140	\$1,080,000	\$2,311,364
	SR15 - URBAN WIDENING	MI	0.852	\$2,808,000	\$2,393,182
	US72 - TURN LANES	MI	0.625	\$1,080,000	\$675,000
<b>UTILITY RELOCATION</b>					
				TOTAL ROW AND UTILITY RELOCATION COST	\$550,000
<b>CONSTRUCTION</b>					
<b>GRADING AND DRAINAGE</b>					
	SR15 - RURAL WIDENING	MI	2.140	\$1,080,000	\$2,311,364
	SR15 - URBAN WIDENING	MI	0.852	\$1,740,000	\$1,482,955
	US72 - TURN LANES	MI	0.625	\$1,080,000	\$675,000
<b>PAVING</b>					
	SR15 - RURAL WIDENING	MI	2.140	\$3,228,000	\$6,908,409
	SR15 - URBAN WIDENING	MI	0.852	\$3,305,600	\$2,817,273
	US72 - TURN LANES	MI	0.625	\$3,228,000	\$2,017,500
<b>**STRUCTURES</b>					
	NEW BRIDGE SR15 715+00 SB OVER HURRICANE CREEK	SF	9680	\$100	\$968,000
	NEW BRIDGE SR15 765+00 SB OVER BIG CREEK	SF	4400	\$100	\$440,000
	BRIDGE WIDENING US72 385+00 EB OVER RR	SF	1800	\$100	\$180,000
<b>SIGNALS</b>					
	SR15 AT US72	LS	1	\$200,000	\$200,000
				CONSTRUCTION SUBTOTAL	\$18,000,500
				ENGINEERING AND CONTINGENCIES (15%)	\$2,700,075
				TOTAL CONSTRUCTION COST	<b>\$20,700,575</b>
				<b>ALT. B-1 CONSTRUCTION COST (without inflation)</b>	<b>\$26,630,120</b>

\* Unit prices from 2009 Planning Division Memorandum with additional 20% adjustment factor

\*\* Estimate includes bridge with assumed unit cost of \$100 per square foot

**Table 2-3. Planning Level Cost Estimate for Build Alternative B-2**

ITEMS		UNIT	QUANTITY	* UNIT PRICE	TOTAL
<b>CONSTRUCTION COST ESTIMATES</b>					
<b>ROW</b>					
	SR15 - RURAL WIDENING	MI	2.140	\$1,080,000	\$2,311,364
	SR15 - URBAN WIDENING	MI	0.852	\$2,808,000	\$2,393,182
	US72 - NEW LOCATION	MI	1.136	\$2,076,000	\$2,359,091
<b>UTILITY RELOCATION</b>					\$650,000
				TOTAL ROW AND UTILITY RELOCATION COST	<b>\$7,713,636</b>
<b>CONSTRUCTION</b>					
<b>GRADING AND DRAINAGE</b>					
	SR15 - RURAL WIDENING	MI	2.140	\$1,080,000	\$2,311,364
	SR15 - URBAN WIDENING	MI	0.852	\$1,740,000	\$1,482,955
	US72 - NEW LOCATION	MI	1.136	\$2,304,000	\$2,618,182
<b>PAVING</b>					
	SR15 - RURAL WIDENING	MI	2.140	\$3,228,000	\$6,908,409
	SR15 - URBAN WIDENING	MI	0.852	\$3,305,600	\$2,817,273
	US72 - NEW LOCATION	MI	1.136	\$2,700,000	\$3,068,182
<b>**STRUCTURES</b>					
	INTERCHANGE US72 OVER SR15	EA	1	\$9,432,000	\$9,432,000
	NEW BRIDGE SR15 715+00 SB OVER HURRICANE CREEK	SF	9680	\$100	\$968,000
	NEW BRIDGE SR15 765+00 SB OVER BIG CREEK	SF	4400	\$100	\$440,000
CONSTRUCTION SUBTOTAL					\$30,046,364
ENGINEERING AND CONTINGENCIES (15%)					\$4,506,955
TOTAL CONSTRUCTION COST					<b>\$34,553,318</b>
<b>ALT. B-2 CONSTRUCTION COST (without inflation)</b>					<b>\$42,266,955</b>

\* Unit prices from 2009 Planning Division Memorandum with additional 20% adjustment factor

\*\* Estimate includes bridge with assumed unit cost of \$100 per square foot

**Table 2-4. Planning Level Cost Estimate for Build Alternative C**

ITEMS		UNIT	QUANTITY	* UNIT PRICE	TOTAL
<b>CONSTRUCTION COST ESTIMATES</b>					
<b>ROW</b>					
	SR15 - NEW LOCATION	MI	3.996	\$2,076,000	\$8,296,136
	LOCAL ROADS	MI	3.617	\$408,000	\$1,475,909
<b>UTILITY RELOCATION</b>					\$290,000
TOTAL ROW AND UTILITY RELOCATION COST					<b>\$10,062,045</b>
<b>CONSTRUCTION</b>					
<b>GRADING AND DRAINAGE</b>					
	SR15 - NEW LOCATION	MI	3.996	\$2,304,000	\$9,207,273
	LOCAL ROADS	MI	3.617	\$636,000	\$2,300,682
<b>PAVING</b>					
	SR15 - NEW LOCATION	MI	3.996	\$2,700,000	\$10,789,773
	LOCAL ROADS	MI	3.617	\$588,000	\$2,127,045
<b>** STRUCTURES</b>					
	INTERCHANGE SR15 OVER US72	EA	1	\$9,432,000	\$9,432,000
	NEW BRIDGES SR15 195+00 OVER HURRICANE CREEK	SF	19360	\$100	\$1,936,000
	NEW BRIDGES SR15 300+00 OVER BIG CREEK	SF	13200	\$100	\$1,320,000
	NEW BRIDGES US72 RAMPS 340+00 OVER BIG CREEK	SF	7200	\$100	\$720,000
	RETAINING WALL US72 320+00 ALONG SW RAMP	SF	6000	\$50	\$300,000
CONSTRUCTION SUBTOTAL					\$38,132,773
ENGINEERING AND CONTINGENCIES (15%)					\$5,719,916
TOTAL CONSTRUCTION COST					<b>\$43,852,689</b>
<b>ALT. C CONSTRUCTION COST (without inflation)</b>					<b>\$53,914,734</b>

\* Unit prices from 2009 Planning Division Memorandum with additional 20% adjustment factor

\*\* Estimate includes bridge with assumed unit cost of \$100 per square foot

### **3.0 ENVIRONMENTAL CONSEQUENCES**

This chapter describes the existing conditions and potential environmental impacts of the three Build Alternatives under consideration, Alternatives B-1, B-2 and C.

The No Build Alternative involves making no improvements to existing State Route (SR) 15. It would have no direct impacts to the environment, but it would not meet the project purpose and need, which is described in detail in Chapter 1 of this document. The No Build Alternative would not correct geometric deficiencies and improve safety conditions, address existing and future traffic needs, nor would it provide an improved link between US 72 and Interstate 22 (US 78) on existing SR 15. Additionally, it would not fulfill the legislative mandate to develop four-lane highways within the state as defined in the 1987 *Four-Lane Highway Program and the 2005 Vision 21*.

After a MDOT internal meeting, it was decided to modify the northern project terminus to just north of the US 72 and SR 15 intersection. Improvements north of US 72 were dropped from further study because MDOT's intent is to study in the EA only those improvements that are likely to advance to construction. Technical studies included in the Appendices of this Environmental Assessment (EA) were conducted for SR 15 from County Road (CR) 312 to the Mississippi/Tennessee State Line. Therefore, total number of impacts will vary between the technical studies and the EA.

#### **3.1 Land Use Impacts**

Land use in the immediate vicinity of the project area consists primarily of farm and pastureland with scattered low-density, single-family residential and industrial properties. Within the Town of Walnut there are several small businesses including gas stations, a Dollar General, an auto parts store, a motel, fast-food restaurants, a pharmacy and a bank. Government facilities in the project area of Walnut include the Walnut Post Office, Town Hall and Library. The Walnut Fire and Rescue as well as two schools, the Walnut Attendance Center and Walnut High School, are also located in the project area in addition to four churches and two cemeteries. The locations of all community facilities in the general project area are shown in Appendix C, Figure 3.

The Walnut Industrial Park is located on US 72, west of the US 72/SR 15 intersection. This industrial park contains two warehouses for Abby Manufacturing. Another industrial building, ThyssenKrupp, is also located along SR 15 in the project area.

The proposed build alternatives would not interfere with any existing or proposed land uses. A detailed discussion of existing and future land uses in the project area can be found in the *Survey of Social and Economic Impacts* in Appendix C.

Tippah County does not have zoning, nor does it have a comprehensive plan, or a land use plan. Consequently, it is difficult to anticipate how the project area will develop in the future. Alternative C may spur new residential and commercial developments on the west side of the Town of Walnut as a new location roadway would provide easier access to areas currently unavailable; however, a lack of adequate infrastructure (e.g., water and sewer) precludes large commercial/industrial developments from locating within many portions of the project study area. Unless basic infrastructure is provided outside of the commercial area of Walnut, it is likely the land uses within the project study area will remain much as they are today.

Direct, indirect and cumulative impacts (ICI) to the land use in the area may occur. The study area was defined as one mile in either direction from the centerline of SR 15 and a half mile from the project end points.

Direct, indirect and cumulative effects can be defined as follows:

- *Direct* effects are caused by, and coincide in time and place with, the proposed action.
- *Indirect* effects are caused by the action and are later in time, but are still reasonable foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
- Cumulative Effects are the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The project corridor is for the most part rural in nature. Although it is expected to remain predominantly rural, new developments may result from the project improvements to SR 15. This is especially true should Build Alternative C be selected as the locally preferred. New alignment roadways typically prompt new commercial and/or residential development as discussed above which would convert the existing agricultural and forested land uses. Should Build Alternative B-2 be selected as the locally preferred alternative, indirect and cumulative effects to the existing land use at the new interchange at the intersection of SR 15 and US 72 may occur as the interchange would be north of its current location. It is anticipated that this shift to the north would promote new businesses (i.e. gas stations, commercial businesses, etc.) in this area. No anticipated indirect or cumulative impacts are anticipated should Build Alternative B-1 be selected as the locally preferred alternative. Improvements would be made only to the existing SR 15 under this alternative. It is not anticipated that the project area would see any substantial changes in land use as a result.

### **3.2 Farmland Impacts**

Build Alternative C has both direct and indirect impacts on farmland. It would acquire approximately 96 acres of farmland for right-of-way (ROW), and it renders approximately 6.5 acres of farmland unusable by creating fragments of farmland that are too small to farm or lack access to the farm facilities. Build Alternatives B-1 and B-2 have direct impacts on farmland. Build Alternative B-1 has the least impact, requiring approximately 16.5 acres of farmland for ROW. Build Alternative B-2 would acquire approximately 33 acres of farmland for ROW. Neither Build Alternative B-1 nor B-2 renders any farmland unusable by creating fragments of farmland that are too small to farm or lack access to the farm facilities. Build Alternative C would have the greatest impacts to farmland. The total acres of prime and unique farmland impacted by Build Alternative C are 21.69.

In accordance with the Farmland Protection Policy Act (FPPA), coordination was undertaken with the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Form AD-1006, the Farmland Conversion Impact Rating, has been completed and is included in Appendix D. Since the total site assessment points for the Build Alternatives are less than 160 points, no other alternatives must be considered for the basis of farmland impacts.

### 3.3 Social Impacts

The project study area is located in Tippah County in northeast Mississippi. The social characteristics of the project area have been determined utilizing data compiled by the US Census Bureau. Public meetings, aerial photography, field visits and conversations with local planning officials were used to assess the impacts of the Build Alternatives to neighborhoods and communities.

The immediate project area is comprised mainly of low-density residential and industrial outside the Town of Walnut and residential, commercial, government/community facilities and churches within the Town. There are no existing neighborhoods or community facilities in the project area that would be impacted by the proposed project and the project does not create a barrier to social interaction; however, some displacements of residential homes and commercial businesses would be unavoidable. Refer to the following section for more information on relocations.

The improvements to SR 15 are necessary to address safety and geometric deficiencies in the project area. The overall net benefit of the project improvements would provide a safer and more efficient corridor.

A detailed discussion of potential social and community impacts is included in the *Survey of Social and Economic Impacts* in Appendix C.

No indirect and cumulative impacts are anticipated to the social characteristics of the project area. Relocations would be necessary regardless of the alternative chosen; however, an adequate amount of decent, safe and sanitary replacement housing in the project area is readily available. Improvements to SR 15 would not create any circumstances that would cause barriers to or hindrances to the social fabric of the Town of Walnut.

### 3.4 Relocations

The evaluation of possible displacements in the project area was based on the conceptual design phase. In this phase, MDOT was committed to minimize impacts to all properties in the project area. This commitment will be furthered to the greatest extent possible during the project design phase.

In order to evaluate relocation impacts, a review of aerial photography and field investigations were conducted. In addition, census data was reviewed and Tippah County Tax Assessor records were utilized to document the approximate size, age, condition and total assessment value of the potential displaced properties. Potential residential, farm and business displacements that could occur as a result of the proposed project have been assessed for each of the proposed Build Alternatives. It should be noted that homes located on land with 10 or more acres were considered under the category of "farms." Appendix C provides detailed information on the residences and businesses identified for relocation.

Build Alternative B-1 would result in the displacement of 11 brick, frame, or vinyl siding residences and 10 businesses for a total of 21 displacements. Alternative B-1 business relocations include Phillips 66, Shopezy, Auto Plus Walnut Parts Company, the Wildcat

Carwash and mini storage, the Country Music Place, the BBQ Man on Wheels, Treesap Medical Center, Duncan's Pharmacy and CB&S Bank.

Build Alternative B-2 would result in the displacement of 12 brick, frame, or vinyl siding residences and 11 businesses for a total of 23 displacements. Build Alternative B-2 business relocations include Phillips 66, Shopezy, Auto Plus Walnut Parts Company, the Wildcat Carwash and mini storage, the Country Music Place, the BBQ Man on Wheels, Treesap Medical Center, Duncan's Pharmacy, CB&S Bank and a business warehouse located at 7291 Highway 72.

Build Alternative C would result in the displacement of 10 brick, frame, or vinyl siding residences, five mobile homes and one business, O'dalays Taco Shack, for a total of 16 displacements.

Two of the residences anticipated to be displaced by Build Alternative B-1 and Build Alternative B-2 are currently for sale. These homes are located at 28751 SR 15 and 28697 SR 15, in the northern vicinity of the SR 15 intersection with US 72.

Due to the rural setting of the proposed project, many of these residences are located on large acreage. Some of the manufactured homes are on large enough lots that they might be relocated to unaffected portions of the property. A formal determination would be made during the ROW phase as to the acquisition and/or relocation of these homes. Manufactured housing dealerships are located in the Ripley area and there are no restrictions on the placement of manufactured homes within Tippah County other than Health Department and Department of Environmental Quality requirements for the presence and location of wells and septic systems.

Residential dwellings identified for potential relocation are all single-family homes and considered to be owner-occupied. The survey of internet real estate listings for residential homes for sale in December 2011 resulted in 30 listings, averaging 2,120 square feet, 3.36 bedrooms and an average selling price of \$145,260.00. The majority of the homes available in/or near the project area are between 1,000 to 2,000 square feet, have three bedrooms, are in good condition, were built within the last 10 to 25 years, and are less than \$119,500.

Replacement housing for the potentially displaced farms on lots of similar size is available up to 148 acres; however, owners of homes on large acreage might choose to reestablish their dwelling on another, unaffected portion of their property. Among the 12 vacant lots for sale that are 10 acres or more, the average size is 52.84 acres and the average selling price is \$207,133.

There are nine commercial properties currently for sale that may be suitable for the relocation of the potentially displaced businesses. Most of the commercial properties are located in Ripley, and cost more than \$285,000.

The majority of the displaced structures under all three Build Alternatives are located within Census Tract 9501, Block Group 1, which has a low income population of 25.14 percent, 8.24 percent higher than Tippah County as a whole. More detailed information than is available at this conceptual stage will be needed to determine whether these residences actually house minorities and low income individuals who may be potentially displaced by the project under the Build Alternatives.

Field investigations also attempted to estimate the demographic characteristics of the potential residential displacements. No individuals were actually observed entering or leaving any of the

potentially displaced residences. Thus, it is not possible to confirm the presence of elderly or minority displacements that may occur. The displacement of Treesap Medical Center and Duncan's Pharmacy could have impacts to long-term residents, persons with disabilities and elderly persons within the community. Residents with mobility limitations, such as persons with disabilities and low income individuals, may find it difficult to meet daily needs due to the loss of facilities and services on which they depend. Treesap Medical Center is one of three doctor's offices in Walnut and Duncan Pharmacy is the only Pharmacy in Walnut. The nearest pharmacy is in Ripley, approximately 16 miles to the south. There is one commercial structure with 4.76 acres and one 14 acre commercial property, both available for development. It might be beneficial to consider constructing replacement buildings for these two facilities prior to the demolition of their being displaced, in order to reduce the disruption caused by relocation.

A detailed relocation report outlining characteristics of the potentially displaced dwellings and a listing and description of available replacement properties in the project area can be found in the *Survey of Social and Economic Impacts* in Appendix C.

Decent, safe and sanitary housing is available for the displaced residential homeowners and tenants. The relocation survey indicates that adequate replacement properties are available for sale in the project area at the current time. The acquisition and relocation program will be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) of 1970, as amended. A relocation assistance officer will be assigned to the project, and each displaced person will be provided the name and telephone number of the Relocation Assistance Officer assigned to help them. The Relocation Assistance Officer will determine the needs of the residents without regard to race, color, religion, sex, or national origin under Title VI of the Civil Rights Act of 1964. The officer will contact the owners and/or tenants, with ample time prior to displacement, to allow negotiations for obtaining and moving to replacement property. All other benefits under the Uniform Act will be carefully explained to the individual. This will include the payment of fair market value for the acquired property in addition to equitable compensation normally associated with relocation.

In compliance with the Uniform Act and United States Department of Transportation (USDOT) FHWA regulations, MDOT will provide relocation assistance payments and relocation assistance advisory services to help accomplish this end. Relocation assistance payments have been designed to compensate displaced persons for costs that have been imposed on them by Federal or Federally-assisted projects. Residential relocation payments are intended for persons who move, or move personal property, from a dwelling as a result of a highway project receiving federal financial assistance. Relocation personnel will provide relocation services, as appropriate for each relocation situation encountered and will utilize the methods of "last resort housing," if necessary. Housing of Last Resort is a mechanism of utilizing extraordinary funding or other actions to provide comparable, decent, safe and sanitary housing.

### **3.5 Environmental Justice**

This project is consistent with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, which requires federal agencies to develop a strategy for its programs, policies and activities to avoid disproportionately high and adverse impacts on minority and low-income populations with respect to health and the environment.

A review of 2000 US Census data, interviews with local government officials and a field review of the study area were used to determine the impacts of the Build Alternatives on minority and low-income populations within the corridors. *It should be noted that 2000 US Census data was reviewed due to 2010 US Census data used for evaluating environmental justice (EJ) impacts not being released at the time EJ was researched for the project area. In addition, the 2006-2010 American Community Survey data only releases information down to the census tract level.* Based on the information gathered, it has been determined that this project would not have a disproportionately high and/or adverse effect on low-income or minority populations. Conversely, the improved transportation infrastructure supporting economic development and increased safety provided by the Build Alternatives would benefit all community members, regardless of race or income. For additional information refer to Appendix C for the *Survey of Social and Economic Impacts*.

### **3.6 Economic Impacts**

The initial economic impact of any of the Build Alternatives is land being removed from the tax rolls through its acquisition for ROW particularly the businesses on the west side of SR 15, south of its intersection with US 72. Should Build Alternatives B-1 or B-2 be selected as the preferred alternative, it is anticipated that the amount of land to be acquired would be less; however, should Build Alternative C be selected the amount of ROW to be acquired would be more extensive as this is a new location alignment. The economic effect of a bypass under Build Alternative C varies with each circumstance. Smaller towns, such as Walnut, are generally more at risk of adverse economic impacts from a highway bypass than medium and larger towns because a bypass reduces through traffic and negatively impacts trade sales and employment. In general, the adverse impacts to existing services in the town could be offset in the long-term by the attraction of commercial development into the vicinity of the bypass area, and thus providing jobs to local residents. Regardless of which alternative is preferred, the injection of construction money into the local economy would also benefit the area.

Improved accessibility would likely increase the value of land and encourage new development in desired areas. Attracting more highway commercial uses and services, additional automobile suppliers, other manufacturing companies to the community would undoubtedly have a positive economic impact on Tippah County, as this would provide jobs to local residents who would, in turn, help to stimulate local businesses. Additionally, the injection of construction money into the local economy would further benefit the area.

Negative economic impacts are limited to those associated with the displacement and relocation of 10 businesses that would occur with the construction of Build Alternative B-1, 11 businesses that would occur with the construction of Build Alternative B-2 and one business that would occur with the construction of Build Alternative C. As discussed in Section 3.4, suitable replacement properties are readily available within Tippah County; however, they may not be located within the Town of Walnut. It is also expected that the economic impacts of relocation costs are expected to be much more than the current assessed values of the displaced business properties.

### **3.7 Joint Development**

There are no proposed new joint developments slated for the project area according to the Northeast Mississippi Planning and Development District, and the proposed project does not include any plans for joint development.

### **3.8 Pedestrian and Bicycle Impacts**

Tippah County, Mississippi, does not have a Pedestrian or Bicycle Plan and there are no existing or planned bicycle or pedestrian facilities in or around the project area. Existing SR 15 through the project area has little to no shoulders and what shoulders it has are unpaved. The proposed Build Alternatives do not include dedicated bicycle lanes. However, within the project design, rural arterial areas of SR 15 include 10-foot shoulders on both sides of the road which could adequately accommodate bicycle traffic. The existing SR 15 within the urban areas does not have sidewalks. The proposed Build Alternatives within the urban area include a five foot sidewalk to accommodate pedestrians. Improvements to SR 15 will positively impact pedestrians and bicyclists within the community.

### **3.9 Air Quality Impacts**

Tippah County is in an area that has been designated in attainment for all criteria pollutants; therefore the project is not anticipated to cause or contribute to an exceedance of the National Ambient Air Quality Standards (NAAQS).

Some temporary air pollution from the construction equipment and dust from the construction activity may occur, but those impacts would be short-term and the appropriate efforts will be made to keep these impacts to a minimum.

### **3.10 Noise Impacts**

A traffic noise analysis was conducted for the proposed improvements to SR 15 in accordance with MDOT's *Highway Traffic Noise Policy* and FHWA's 23 CFR Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. FHWA's traffic noise model, TNM 2.5 was used to estimate the traffic-related noise levels for the existing (2011) and the design year (2040) conditions of the No Build and Build Alternatives. The analysis included:

- Identification of noise-sensitive land uses along the project;
- Determination of existing sound levels with development of validation models using TNM 2.5 with field measured noise levels;
- Determination of future sound levels by predicting the design year noise levels for the No Build and Build scenarios using TNM 2.5;
- Determination of traffic noise impacts by comparing predicted noise levels with guidelines to determine impacts;
- Noise abatement evaluation, where necessary, of the feasibility of various noise abatement measures;
- Discussion of construction noise; and
- Provision of information for local officials.

A report containing background material and a full discussion of the analysis findings, including discussions of the fundamental concepts of roadway noise, the FHWA Noise Abatement Criteria (NAC), and the noise prediction model, is included as Appendix F. The findings of the noise analysis are summarized below.

Two hundred and eleven noise-sensitive facilities are located within the proposed project area. Noise levels were modeled at a total of 11 locations along the existing and proposed project alignments. These facilities consist of eight single-family residences, one cemetery, one commercial facility, and one church. Sound is measured in decibels, a logarithmic scale of measurement, and traffic noise in this report is measured in the specific A-scale decibel system (dBA) using the  $L_{eq}$  descriptor (see Appendix F for a full explanation of the fundamentals of roadway noise). Under existing conditions, two residences have traffic noise levels approaching or exceeding NAC levels. The NAC for residences is 67.0 dBA.

For the No Build Alternative, the  $L_{eq}$  levels from highway traffic at occupied facilities located along the proposed project are expected to be 0.0 to 4.0 dBA higher than the existing noise levels. This increase in noise levels is due to small increases in traffic on existing roadways over the 28-year period. Under the No Build Alternative, four receptors are predicted to be impacted: three residences located south of US 72 between CR 115 and McCoy Street (B222, B224, and 8) and one located east of SR 15 near CR 123 (B143).

The 211 noise sensitive facilities in the proposed project area are composed of: 186 Activity Category B residences; eight Activity Category C churches, parks and cemeteries; eight Activity Category D indoor uses; and nine Activity Category E commercial noise sensitive receptors. The predicted impacts for each alternative are summarized in table 3-1.

**Table 3-1. Impacted Noise Receptors by Alternative**

Alternative	Impacted Receptors by Activity Category				In Right-of-Way				Total Impacts
	B	C	D	E	B	C	D	E	
Total Receptors	186	8	8	9					
2011 Existing	2	0	0	0					2
2040 No-Build Alternative	5	0	0	0					5
2040 Build Alternative B-1	10	2	0	0	21	0	0	1	22
2040 Build Alternative B-2	8	2	0	0	24	0	0	1	25
2040 Build Alternative C	1	0	0	0	30	0	0	0	30

Source: *Traffic Noise Assessment*, October 15, 2008, Revised April 23, 2012, Prepared by Third Rock Consultants, LLC

MDOT guidelines state that noise abatement measures should be considered for receptors with predicted traffic noise impacts. The following 12 receptors were impacted by one or more Build Alternatives: 4 (Harmony Church/Cemetery), 5, 8, B93, B117, B120, B121, B122, B123, B222, B224 and C6 (Christ Temple Church). Noise abatement measures can include improved traffic management, alterations to horizontal or vertical alignments and acquisition of noise buffer zones. If these measures are not appropriate, not effective or not feasible, the installation of structural noise barriers can be evaluated with respect to feasibility and reasonableness.

A reduction of speed limit or traffic management would not meet the project purpose and need, which is to provide a higher speed access corridor. Thus, traffic management measures are not

appropriate abatement measures. Alteration of the proposed vertical or horizontal alignments of the Build Alternatives is also not a feasible abatement measure as the Build Alternatives have been developed in consideration of many factors and constraints, including impacting the least number of facilities and the avoidance of several cemeteries in the area.

A noise buffer zone is a possible abatement measure for future development along Build Alternative C as much of the property in the area remains undeveloped. Local ordinances could be implemented to require future development to be set back a minimum distance from the highway such that the NAC is not exceeded for the land use (residential or commercial).

Because other abatement measures are not appropriate, not effective or not feasible, the installation of structural noise barriers was evaluated for each of these 12 locations for the 2040 design year. According to MDOT policy, noise barriers must be both feasible and reasonable to be implemented as an abatement measure. Noise barriers for nine of the receptors (5, B93, B117, B120, B121, B122, B222, B224 and C6) were all found to be unfeasible since a 5 dBA noise reduction could not be achieved at the impact receptors. Therefore, no further assessment was required at these locations.

A noise barrier was found to be unfeasible at Harmony Church/Cemetery (Receptor 4) because it would require limiting the points of ingress or egress. Noise barriers were found to be feasible for Receptors 8 and B123 but not reasonable due to high costs per benefited receptor. No noise barriers are likely to be implemented on this project due to avoidance options and the unlimited accessibility of SR 15.

Although some noise is expected associated with project construction, none of the sensitive receptors are expected to be exposed to construction noise for a long duration. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as soundproof housing for stationary noise-producing machinery, silencers on intakes of equipment, efficient and well-maintained exhaust mufflers on internal combustion engines, and restriction of construction operations in the vicinity of noise-sensitive locations to periods of the day when excessive noise would be the least harmful. The contractor shall comply with all state and local sound control and noise level rules, regulations and ordinances that apply to any work performed.

### **3.11 Stream and Water Quality Impacts**

The Build Alternatives proposed for SR 15 will require bridging or otherwise crossing several streams that flow through the project area, which is located in the Flatwood/Blackland Prairie Margins ecoregion and within the North Independent Streams Basin. The streams in the project area are tributaries of Muddy Creek, which is part of the Upper Hatchie River Watershed. Muddy Creek flows in a northern direction from its headwater in central Tippah County across the Tennessee State line to its confluence with the Hatchie River. Streams known at this time to be potentially affected by the project alternatives are listed in Table 2 and shown on Exhibits 3 through 8 of the Ecology Report included in Appendix G. The Mississippi Department of Environmental Quality (MDEQ) and the US Army Corps of Engineers (USACE) has not made waters of the State and/or of the US determinations.

Streams were examined and their locations recorded during field surveys conducted October 3-7, 2011, along Alternatives B-1, B-2 and C. The majority of the streams within the project area are perennial or ephemeral in nature. According to MDEQ, the designated use of all the project

area streams is for fish and wildlife. None of the streams in the project corridors are considered outstanding waters. A fecal coliform total maximum daily load (TMDL) has been developed for the segment of Muddy Creek from its headwaters to the Tennessee State line. The potential nonpoint sources of fecal coliform bacteria for Muddy Creek and its tributaries include: failing septic systems, wildlife, land application of hog and cattle manure, grazing animals, land application of poultry litter, and urban development. Muddy Creek is not included in the Mississippi 2010 Section 303 (d) List of Impaired Water Bodies, but a tributary that flows through the project area, Dry Creek, is listed for pathogens. Stream impacts of the proposed project are summarized in Table 3-2.

**Table 3-2. Stream Impacts**

	Alternative B-1 (linear feet)	Alternative B-2 (linear feet)	Alternative C (linear feet)
<b>Perennial</b>	335	335	2,598
<b>Intermittent</b>	447	447	1,040
<b>Ephemeral</b>	616	616	953
<b>Total Stream Impacts</b>	1,398	1,398	4,591

Source: *Ecology Technical Study*, November 17, 2011, Revised February 20, 2012, Prepared by Third Rock Consultants, LLC

Alternative B-1 would have 1,398 linear feet of stream impacts, Alternative B-2 would have 1,398 linear feet of stream impacts, and Alternative C would have 4,591 linear feet of stream impacts. Mortality of individual fish and aquatic wildlife may occur during construction. Sediments that are added to the stream during construction can bury fish and nesting areas and niches that provide habitat for aquatic insects. Crossing streams using culverts and bridges can reduce stream sinuosity, thereby reducing stream length and available habitat. Indirectly, all the Alternatives could cause some sedimentation impacts to sites downstream; however good erosion and sediment control will be designed and implemented to minimize these impacts. Stream impacts will be mitigated using one of MDOT's approved banks.

Compliance with water quality standards will be the responsibility of each individual contractor involved with the proposed project. MDOT's *Standards and Plans* contain provisions for preventing and abating pollution of streams and water bodies. These measures are recognized as Best Management Practices (BMPs) by the Bureau of Pollution Control and have been developed from the following set of regulations:

- Wastewater Regulations for National Pollutant Discharge Elimination System (NPDES) Permits;
- Underground Injection Control (UIC) Permits;
- State Permits;
- Water Quality Based Effluent Limitations; and
- Water Quality Certification, as amended by October 25, 2001.

The construction contracts will require compliance with the State Bureau of Pollution Control's General NPDES Permit process for Construction Storm Water Discharge for projects on which one or more acres are disturbed by construction activities. Contractors will be required to furnish a Construction Notice of Intent, and, where applicable, a Mining Notice of Intent in compliance with the provisions of the Mississippi Water Pollution Control Law (Section 49-17-2 et. Seq., MS Code of 1972) and the regulations and standards adopted and promulgated there under (and under authority granted pursuant to Section 402(b) of the Federal Water Pollution Control Act). In areas requiring permits under Section 404 of the Act, the highway activities are

subject to a special review by the Bureau of Pollution Control for certification as to water quality. See Section 3.15 for a full discussion of permits associated with the proposed project.

Any additional requirements placed by the Bureau of Pollution Control will be included in the plans and specifications for the work. Compliance with BMPs, permits and requirements in place by the Bureau of Pollution Control will help insure the proposed project activities will not contribute to a significant deterioration of water quality.

### 3.12 Wetlands Impacts

The project alternatives were evaluated to determine the boundaries of jurisdictional wetlands and other waters of the United States in accordance with the provisions contained in Section 404 of the Clean Water Act (Act) of 1972 and Executive Order 11990. Wetlands and ponds potentially affected by the Build Alternatives B-1, B-2 and C are listed in Tables 4 and 5 and shown on Exhibits 3 through 8 of the ecology report (Appendix G). MDEQ and USACE have not made waters of the State and/or United States determinations.

Wetlands were examined and their locations and boundaries delineated using procedures detailed in the USACE *Wetland Delineation Manual (1987)* during field reviews conducted October 3-7, 2011. The primary function of wetlands in the project area is wildlife habitat. Wetlands also serve to capture sediment and those located near agricultural fields may serve as nutrient and sediment filters for water before it enters streams. Wetland impacts are summarized in Table 3-3.

**Table 3-3. Wetland Impacts**

	Alternative B-1 (in acres)	Alternative B-2 (in acres)	Alternative C (in acres)
<b>Forested</b>	0	0	0
<b>Scrub-shrub</b>	0	0	0
<b>Emergent</b>	0.07	0.07	3.19
<b>Total Wetland Impacts</b>	0.07	0.07	3.19
<b>Ponds</b>	0.31 (1 pond)	0.31 (1 pond)	1.14 acres (4 ponds)

Source: *Ecology Technical Study*, November 17, 2011, Revised February 20, 2012, Prepared by Third Rock Consultants, LLC

As currently proposed, Alternatives B-1 and B-2 would impact 0.07 acre of emergent wetland and 0.31 acre of pond (one pond). Alternative C would impact 3.19 acres of emergent wetland and 1.14 acres of pond (four ponds). If these wetlands are filled, mortality of individual aquatic life may occur during construction and the loss of wetland habitat in the landscape would be permanent. Wetlands that are partially, but not completely, filled by the proposed project may be affected by modified drainage patterns, which could result in localized changes in water levels and vegetation. Increases in development due to the access the new roadway provides may cumulatively reduce available wetland habitats over time.

In the design process, MDOT will evaluate and implement, if feasible, measures to minimize wetland impacts. For unavoidable impacts, wetlands will be mitigated from one of MDOT's approved wetland banks.

### 3.13 Floodplain Impacts

In accordance with Executive Order 11988, an assessment of impacts to the floodplains associated with streams in the proposed project area was conducted. The proposed project would unavoidably cross the 100-year floodplains of Hurricane Creek, an unnamed tributary to Big Creek, and Big Creek as identified on the Flood Insurance Rate Maps Community Panels 28139C0035D and 28139C0050D developed by the Federal Emergency Management Agency (FEMA). All of these crossings would be perpendicular. Alternatives B-1 and B-2 would have two perpendicular floodplain crossing. Alternative C has three perpendicular floodplain crossings. Floodplain impacts are summarized in Table 3-4.

**Table 3-4. Floodplain Impacts**

	Alternative B-1 (in acres)	Alternative B-2 (in acres)	Alternative C (in acres)
<b>Hurricane Creek</b>	30.5	30.5	36.9
<b>Unnamed Tributary to Big Creek</b>	0	0	5.1
<b>Big Creek</b>	21.4	21.4	36.5
<b>Total Impacts</b>	51.9	51.9	78.5

The crossing of Hurricane Creek by Alternatives B-1 and B-2 would be perpendicular to the stream flow creating a transverse encroachment of 30.5 acres. Alternative C would avoid this particular crossing, but would create a perpendicular crossing of Hurricane Creek farther to the west. The perpendicular crossing by Alternative C would result in a transverse encroachment of 36.9 acres. These floodplain crossings are shown in Appendix G. Only the No Build Alternative would avoid impacts to Hurricane Creek and its associated floodplain. The Alternatives cannot be shifted to avoid Hurricane Creek and its floodplains because the stream runs west to east through the project area.

The crossing of Big Creek by Alternatives B-1 and B-2 would be perpendicular to the stream flow creating a transverse encroachment of 21.4 acres. Alternative C would avoid this particular crossing, but would create a perpendicular crossing of Big Creek farther to the northwest. The perpendicular crossing by Alternative C would result in a transverse encroachment of 36.5 acres. These floodplain crossings are shown in Appendix G. Only the No Build Alternative would avoid impacts to Big Creek and its associated floodplain. The Alternatives cannot be shifted to avoid Big Creek and its floodplains because the stream runs northwest to southeast through the project area.

The crossing of an unnamed tributary to Big Creek by Alternative C would be perpendicular creating a transverse encroachment of 5.1 acres. This floodplain crossing is shown in Appendix G. Only the No Build Alternative would avoid impacts to the unnamed tributary to Big Creek and its associated floodplain.

In summary, none of the floodplain crossings is considered a major encroachment on the floodplain because:

- The crossings will be designed to convey floodwaters so that there would be no major risk of property damage or loss of life due to the encroachment; and

- There would be no substantial adverse impact to natural and beneficial floodplain values.

All hydraulic structures associated with these floodplain crossings would be developed in accordance with FHWA guidelines as found in 23 CFR Part 650 and Mississippi House Bill No. 8 (as adopted on August 1, 1979, and amended on June 10, 1982). These design standards would be adequate to ensure that no additional risk would be incurred to these base flood elevations, or to property owners from backwater conditions created by the construction of either Build Alternative.

Design measures to minimize floodplain impacts include: (1) avoiding longitudinal encroachments, (2) sufficient bridging to minimize adverse effects of backwater and increases in streamflow velocity, (3) minimizing channel alterations, (4) adequate and timely erosion control to minimize sediment transport into streams, and (5) utilizing standard specifications for controlling work in and around streams to minimize adverse water quality impacts.

Tippah County participates in the National Flood Insurance Program (NFIP). No regulatory floodway encroachment would occur; however, procedures for coordinating highway encroachments on floodplains with FEMA would be followed. The project design and construction would comply with NFIP standards as required for Federal Aid Highway action involving regulatory floodways.

### **3.14 Water Body Modification and Wildlife Impacts**

The project area is contained in the Flatwood/Blackland Prairie Margins and bordered by the Northern Hilly Gulf Coastal Plain ecoregions. The physiography of the Flatwood/Blackland Prairie Margins region consists of smooth lowland plains and undulating irregular plains with some hills. The physiography of the Northern Hilly Gulf Coastal Plain region consists of dissected hills with rounded tops and gently sloping to strongly sloping side slopes with dissected irregular slopes with mixed oak and pine forests. Existing SR 15 passes through a predominantly rural landscape of undeveloped forested slopes with a mix of agricultural fields and residences with commercial development in the Town of Walnut. Oak, hickory and pine trees dominate forested hillsides and ridge tops in the project area, Pine plantations are common in the area; other agriculture includes cotton and pasture, with some soybeans.

Both upland and old-field habitats in various stages of succession, and ponds and wetlands provide food, cover and nesting opportunities for numerous small mammals, reptiles, native birds, spiders and insects. All stream types have predominately sand and silt substrates and deeply entrenched channels. Floodplains provide feeding and breeding areas for many invertebrates that are important to the food chain in streams and terrestrial habitats.

The proposed Build Alternatives would require crossings of streams and floodplains in the project area and may result in impacts to wetlands and ponds. As part of the proposed project either new bridges or culverts will be constructed at any hydraulic crossings. Stream channel relocation will be minimized to the maximum extent possible. Stream banks will be restored to a condition similar in elevation and shape to that which now exists to facilitate natural regeneration of vegetation. Erosion control measures adopted as part of MDOT's BMPs will be installed to minimize sedimentation and increased turbidity. Bridges and culverts may also provide opportunities to offer wildlife benefits through design characteristics that enable wildlife

to use bridge passages as safe corridors between blocks of terrestrial habitat. The proposed changes would not adversely affect wildlife and domestic animal use of these water bodies.

Efforts to minimize modification of water bodies and the impacts of such modifications on wildlife will continue throughout the project.

### **3.15 Permits**

The placement of fill in waters of the United States, including wetlands, requires a permit from USACE under Section 404 of the Clean Water Act of 1977. There are three levels of this permit, and a determination of the appropriate permit(s) required, based on the amount, type and location of the fill required, will be made as the proposed project is developed.

Prior to the issuance of a Section 404 permit, the applicant must obtain a Section 401 Water Quality Certification from the state in which the discharge originates. The purpose of the 401 certification is to verify that the proposed activity will not result in violation of the water quality standards of the State. MDEQ is responsible for 401 certification review.

### **3.16 Scenic Rivers**

There are no scenic rivers in the project area, so none will be impacted.

### **3.17 Coastal Barriers**

There are no coastal barriers in the project area, so none will be impacted.

### **3.18 Coastal Zones**

There are no coastal zones in the project area, so none will be impacted.

### **3.19 Threatened and Endangered Species**

The Mississippi Department of Wildlife, Fisheries and Parks and the US Fish and Wildlife Service Mississippi Ecological Services Field Office (MSFWS) participated in early coordination on the proposed project in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661-667e) and the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). The MSFWS database lists threatened and endangered species by county. No species are listed for Tippah County. Additionally, a coordination response letter from USFWS, dated October 4, 2011, resulted in no federally listed endangered, threatened or candidate species finding for the project area.

A letter (located in Appendix C of the Ecology Technical Study) dated October 4, 2011, from the Mississippi Natural Heritage Program (MNHP) reports the occurrences of two species of concern within 2 miles of the proposed project corridor, the steelcolor shiner (*Cyprinella whipplei*) and the ridge-stem false foxglove (*Agalinia oligophylla*). Information regarding these species follows:

### Steel Color Shiner

The steelcolor shiner is a small (12 to 16 centimeter) insectivorous fish that is known from the Mississippi River basin from Ohio and West Virginia to Illinois, Missouri and eastern Oklahoma, and south to northern Alabama and northern Louisiana. Spawning occurs in late spring and summer, starting during the second or third summer of its up-to-four-year life span. The steelcolor shiner spawns around logs, brush, and other obstructions, usually near riffles, attaching eggs to the undersides of obstructions or placed above the bottom under loose bark, in crevices or furrows on logs, or among tree roots; males maintain territories around spawning surfaces.

Habitat for the steelcolor shiner includes runs, pools, and backwaters of warm, moderate to somewhat low-gradient large creeks and medium to large rivers that typically are clear; it also tolerates streams that generally are turbid or have silt bottoms.

Impoundments have been the biggest threat to the steelcolor shiner. Habitat for the steelcolor shiner in the project area exists in the larger streams: Hurricane Creek and Big Creek. MNHP recommends that BMPs be implemented and monitored for compliance, specifically measures that will prevent any suspended silt and contaminants from leaving the site in stormwater run-off, as this may negatively affect water quality and habitat conditions within nearby streams and waterbodies.

### Ridge-Stem False Foxglove

The ridge-stem false foxglove is a herbaceous annual in the figwort family that grows to 3 to 6 feet tall. It has pink blooms in July, August and September. This species is locally abundant in southwestern Louisiana and easternmost Texas, but is also known from Mississippi, Alabama and Tennessee. Records of the species are from 10 counties in Mississippi, including Tippah County. Habitat requirements for this species include sunny locations of average moisture, including prairies, roadsides, fields, and woods. It has yellowish green stems, leaves that are somewhat linear to spatulate, and flowers that lack a yellow-lined throat.

In summary, no protected species records are known within the likely direct impact area of the project, nor does Critical Habitat for any species occur within the project area or Tippah County. Increases in development due to the access the new roadway provides may cumulatively reduce available habitats for the steelcolor shiner and the ridge-stem false foxglove over time. The overall potential to impact the steelcolor shiner and ridge-stem false foxglove, both a state-listed species of concern, both directly and indirectly, are similar for all Alternatives.

## **3.20 Historic and Archaeological Resource Impacts**

The methodology for the cultural resource survey and the findings are summarized below. The complete report, *Phase I Archaeological Assessment of State Route 15 from County Road 312 to the Tennessee State Line, Tippah County, Mississippi* is included in Appendix J.

This project has been coordinated with the State Historic Preservation Office (SHPO) and representatives of interested Native American tribes. MDOT also undertook substantial informal coordination with the SHPO regarding the findings of the archaeological field work as they were reported. MDOT is continuing to coordinate with the SHPO.

Below is a summary of the findings of the study and potential project impacts to historic architectural and archaeological resources.

#### Architectural/Historical Resources

Prior to this study, no resources have been listed or determined eligible for listing in the National Register of Historic Places (NRHP) that are in the project's Area of Potential Effect (APE).

A records search was conducted by the field architectural historian. Thirty standing structures over 50 years of age were recorded in the APE during the field survey. The findings of the field survey and records research indicated that two of these resources are considered potentially eligible for listing on the NHRP. These structures are: the ca. 1850 Pulliam House and the ca. 1955 John Curtis Richardson House. The Pulliam House is adjacent to Build Alternative C and the John Curtis Richardson House property is within Build Alternatives B-1 and B-2.

The ca. 1850 Pulliam House is the oldest standing house in the project corridor. The house has been continuously owned by the Pulliam family and its descendents. Since it also retains an adequate amount of original design, setting, materials, and workmanship to convey a historic sense of life in the last half of the nineteenth century, the ca. 1850 Pulliam House is eligible for listing in the NRHP under Criterion A for being associated with early development in the area and Criterion C for its design and construction and embodying distinctive characteristics of a type, period, and method of construction.

The ca. 1955 John Curtis Richardson House is the only intact example of a traditional style rambling ranch in the project corridor. Since it has retained an adequate amount of original design, setting, materials, and workmanship to convey a historic sense of life in the mid-twentieth century, the ca. 1955 John Curtis Richardson House is considered eligible for listing on the NRHP under Criterion C for its design and construction and embodying distinctive characteristics of a type, period, and method of construction.

All proposed alternatives avoid the Pulliam House and property. The proposed Alternatives B-1 and B-2 require a portion of the John Curtis Richardson House's property east of the John Curtis Richardson House. The limits of Alternatives B-1 and B-2 have been set very close to the estimated construction limits to avoid the potentially eligible for listing on the NRHP structure.

#### Archaeological Resources

The survey area for the proposed project encompassed two corridors. The width of the study corridors varied, but was approximately 350 feet in areas of new alignment and no greater than 200 feet in areas of existing alignment. Due to the nature of the project area, which is mainly wooded, shovel testing was the primary method of survey. Areas where there was good surface visibility were visually inspected. A total of 1,507 shovel test locations were recorded; 1,310 were negative for cultural material and 197 were not dug for various reasons, mainly disturbance. Four areas were not shovel tested due to disturbance: the commercial district west of SR 15 in the town of Walnut; the commercial and residential areas on both sides of SR 15 in the community of Brownfield; and a residential stretch east of SR 15 between Walnut and Brownfield. Although not shovel tested, all four areas were visually inspected.

As a result of the fieldwork, a single historic scatter was encountered and recorded. This site is recommended as not eligible for listing on the NRHP and no further archaeological work is required.

The Mississippi Department of Archives and History (MDA&H) provided a letter dated April 27, 2012, regarding the review of the cultural resources survey. The letter stated that the two investigated archaeological sites are not eligible for listing in the NRHP.

### **3.21 Section 4(f)/Section 6(f) Resources**

The findings of the field survey and records research indicated that there are two resources within the area considered potentially eligible for listing on the NHRP. These structures are: the ca. 1850 Pulliam House and the ca. 1955 John Curtis Richardson House. The Pulliam House is located outside of and adjacent to Build Alternative C. The John Curtis Richardson House is located adjacent to Alternatives B-1 and B-2. Both alternatives avoid taking the house. However, the property adjacent to existing SR 15, along the eastern boundary of the potentially eligible property, is within Build Alternatives B-1 and B-2.

The MDA&H provided a letter dated April 27, 2012, regarding the review of the cultural resources survey. They concurred that the John Curtis Richardson House and Pulliam House are eligible for the NRHP. Coordination with the SHPO is ongoing.

Additionally, the analysis indicated that there is no Section 4(f) use of public parks, recreation lands, wildlife and waterfowl refuges or other Section 4(f) protected resources that exist in or adjacent to the project impact area.

The project does not involve any Section 6(f) resources because no properties in the project area were acquired or developed using funds from the Land and Water Conservation Fund Act (LWCFA).

### **3.22 Hazardous Waste Impacts**

A *Hazardous Materials Study* of the project area was performed by Thompson Engineering to identify potential hazardous waste sites (see Appendix H). This study included:

- A review of Federal and State lists of environmentally regulated sites to identify sites with documented contamination and also those sites considered as potential sources of contamination;
- A review of historical topographic maps and aerial photography;
- A review of a Phase II Environmental Site Assessment for the Walnut Dry Cleaners performed in 2005; and
- A physical inspection of the site conditions in the project area.

A site reconnaissance of the study area was performed on October 4, 2011. Based on information obtained from review of available state and federal records, topographic maps and aerial maps, and the site reconnaissance nine facilities with potential environmental concerns were identified adjacent to the proposed alignments. Eight of the sites were determined to pose limited or no risk due to the distance, the minimal amounts or the nature of chemicals or materials on site, and/or the current regulatory status of the sites. Walnut Dry Cleaners will require an additional environmental assessment prior to any ROW acquisition. The site is closed and no longer active and is not clearly identifiable on historical aerial photographs. According to the EDR report, soil contamination from Poly Chloro Ethylene (PCE) exists on site. A review of the Phase II report indicates that there is the potential for contamination at the site. Since the facility was in operation at the time of the assessment and conditions at the site could

have changed since then, further assessment is needed prior to right of way acquisition. The Walnut Dry Cleaners is located along Alternatives B-1 and B-2.

Due to the agricultural and rural nature of the region, where the use of fertilizers, pesticides, herbicides, equipment lubricants and fuel tanks is common, the potential exists to encounter hazardous substances and petroleum constituents along the corridor. MDOT personnel and any contractors working on the project will be made aware of the possibility of encountering these environmental issues, and the appropriate personnel will be contacted in the event that stained soils, soils with unusual odors or buried containers are encountered at any point along the project corridor.

Transformers located along the project ROW are the property of the local energy supplier and it is their responsibility to maintain the equipment and respond to any releases. During site reconnaissance, no visible evidence of leaks was observed in association with the transformers. Therefore, the transformers are considered a minimal environmental hazard. Not all transformer locations that exist along the potential corridor were identified during the site reconnaissance because some properties were not accessible along the driving reconnaissance routes.

If undiscovered waste sites are unearthed during construction, excavation activities in the area will be immediately suspended. MDOT, in conjunction with the appropriate agencies, will develop an acceptable plan to investigate the site and determine corrective measures for the protection of public health and the environment.

### **3.23 Visual Impacts**

#### Alternatives B-1 and B-2

The proposed Build Alternatives B-1 and B-2 pass through a predominantly commercial and residential area. These alternatives involve the widening of the existing SR 15 roadway, whose visual resources can be separated into two categories: natural and cultural.

The natural components of the landscape include wooded areas along existing SR 15. The cultural components consist of elements such as scattered, low-density, single-family houses, farms with residential and agricultural buildings and cleared agricultural lands, commercial development, a roadway network of two-lane county roads, bridges and power lines.

The proposed Build Alternatives B-1 and B-2 will result in a four/five-lane roadway along the existing SR 15 alignment. The introduction of cuts and fills and roadway sections on structure and the removal of trees would modify the visual environment. However, this impact is not substantial because the environment is already modified by manmade elements and the existing view from this area is of a two-lane road.

#### Alternative C

The proposed Build Alternative C passes through a predominantly rural landscape, whose visual resources can be separated into two categories: natural and cultural.

The natural components of the landscape include densely wooded lands on the ridgetop, bottomlands, and creeks and streams. The cultural components consist of elements such as scattered, low-density, single-family houses, farms with residential and agricultural buildings and cleared agricultural lands, a roadway network of two-lane county roads, bridges and power

lines. Some of the residences and farms are well-kept and contribute to a positive visual landscape, while others may be considered to possess poor aesthetic quality with unkempt features or properties filled with debris. When the natural features are combined with the cultural components introduced by man into this landscape, the result is a landscape that lacks high visual quality. The overall visual quality of the landscape is fair to good, but this type of landscape is prevalent throughout rural, northern Mississippi and is not unique.

Views from the proposed Build Alternative C in these rural areas range from enclosing, where dense stands of trees are massed tightly along each side of the road, to semi-enclosed, to open views of pastureland and floodplains with masses of forest as the backdrop. Along much of the proposed Build Alternative C, the tightly massed tree stands would limit views of the proposed roadway; however, in other locations along Build Alternative C, the proposed roadway would be seen by residences that currently have views of a rural two-lane roadway or no views of a roadway at all.

### **3.24 Energy Impacts**

None of the three proposed Build Alternatives are expected to have a negative energy impact on the State or the region. The construction of the project will require considerable amounts of energy, including: the manufacturing and transport of the construction components, the heavy equipment utilized for roadway construction, and the routine maintenance of the new roadway. On the other hand, the Build Alternatives will improve traffic flow and reduce travel time, thereby reducing long-term energy usage.

In summary, the amount of energy required to construct a highway project of this type is substantial, but temporary, in nature, and generally leads to reduced operating costs once the project is completed. A reduction in costs and energy use could come from improved access, reduced travel time and increased safety (i.e., fewer accidents that delay traffic and require emergency services).

### **3.25 Construction Impacts**

The impacts associated with construction, which are similar for all Build Alternatives, are temporary in nature. MDOT's *Plans and Specifications* contain provisions requiring conformity with all local and state laws and ordinances. Erosion and sedimentation controls are a part of MDOT's *Plans and Specifications* and will be used where applicable. Efforts will be made to minimize the temporary noise and vibration impacts due to the use of heavy equipment used during the construction of the project. As previously stated, some temporary air pollution from the construction equipment and dust from the construction activity is anticipated, but appropriate effort will be made to keep these impacts to a minimum.

### **3.26 Short-term Uses of the Environment versus Long-term Productivity**

Short-term impacts related to the proposed project would occur in the immediate vicinity of the construction activities. Interruptions to the movement of vehicles in the project area would likely occur. However, these interruptions would be temporary, and maintenance of traffic plans will be implemented to minimize any inconveniences to motorists. As with any construction project, short-term disturbances would consist of construction noise and visual impacts. MDOT's specifications address the natural impacts and are designed to hold these impacts to a minimum for both the materials required and the actual building of the roadway.

Additional short-term impacts associated with both Build Alternatives involve residential relocations that are unavoidable and land use impacts. While displacees would experience temporary inconveniences due to their displacement, it is anticipated that they will be able to relocate within the study area. Relocation impacts will be minimized to the greatest extent possible during each phase of the project (see Section 3.4).

The major long-term impact will be the loss of natural habitat and displacement of wildlife; however, these impacts do not pose a significant threat to the ecology of the area as a whole. The long-term gains that are anticipated as a result of this proposed project include an enhanced transportation network, improved traffic flow, and increased economic development opportunities for the area.

The negative short-term impacts discussed above are necessary to achieve the positive results of the proposed project. The long-term effects would result in a safe and efficient means of travel for current and future local traffic, through traffic and truck traffic traveling to manufacturing/shipping destinations. Additionally, the construction of one of the Build Alternatives would enhance long-term productivity by reducing delay and fuel consumption. The long-term benefits of the proposed project are consistent with the use of resources.

### **3.27 Irreversible/Irretrievable Commitments of Resources**

The construction of both Build Alternatives would result in the irreversible and irretrievable commitment of resources, such as natural, physical, human and financial resources. These resources cannot be recovered once they have been expended for the construction of the proposed project. The man-hours expended for the design and construction cannot be reclaimed, nor can the energy required for construction.

Existing land uses within the proposed ROW of the Build Alternatives, including natural habitats, agricultural lands and residential properties, will be irreversibly committed, as will the fuel, labor, construction materials, and both state and federal transportation funds required for the project.

The commitment of all these resources is, in large part, predicated on the basic concept that the efficient transportation systems contribute to health, safety and welfare of local, county and state residents, as well as those traveling to and from other parts of the country. The constructed facility would provide improved accessibility, economics, safety, travel time and fuel consumption for the local community and the traveling public. These factors are anticipated to offset and exceed the loss of the resources required for this project.

## 4.0 COMMENTS AND COORDINATION

### 4.1 Solicitation of Views

The Mississippi Department of Transportation (MDOT) sent a Solicitation of Views package to public officials and the following agencies in March 2011. Agencies that responded are indicated in italics and a summary of their comments is provided.

- US Army Corps of Engineers (USACE), Vicksburg District
- US Fish and Wildlife Service (USFWS)
- United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS)
- *Mississippi Department of Archives and History (MDA&H)*  
*With respect to cultural resources, we are unable to comment without more detailed surveys of the proposed routes, which we understand will be forthcoming as the project progresses.*
- Mississippi Department of Environmental Quality (MDEQ)
- *Mississippi Department of Wildlife, Fisheries and Parks*  
*Occurrences of two species of concern have been documented within two miles of the proposed project sites. Portions of the project site are underlain by hydric soils and may be designated wetlands.*
- US Geological Survey (USGS)
- Mississippi Soil & Water Conservation Commission (MSWCC)
- US Environmental Protection Agency (EPA) Region 4

The Solicitation of Views package contained:

- Maps showing the general location of the study area, including the SR 15 study corridor;
- A preliminary description of the project;
- The project purpose and alternatives discussion; and
- An overview of known environmental concerns within the study area.

This initial contact with the respective local officials and agencies is the first step in the scoping process and assures that interested parties have an opportunity for input into the project planning process at a preliminary stage in its development. All of the responses and concerns received as part of the initial coordination efforts were documented and can be found in Appendix E along with one set of the letters that was sent out with the Solicitation of Views package.

### 4.2 Agency Scoping Meeting

MDOT conducted an agency scoping meeting on July 11, 2011, and the six agencies who received initial coordination packages were invited to attend (see Section 4.1). This meeting was intended to ensure that interested parties have an opportunity for input into the project planning process at a preliminary stage in its development. Minutes from the meeting can be found in Appendix I.

### **4.3 Section 106 Coordination**

This project has been coordinated with parties pursuant to regulations defining Section 106 of the National Historic Preservation Act (36 CFR 800). Evidence of this coordination can be found in Appendix J.

#### **4.3.1 Coordination with the State Historic Preservation Office**

MDOT archaeological staff periodically coordinated with the State Historic Preservation Office (SHPO) to identify properties eligible for the National Register of Historic Places (NRHP) that may be affected by the proposed project. Coordination pursuant to Section 106 has continued through project development.

#### **4.3.2 Coordination with Native American Tribes**

Due to the Native American history of the area, coordination through FHWA with Native American tribes was an important part of the planning process for this project. Appendix J contains a copy of the initial coordination email sent to the tribes on March 9, 2012.

### **4.4 Public Meeting**

An essential part of the State Route (SR) 15 National Environmental Protection Act (NEPA) process has been the establishment of early and continuous stakeholder involvement. One public meeting was held in the project area to disseminate information about the various alternatives being considered for the study and provide stakeholders with an opportunity to participate in the development of the EA through verbal and written comment. The project planning team was also present at the public meeting for the SR 15 improvement project to answer questions and solicit comments.



#### **4.4.1 Public Meeting Held on July 11, 2011**

An open house public meeting for the proposed project was held on July 11, 2011, at the Walnut Community Center in Walnut. At the time, MDOT was considering the No Build Alternative and three Build Alternatives (see Chapter 2, Sections 2.1 through 2.3). The meeting sign-in sheet recorded 109 public attendees and 10 MDOT and consultant staff attendees. The meeting was held in an open house format. Meeting participants were invited to view visual displays depicting the three Build Alternatives under consideration at that time on aerial photography. Staff representatives were available to offer clarification and answer questions. A summary of the public meeting can be found in Appendix K.

In an effort to gather public input on concerns about the proposed project, attendees were asked to place a sticker on a display board by their greatest concerns which are summarized in Table 4-1.

Twenty-six comment cards were submitted by meeting attendees, either at the meeting or within the official comment period. In general, public comments focused on the economic future of the Town of Walnut if the bypass alternative was selected, safety for students going to and from school and economic development. Attendees were asked to comment on the Build Alternative they liked best and why. All 26 of the comment cards selected Build Alternative B-1 as their preferred alternative. Many of the responders also listed a preference against Build Alternative C saying they felt if the Town was bypassed, it would suffer significant economic loss.



The Mayor and Board of Aldermen for the Town of Walnut signed a resolution supporting Build Alternative B-1 on June 7, 2011. A copy of the resolution can be found in Appendix K.

**Table 4-1. Comments Regarding Issues and Concerns**

	ISSUES/CONCERN	LEVEL OF CONCERN		
		Greatest Level of Concern	2nd Greatest Level of Concern	3 <sup>rd</sup> Greatest Level of Concern
	Safety of travelers through the area along SR 15 and at the US 72/SR 15 intersection	12	9	5
	Provide improvements to accommodate growth and economic development in the Town of Walnut	12	14	3
	Narrow lanes, little to no shoulder widths, and/or poor visibility on SR 15	1	3	3
	Impacts to surrounding businesses and residences as traffic and growth increase	9	11	5
	Meeting existing and future traffic projection needs	1	1	4
	Fulfilling the 2005 Vision 21 Program mandate to develop four-lane highways within the state		1	

Comments received during the public meeting were used to inform the decision to carry Build Alternatives B-1, B-2, and C through the NEPA process.

## 5.0 SUMMARY AND RECOMMENDATIONS

### 5.1 Summary

Table 5-1 summarizes the evaluation of the proposed Build Alternatives B-1, B-2 and C. Anticipated environmental consequences of the proposed project are included for all Build Alternatives. Impacts to joint development, scenic rivers, coastal barriers and coastal zones are not applicable to this project.

### 5.2 Recommendations

The selection of a preferred alternative is based upon the following considerations:

- The effectiveness of the proposed alternative in satisfying the project purpose and need;
- A comparison of the overall impacts and benefits of the proposed alternatives; and
- Input from both the public and reviewing agencies.

The No Build Alternative, which involves leaving the segment of existing SR 15 in its current configuration, does not meet the purpose and need of the project. The No Build Alternative does not provide adequate transportation infrastructure to accommodate area growth or provide an improved link between US 72 and Interstate 22 (US 78). The No Build Alternative also fails to improve safety for travelers driving through the area and fulfill the intent of the legislative mandate to develop four-lane highways within the state as defined in the *1987 Four-Lane Highway Program and the 2005 Vision 21*.

The proposed Build Alternatives B-1, B-2, and C, all meet the purpose and need for the project and provide positive benefits to the surrounding area. All Build Alternatives will improve safety, provide a linkage route for north/south traffic between US 72 and Interstate 22 (US 78), and fulfill the legislative mandate.

The evaluation factors are shown in Table 5-1. A notable difference is the potential impacts to the environment between the Build Alternatives. B-1 and B-2 are similar in potential impact while Build Alternative C has a much greater impact on farmland required, streams affected, wetlands impacted, and floodplain impacts. Build Alternative B-1 and B-2 will affect 1,398 LF of stream while Build Alternative C affects 4,591 LF of stream.

Residential relocations are similar for all three alternatives. While business displacements are 10 displacements and 11 displacements for Build Alternatives B-1 and B-2, respectively. There is only one business displacement for Build Alternative C. Noise impacted site are similar for Build Alternatives B-1 and B-2 at 12 and 10 impacted sites, respectively, and for Build Alternative C there is only one noise impact.

Each of the three alternatives may possibly impact a potentially eligible National Register of Historic Places site.

Build Alternative C will cost the most to construct at an estimated \$53,914,734; Build Alternative B-1 is estimated to cost half of Build Alternative C at an estimated \$26,630,120. Build Alternative B-2 is estimated to cost \$42,266,955.

**Table 5-1. Summary of Environmental Consequences and Evaluation of Alternatives**

Impact Category	Build Alternative B-1	Build Alternative B-2	Build Alternative C
Land Use	No anticipated indirect or cumulative impacts are anticipated.	Indirect and cumulative effects to the existing land use at the new interchange at the intersection of SR 15 and US 72 may occur. It is anticipated that this shift to the north would promote new businesses (i.e. gas stations, commercial businesses, etc.) in this area.	New alignment roadways typically prompt new commercial and/or residential development which would convert the existing agricultural and forested land uses.
Farmland (acres)	16.5	33	96
Prime and Unique Farmland (acres)	0	0	21.69
Social	There are no existing neighborhoods or community facilities in the project area that would be impacted by the proposed project and the project does not create a barrier to social interaction	There are no existing neighborhoods or community facilities in the project area that would be impacted by the proposed project and the project does not create a barrier to social interaction	There are no existing neighborhoods or community facilities in the project area that would be impacted by the proposed project and the project does not create a barrier to social interaction
Residential Relocations	12	13	11 structures 5 mobile homes
Business Displacements	10	11	1
Environmental Justice	None	None	None
Economic	Short-term: removal of property from tax rolls Long term: Increase in taxable property; economic development	Short-term: removal of property from tax rolls Long term: Increase in taxable property; economic development	Short-term: removal of property from tax rolls Long term: Increase in taxable property; economic development
Pedestrian and Bicycle	There is no existing or planned bicycle or pedestrian facilities in or around the project area. The proposed Build Alternative does not include bicyclists and/or pedestrians facilities.	There is no existing or planned bicycle or pedestrian facilities in or around the project area. The proposed Build Alternative does not include bicyclists and/or pedestrians facilities.	There is no existing or planned bicycle or pedestrian facilities in or around the project area. The proposed Build Alternative does not include bicyclists and/or pedestrians facilities.

Impact Category	Build Alternative B-1	Build Alternative B-2	Build Alternative C
Air Quality	None	None	None
Noise Impacted Sites	12	10	1
Streams (linear feet affected)	1,398	1,398	4,591
Wetlands (acres impacted)	0.07	0.07	3.19
Ponds	0.31 acre (1 pond)	0.31 acre (1 pond)	1.14 acres (4 ponds)
Floodplain Impacts (acres)	51.9	51.9	78.5
Water Body Modification and Wildlife	Yes. However, efforts to minimize modification of water bodies and the impacts of such modifications on wildlife will continue throughout the project.	Yes. However, efforts to minimize modification of water bodies and the impacts of such modifications on wildlife will continue throughout the project.	Yes. However, efforts to minimize modification of water bodies and the impacts of such modifications on wildlife will continue throughout the project.
Permits	Section 404 Permit, Section 401 Water Quality Certification	Section 404 Permit, Section 401 Water Quality Certification	Section 404 Permit, Section 401 Water Quality Certification
Threatened and Endangered Species	No protected species records are known within the likely direct impact area of the project, nor does Critical Habitat for any species occur within the project area or Tippah County.	No protected species records are known within the likely direct impact area of the project, nor does Critical Habitat for any species occur within the project area or Tippah County.	No protected species records are known within the likely direct impact area of the project, nor does Critical Habitat for any species occur within the project area or Tippah County.
Historical Resources	One potentially eligible site	One potentially eligible site	One potentially eligible site
Archaeological Resources	None	None	None
Section 4(f) Resources	None	None	None
Section 6(f) Resources	None	None	None
Hazardous Waste Sites Identified	1	1	None
Visual	No substantial impact, the environment is already modified by manmade elements and the existing view from this area is of a two-lane road.	No substantial impact, the environment is already modified by manmade elements and the existing view from this area is of a two-lane road.	Impacts to the view shed of a limited number of residences that are rural in character

Impact Category	Build Alternative B-1	Build Alternative B-2	Build Alternative C
Energy	Temporary use of energy associated with construction; reduction in future costs and energy from improved access, reduced travel time and increased safety	Temporary use of energy associated with construction; reduction in future costs and energy from improved access, reduced travel time and increased safety	Temporary use of energy associated with construction; reduction in future costs and energy from improved access, reduced travel time and increased safety
Construction	Temporary noise, vibration and air pollution impacts	Temporary noise, vibration and air pollution impacts	Temporary noise, vibration and air pollution impacts
Estimated Project Cost	\$26,630,120	\$42,266,955	\$53,914,734

All three Build Alternatives were presented to the public at a public meeting held on July 11, 2011. Comments from the public meeting were overwhelmingly in favor of Alternative B-1. A total of 26 comment cards were returned to the Mississippi Department of Transportation (MDOT) either at the meeting or by mail in the days that followed. One hundred percent of those that commented were in favor of Alternative B-1. In general, public comments focused on the economic future of the Town of Walnut if the Build Alternative C was selected. See Appendix K for a full meeting summary.

The Preferred Build Alternative will be selected after the Public Hearing.