

*ARDOT Job 070442*

# *HWY. 67 - HWY. 51 (ARKADELPHIA BYPASS) P.E.*

## Environmental Assessment



**September 2020**

# HWY. 67 TO HWY. 51 (ARKADELPHIA BYPASS) P.E.

ARDOT Job 070442; F.A.P. Number STPC-9013(10)

## Environmental Assessment

*Submitted pursuant to:*

The National Environmental Policy Act  
42 U.S.C. §4322(2)(c) and 23 C.F.R. §771

*Submitted by:*

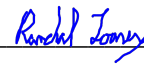
**FEDERAL HIGHWAY ADMINISTRATION**

*and*

**ARKANSAS DEPARTMENT OF TRANSPORTATION**

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September 30, 2020

Date of Approval



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In compliance with the National Environmental Policy Act, this Environmental Assessment describes the proposed project to provide a bypass from Highway 67 to Highway 51 in the City of Arkadelphia. The analysis did not identify any significant adverse environmental impacts.

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This Environmental Assessment is also available for review online at: <http://www.arkansashighways.com/>



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## **ACRONYMS**

AASHTO	American Association of State Highway Transportation Officials
ADA	Americans with Disabilities Act
ADEQ	Arkansas Department of Environmental Quality
ADH	Arkansas Department of Health
ADT	Average Daily Traffic
AHPP	Arkansas Historic Preservation Program
ANHC	Arkansas Natural Heritage Commission
ARAS	Arkansas Archeological Survey
ARDOT	Arkansas Department of Transportation
ASC	American Community Survey
AST	Aboveground Storage Tank
BMP	Best Management Practice

CBD	Central Business District
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	Environmental Protection Agency
FAP	Federal Aid Project
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
HUC	Hydrologic Unit Code
LOS	Level of Service
LUST	Leaking Underground Storage Tank
LWCF	Land and Water Conservation Fund
MVM	Million Vehicle Miles
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NLEB	Northern Long-eared Bat
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated Biphenyls
ROW	Right of Way
RSA	Resource Study Area
SHPO	State Historic Preservation Officer
SWPPP	Stormwater Pollution Prevention Plan
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VPD	Vehicles per Day

# Chapter 1 – Purpose and Need

*Chapter 1 describes current transportation problems, explains how the proposed project could resolve these problems, and outlines the project's lead agency roles.*

## 1.1 What is the Arkadelphia Bypass project?

The Arkansas Department of Transportation (ARDOT) is proposing to construct a bypass and modify the Interstate 30 (I-30) and Highway (Hwy.) 51 interchange (I-30/Hwy. 51 interchange) in the City of Arkadelphia to improve safety, mobility, and connectivity. The project area is shown in **Figure 1**.

## 1.2 What are the existing conditions in the project area?

Located in Clark County, Arkadelphia is an economic center in southwest Arkansas that hosts a substantial volume of commercial traffic, including large trucks. Arkadelphia is also an educational center due to the presence of Henderson State University and Ouachita Baptist University. Clark County and Arkadelphia have populations of approximately 22,385 and 10,611, respectively (U.S. Census Bureau, 2018).

The existing transportation network in the project area is shown in **Figure 2**. The Central Business District (CBD) lies at the crossroads of Hwys. 51 and 67. Interstate 30 is located along the western edge of the city.

**Hwy. 51** is the primary east-west traffic corridor through Arkadelphia and provides the only Ouachita River crossing in the region. Hwy. 8 runs concurrent with Hwy. 51 through the project area, as does a short segment of Hwy. 7 east of the CBD. Hwy. 51 is also designated as Pine Street (St.) from 6<sup>th</sup> St. to west of I-30, and as Caddo St. from 10<sup>th</sup> St. to 1<sup>st</sup> Street. Within the project area, Hwy. 51 consists of two travel lanes ranging from 12 to 15 feet in width, lacks shoulders, and has curb and gutter. A bridge carrying Hwy. 51 over the Ouachita River and the Union Pacific Railroad (UPRR) was completed in 2018. Hwy. 51 is scheduled to be widened along the light green-colored section of the roadway shown in Figure 2 to two 12-foot travel lanes, a 12-foot two-way center turn lane, and curb and gutter. Three problem intersections with difficult turns are present along Hwy. 51; **Figure 3** provides a detailed view of these intersections. Hwy. 51 is approximately 2.8 miles in length between I-30 and the Ouachita River bridge and there is a 30-35 miles per hour (mph) posted speed limit along this segment of highway.

**Mobility** is the easy movement of people and goods through an area. **Connectivity** refers to the number and directness of routes and roadways. Good connectivity is provided by multiple routes and connections serving the same origins and destinations. Mobility and connectivity improvements increase traffic flow and roadway capacity.

**Arkadelphia's Central Business District (CBD)** is generally located southeast of the Hwy. 51/Hwy. 67 intersection (Figure 2) and is the hub of Arkadelphia's business and social life. This area is home to many offices, government facilities, restaurants, and retail establishments.

A **difficult turn** is considered to be a 90 degree turn at an intersection that does not have the proper design criteria for the size of the turning vehicle. These difficult turns result in what are referred to as **problem intersections** near the CBD.

Figure 1: Project Area

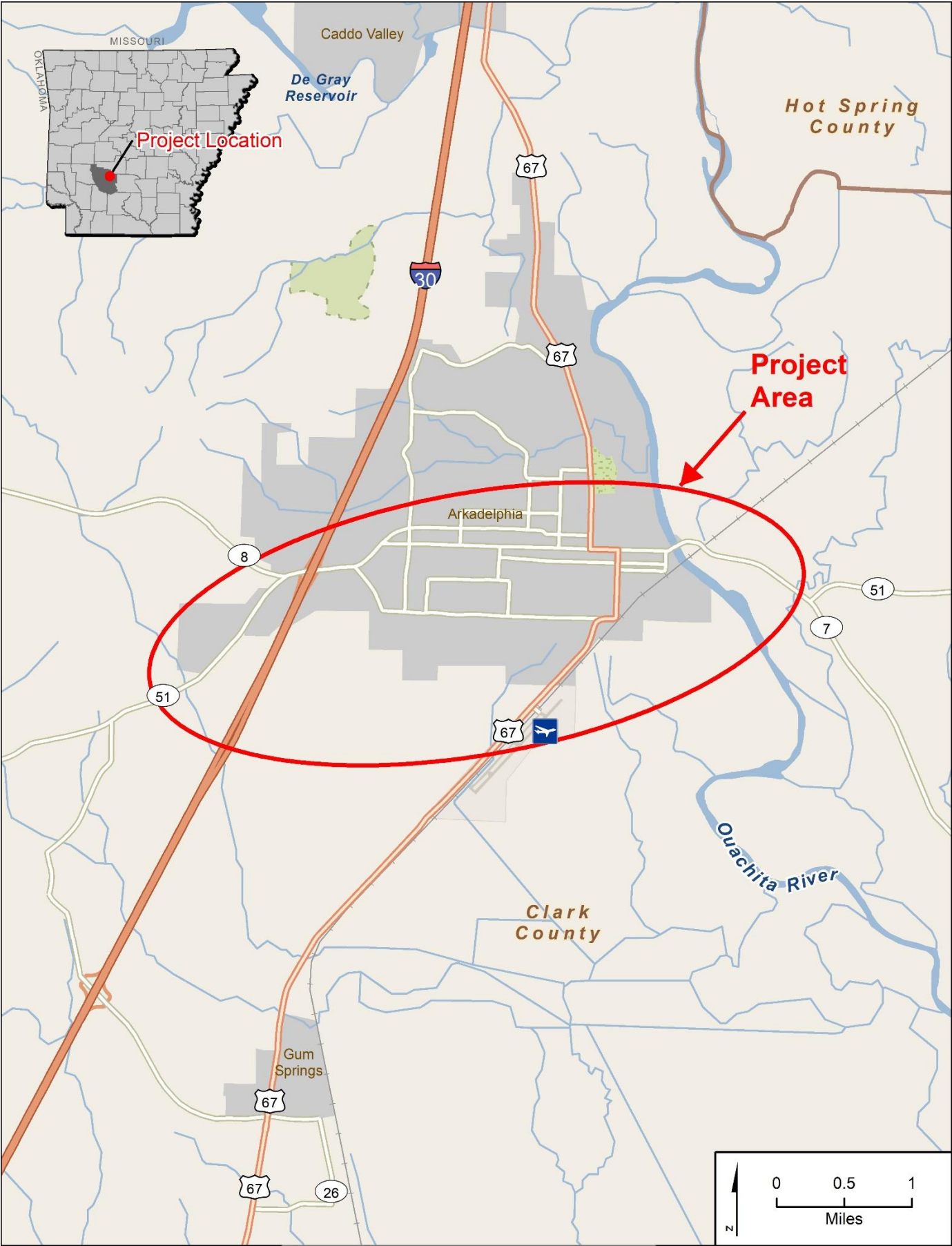




Figure 2: Existing Transportation Network

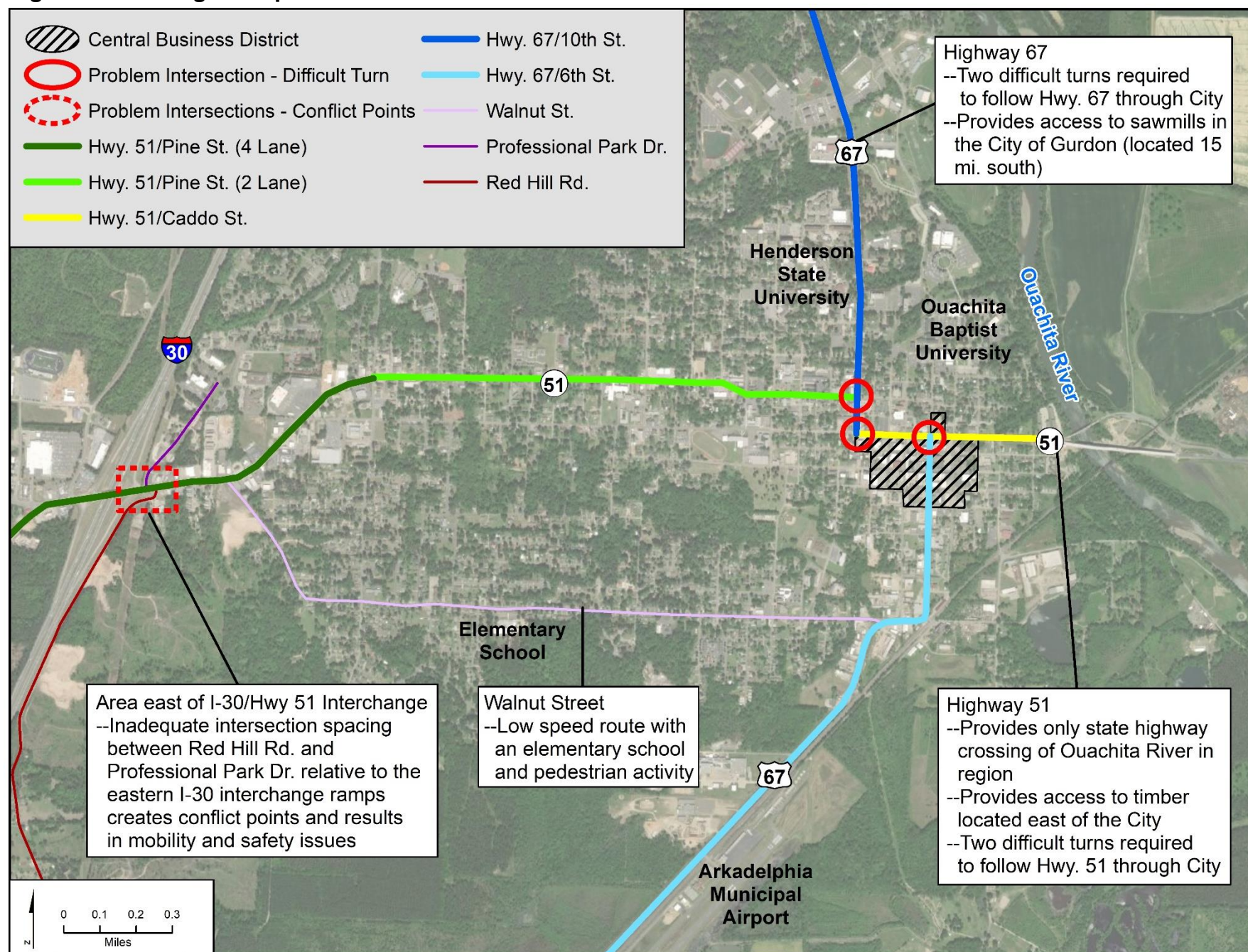
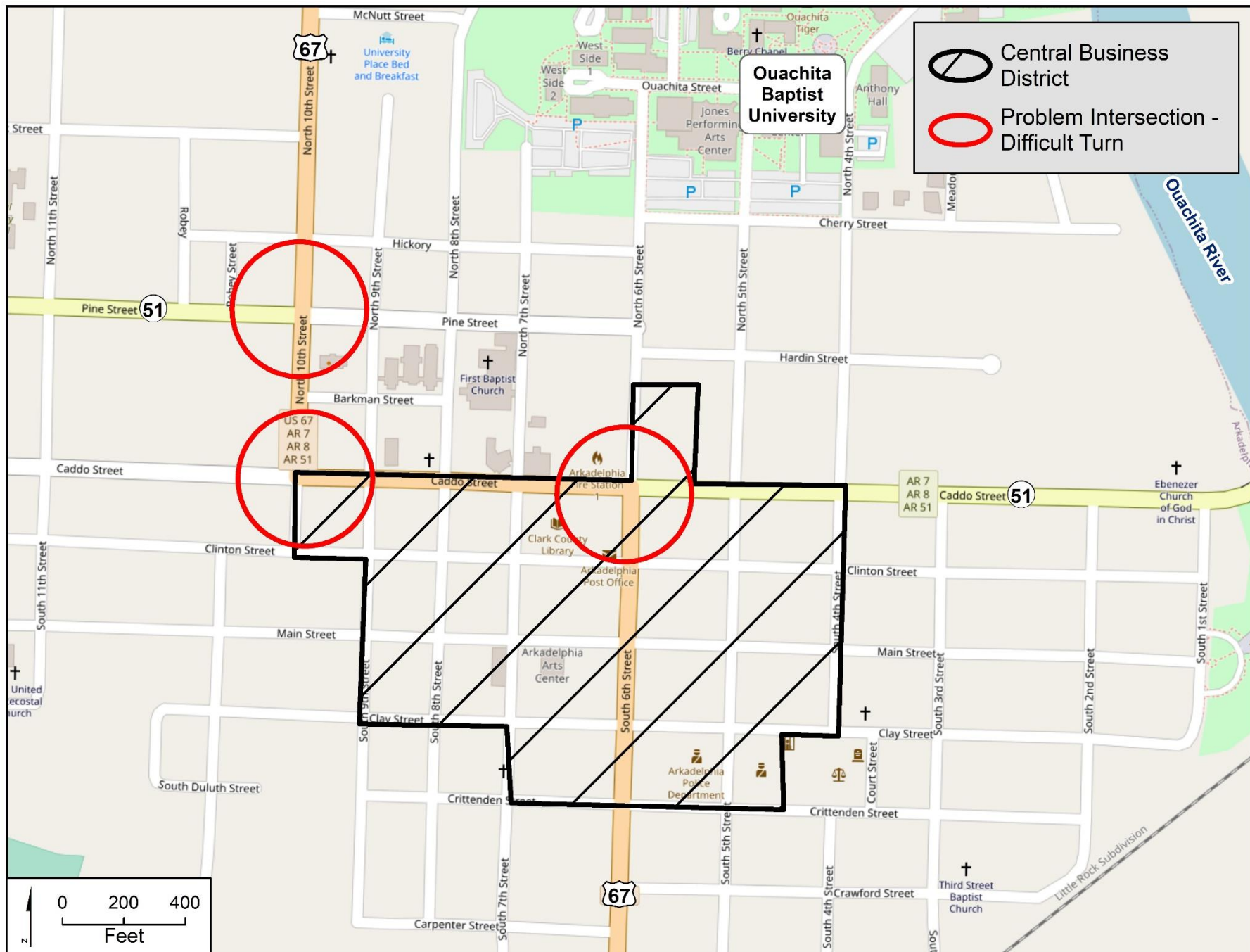




Figure 3: Problem Intersections



**Hwy. 67** is a primary north-south traffic corridor, and Hwy. 7 runs concurrent with it from Arkadelphia to I-30. Hwy. 67 is also designated as 10<sup>th</sup> St. north of the CBD, as Caddo St. between 10<sup>th</sup> St. and 6<sup>th</sup> St., and as 6<sup>th</sup> St. between Hwy. 51 and Walnut Street. Within the project area, Hwy. 67 consists of two travel lanes ranging from 12 to 15 feet in width, lacks shoulders, and has curb and gutter. Hwy. 67 contains the same three problem intersections as Hwy. 51, as these two highways run concurrent with each other in these locations. Hwy. 67 is approximately 1.8 miles in length between Hwy. 51 and the Arkadelphia Municipal Airport and there is a 30 mph posted speed limit along this segment of highway.

**Walnut St.** runs parallel to a segment of Hwy. 51 and connects Hwys. 51 and 67. This roadway has two 11 to 12-foot wide travel lanes, lacks shoulders, and is not a good traffic conductor due to slow speeds, the presence of an elementary school, and pedestrian activity. Walnut St. is approximately 2.0 miles in length between Hwy. 51 and Hwy. 67 and there is a 30 mph posted speed limit along this segment of roadway.

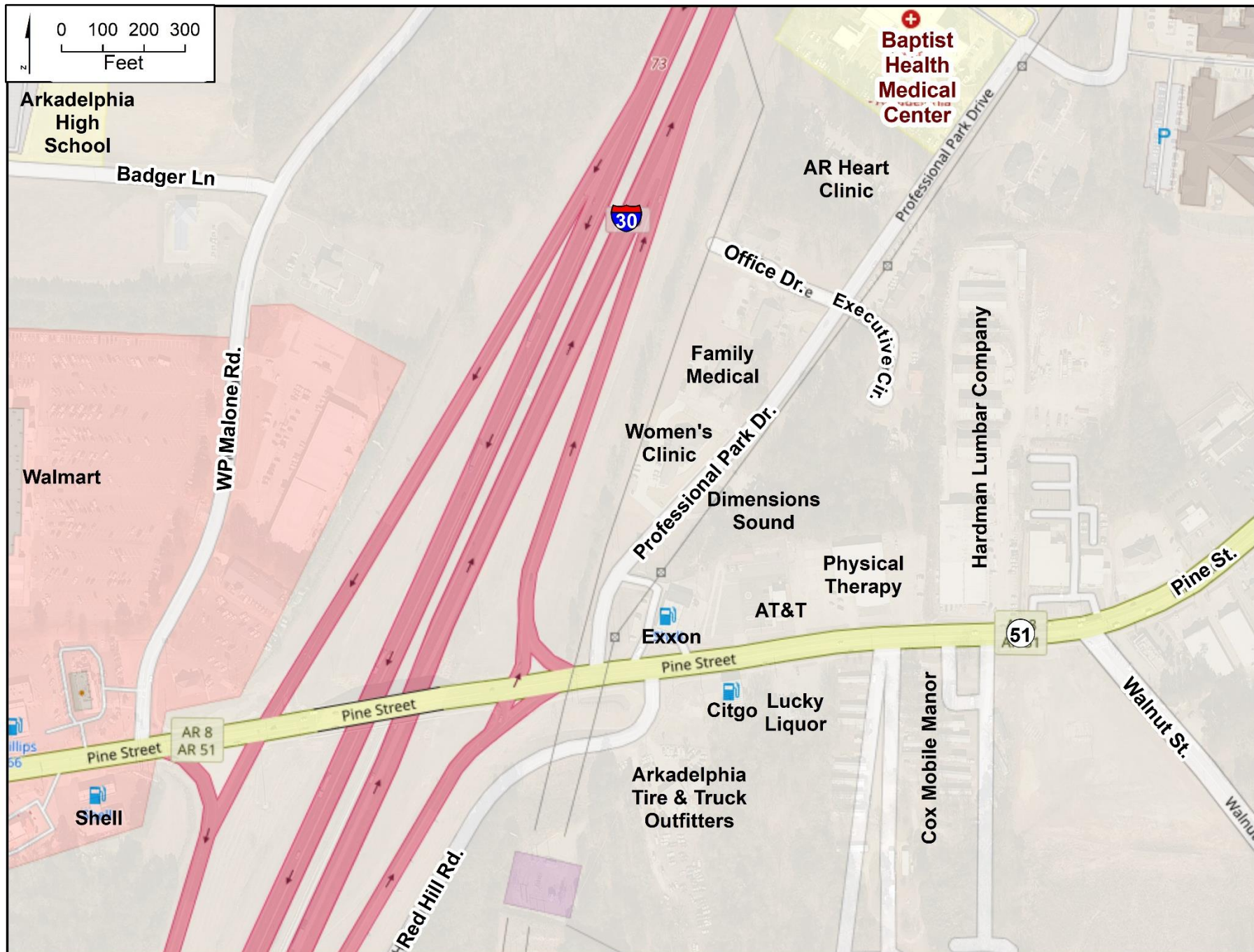
**I-30**, which roughly parallels Hwy. 67 through the project area, has two 12-foot wide travel lanes in each direction, a divided grass median, and approximately 10-foot wide paved outside shoulders. There is a 70 mph posted speed limit for I-30 and logging trucks are prohibited. The **I-30/Hwy. 51 interchange** has a diamond interchange configuration. The area immediately east of the interchange is identified as having problem intersections due to the inadequate intersection spacing between Professional Park Drive (Dr.) and Red Hill Road (Rd.) relative to the eastern I-30 interchange ramps. **Figure 4** provides a detailed view of this interchange area.

**Professional Park Dr.** ties into Hwy. 51 from the north and is located between the I-30 on ramp and the driveway for an Exxon gasoline station. Near its stop-sign controlled intersection with Hwy. 51, Professional Park Dr. consists of two travel lanes ranging from 12 to 14 feet in width, a 12-foot wide right-turn lane onto Hwy. 51, lacks shoulders, and has curb and gutter. Farther north of the Hwy. 51/Professional Park Dr. intersection, Professional Park Dr. consists of two 18-foot wide travel lanes, lacks shoulders, has curb and gutter, and includes a 5-foot wide sidewalk along the west side of the road. No speed limit is posted for this roadway within the project area.

**Red Hill Rd.** ties into Hwy. 51 from the south and is located between the I-30 on ramp and the driveway for a Citgo gasoline station. Near its stop-sign controlled intersection with Hwy. 51, Red Hill Rd. consists of two 12-foot wide travel lanes, 18-foot wide right-turn and left-turn lanes onto Hwy. 51, lacks shoulders, and has curb and gutter. Farther south of the Hwy. 51/ Red Hill Rd. intersection, Red Hill Rd. consists of two 10-foot wide travel lanes and lacks shoulders. No speed limit is posted for this roadway within the project area.



Figure 4: I-30/Hwy. 51 Interchange Area



### 1.3 Why is the Arkadelphia Bypass needed?

Several ARDOT planning studies have identified the CBD and the east side of the I-30/Hwy. 51 interchange as areas in Arkadelphia where safety and mobility are inadequate. These studies include the 2006 Arkadelphia Truck Route Study, 2013 Arkadelphia Bypass Study, and the 2020 Arkadelphia Bypass Traffic Study. The safety, mobility, and connectivity deficiencies detailed in **Appendix A** are summarized below.

**Safety** is of primary importance to agencies responsible for constructing and maintaining our nation's roadways

#### Safety Analysis

##### *Crash Rates*

The relative safety of a route can be determined by comparing the crash rate in crashes per million vehicle miles (MVM) traveled to a statewide average for similar routes.

The Arkadelphia Bypass Traffic Study evaluated crash rates from 2015-2017 for roadways in the project study area. The study results indicated that crash rates on each of these roadway segments were above the statewide average (see **Table 1** and corresponding **Figure 5**). Crash rates are highest along Hwy. 51, which has congested intersections, difficult turns, and frequent stop-and-go traffic conditions. Difficult turns are present within and near the CBD because the Hwy. 51 roadway geometry is restrictive, and large trucks (particularly logging trucks) have difficulty making turning maneuvers. The presence of large trucks creates safety concerns because, while making a turn, the rear wheels often run over the curbs and onto the sidewalk due to the small turning radii at these intersections. Additionally, truck drivers typically have to pull into the opposing lane of traffic to complete the turn, causing the opposing traffic to back up to allow the truck the room to make the turn.

**Large trucks** include all trucks 10,000 lbs. and up.

The study results also revealed a relatively high number of crashes at the unsignalized intersections of Hwy. 51 between the I-30 northbound ramp and Professional Park Drive. The high number of crashes in this area is likely due to the numerous conflict points on Hwy. 51 east of the I-30/Hwy. 51 interchange. Conflict points on roadways, such as driveways and street intersections, are associated with an increase in crash risk. When conflict points are numerous and dense, drivers have more information to process and less time to react to unexpected situations. As travel volumes increase, the safety performance of roadways with numerous conflict points can be poor.

**Conflict points** are where a roadway user can cross, merge, or diverge with another roadway user.

##### *Pedestrian Safety*

The CBD's many businesses and restaurants attract a large number of pedestrians. Pedestrian crossings therefore occur throughout the CBD, including at Hwys. 51 and 67. Both of these highways experience commercial traffic, including large trucks. The presence of trucks presents safety concerns for pedestrians.

**Table 1: Annual Average Crash Rates (2015-2017); See Figure 5 for Color-Coded Routes**

Route	Segment Length (mi.)	Weighted ADT <sup>2</sup>	All Crashes			KA Crashes <sup>1</sup>		
			No. of Crashes	Crash Rate (per 100 MVM) <sup>3</sup>	Statewide Average (per 100 MVM) <sup>3</sup>	No. of Crashes	Crash Rate (per 100 MVM) <sup>4</sup>	Statewide Average (per 100 MVM) <sup>4</sup>
Hwy. 51 (Walnut St. to 26 <sup>th</sup> St.)	0.93	13,000	60	4.53	3.98 <sup>5</sup>	2	0.15	7.88
Hwy. 51 (26 <sup>th</sup> St. to Robey)	1.27	9,000	47	3.76	2.48 <sup>6</sup>	0	0	9.55
Hwy. 67 (Siplast Rd. to Pine St.)	1.38	6,700	27	2.67	2.48 <sup>6</sup>	0	0	9.55
Hwy. 51 (1 <sup>st</sup> St. to 5 <sup>th</sup> St.)	0.51	3,400	8	4.21	2.48 <sup>6</sup>	0	0	9.55

<sup>1</sup> KA Crashes are defined as either fatal or serious injury crashes

<sup>2</sup> Average Daily Traffic (ADT)

<sup>3</sup> Crash rates reported in crashes per million vehicle miles (MVM)

<sup>4</sup> KA crash rates reported in crashes per 100 million vehicle miles (MVM)

<sup>5</sup> Statewide average crash rate for four-lane undivided highways, no control of access

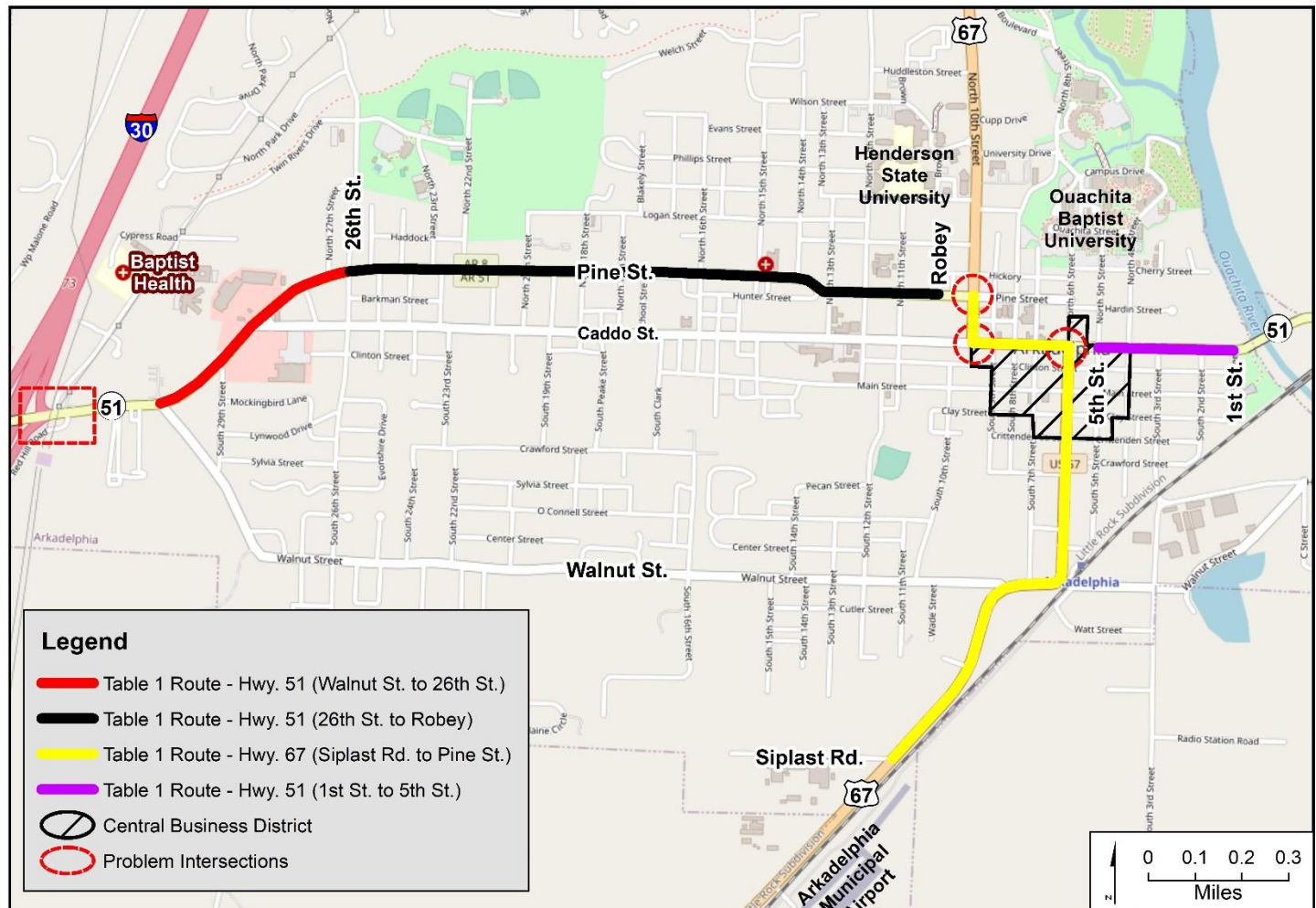
<sup>6</sup> Statewide average crash rate for two-lane undivided highways, no control of access

### ***Safety Near the I-30/Hwy. 51 Interchange***

The minimum recommended distance between the I-30 ramps and the closest road or driveway connection is 300 feet per published interstate design standards (AASHTO, 2016). Professional Park Dr. is approximately 180 feet from the I-30 ramp and is, therefore, not meeting current design criteria. This insufficient distance between the I-30 ramp and Professional Park Dr. decreases vehicular safety and is further exacerbated by several surrounding conflict points created by adjacent driveways and Red Hill Road. Furthermore, the intersection of Hwy. 51 and Professional Park Dr. is controlled by a stop sign on Professional Park Drive. Left turning vehicles at this intersection must yield to oncoming traffic. Due to limited gaps in traffic, left turning vehicles often stack up in both the Hwy. 51 and Professional Park Dr. travel lanes. Rear-end collisions are more likely to occur as vehicles waiting to make left turns stack up in the travel lanes. The intersection of Hwy. 51 and Professional Park Dr. is especially problematic because Professional Park Dr. is the main access for emergency vehicles going to or leaving from the Baptist Hospital (Figure 4). When traffic backs up, emergency vehicles are impeded and/or emergency response times delays occur, creating public safety concerns.



Figure 5: Location of Routes Listed in Table 1



For the reasons described above, providing an alternate route around the CBD would increase both vehicular and public safety by reducing crash rates, creating safer pedestrian conditions, and improving the I-30/Hwy. 51 interchange.

## Mobility

### *CBD Mobility*

With Hwy. 67 running north and south and Hwy. 51 running east and west, the two highways converge in the CBD at the intersection of Caddo St. and 10<sup>th</sup> Street (Figure 3). Consequently, both local and through traffic also converge in the CBD. Trucks comprise up to 5% of the through traffic vehicle mix on Hwys. 51 and 67, which are primary routes through Arkadelphia. The timber industry is one of the largest sectors of the regional economy and a number of processing mills operate within 40 miles of Arkadelphia. Hwy. 67 is regularly used by logging trucks traveling to the processing mills in Gurdon, located approximately 15 miles south of Arkadelphia. Because they are prohibited on interstates, logging trucks passing through Clark County do not have a viable alternative to using Hwy. 67, which

runs parallel to I-30. Much of the truck traffic through the CBD is therefore comprised of logging trucks going to and returning from the processing mills. The presence of these trucks imposes travel time delays on other road users as turning trucks often have to wait for approaching vehicles to make their turns so that the necessary room is available for them to move through the intersection. Leading vehicles waiting in travel lanes for gaps in oncoming traffic result in delays for following vehicles. In addition, the high number of driveways in the project area contribute to turn complications. The frequent travel delays caused by these conditions reduce mobility in the area. As shown in Figure 2 and Figure 3, trucks must negotiate up to three difficult turns as they pass through the CBD, causing travel delays.

### ***Mobility Near the I-30/Hwy. 51 Interchange***

As previously described, the stop sign-controlled intersection of Hwy. 51 and Professional Park Dr. causes travel time delays. Vehicles turning left on both Hwy. 51 and Professional Park Dr. must yield to oncoming traffic, causing frequent stack ups and travel delays. These conditions also delay emergency vehicles going to and from Baptist Hospital.

For the reasons described above, providing an alternate route around the CBD and improving the I-30/Hwy. 51 interchange would increase mobility and connectivity.

## **1.4 How is the project related to other transportation plans and goals?**

The ARDOT's Statewide Transportation Improvement Program (STIP) is a staged, multi-year, statewide intermodal program of transportation projects consistent with the statewide transportation plan and planning processes. The proposed project has been included in the 2019-2022 STIP and considered in the context of core STIP goals.

Arkadelphia's Comprehensive Development Plan identifies several transportation issues, two major ones being traffic at the existing I-30/Hwy. 51 interchange and traffic problems caused by large trucks traveling through the heart of downtown. As detailed in Section 1.3, the proposed project addresses these issues and meets the transportation goals and strategies outlined in the STIP and Arkadelphia's Comprehensive Development Plan.

The **Arkadelphia Comprehensive Development Plan** was prepared by the city's Planning Commission and serves an official policy statement for directing growth and development.

As previously described, planning studies have been completed. The 2013 Arkadelphia Bypass Study was prepared at the request of Arkadelphia city officials to evaluate options for improving traffic flow through Arkadelphia, particularly through the CBD. The study evaluated nine different alternatives, some of which were modified and incorporated into the alternatives as detailed in this Environmental Assessment (EA) and presented in Chapter 2.

## 1.5 What is the purpose of this project?

Given the needs, goals, and objectives described above, the purposes of this project are to improve safety, mobility, and connectivity in Arkadelphia by providing:

- An alternate route to reduce the number of logging and other large trucks traveling through the CBD;
- A safer east-west travel route for both local and through traffic; and
- I-30/Hwy. 51 interchange modifications to reduce traffic congestion and increase emergency vehicle access to and from the Baptist Hospital.

## 1.6 What is the purpose of this Environmental Assessment?

This EA was prepared in compliance with the *National Environmental Policy Act* (NEPA) to:

- Explain the purpose and need of the proposed action.
- Describe the alternatives considered for implementing the proposed action.
- Evaluate the social, economic, and environmental effects of the alternatives.
- Inform the public and decision makers about potential impacts of the proposed action so their feedback can be solicited.
- Determine whether effects are significant and require an Environmental Impact Statement (EIS) or if the project effects can be sufficiently documented through an EA and Finding of No Significant Impact (FONSI).

Although NEPA regulations do not provide specific thresholds to determine if project impacts are considered **significant**, they do outline the process that should be used to evaluate impacts.

Consideration is given both to context of the setting, and intensity, which is the severity of the impacts.

## 1.7 Who is leading this project?

This project is being led by a partnership between the Federal Highway Administration (FHWA) and the ARDOT. The FHWA is involved because it would fund a portion of the project and has the primary responsibility for the content and accuracy of this NEPA document. The project is also being funded through state funds allocated to the ARDOT. The ARDOT is responsible for administering and maintaining the state highway system.

A **Finding of No Significant Impact (FONSI)** presents the reasons why an action will not have significant environmental effects and therefore does not require preparing an Environmental Impact Statement (EIS). Based on analyses and project feedback received to date, the ARDOT anticipates preparing a FONSI for this project.

## Chapter 2 – Alternatives

*Chapter 2 identifies the project limits, explains how project alternatives were developed, describes the public involvement process, and describes the alternatives evaluated in this EA.*

### 2.1 What are the project limits and why were they chosen?

The east-west project limits extend from Hwy. 51 east of the Ouachita River to Hwy. 51 west of I-30. The north-south project limits extend from just north of Hwy. 51 to the Arkadelphia Municipal Airport to the south. These limits allow for the consideration of alternatives that include the following: using the existing Ouachita River bridge; constructing a new Ouachita River bridge; multiple bypass location options south of town; and improving the I-30/Hwy. 51 interchange.

### 2.2 How were alternatives developed?

As outlined in Chapter 1, bypass alternatives were identified in previous planning studies. Seven Bypass Alternatives (Alternatives A-G; see **Figure 6**), four Interchange Alternatives (Alternatives 1-4; see **Figure 7**), and the No Action Alternative were subsequently evaluated for this project and presented to local officials and the public during a public involvement meeting held in February 2019. These alternatives are described below.

NEPA requires including a “**No Action**” alternative in environmental analysis. Although it is unlikely to meet the project’s purpose and need, the “no action” alternative provides a baseline against which the other alternatives can be compared.

The alternatives have been categorized into routes west of Hwy. 67 (West Bypass Alternatives), routes east of Hwy. 67 (East Bypass Alternatives), and I-30/Hwy. 51 interchange improvement alternatives (Interchange Alternatives). Six of the seven alternatives provide for a Hwy. 51 bypass south of Arkadelphia (Alternatives A, B, C, E, F, and G) while one alternative (Alternative D) provides a direct north-south bypass for Hwy. 67 from Caddo St. south along 10<sup>th</sup> Street. With consideration to local official and public comments following the public meeting, an additional West Bypass Alternative (Alternative H) and an additional Interchange Alternative (Alternative 1A), were added for evaluation.

### Alternatives Removed from Further Consideration

Following the public meeting, two bypass alternatives were removed from further consideration. Alternative C was removed because it is very similar to Alternative A but lies closer to residential homes, crosses 26<sup>th</sup> St. at a less desirable location, and was least preferred by the public. Alternative E was removed because it is similar to Alternative F but has more residential and business impacts and Alternative F was more preferred by the public.

Traffic operations of all Interchange Alternatives were very similar. However, Alternative 4 resulted in substantially more wetland impacts and impacts to a mobile home park (Cox Mobile Manor). This mobile home park is considered an environmental justice area due to the presence of minority and low-income populations. Therefore, Alternative 4 was removed from further consideration.



Figure 6: Initial Bypass Alternatives Considered

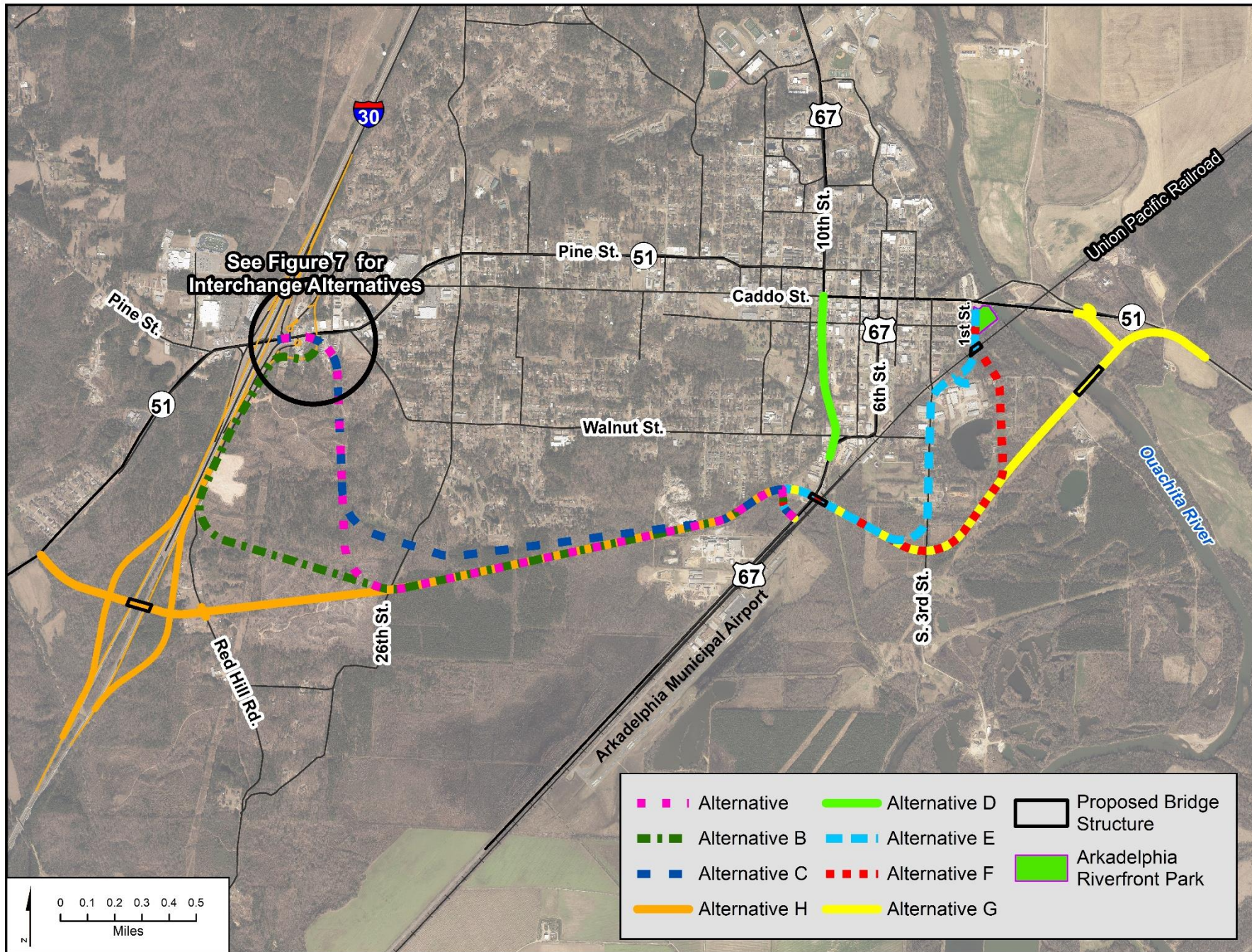
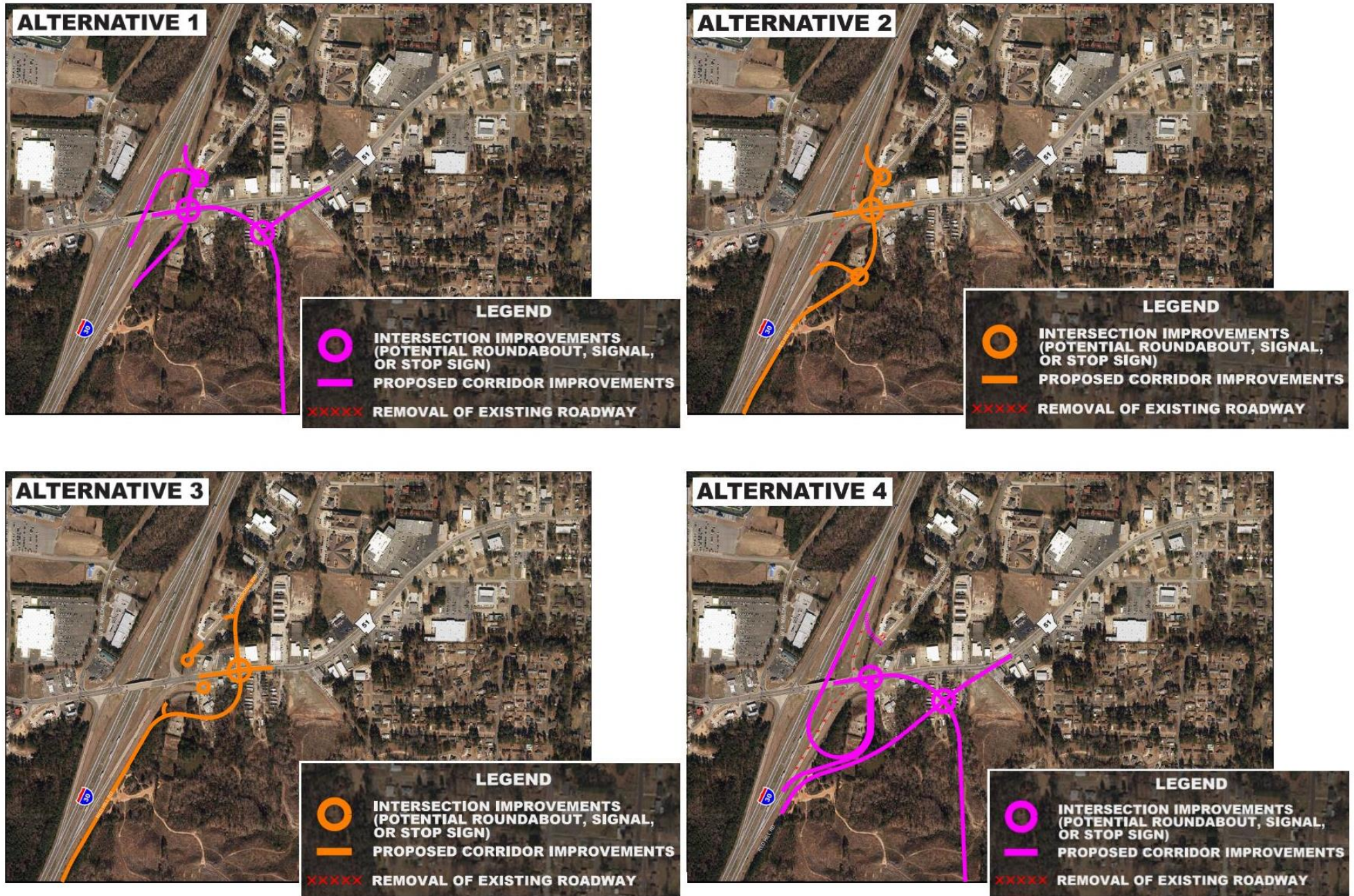




Figure 7: Initial Interchange Alternatives Considered

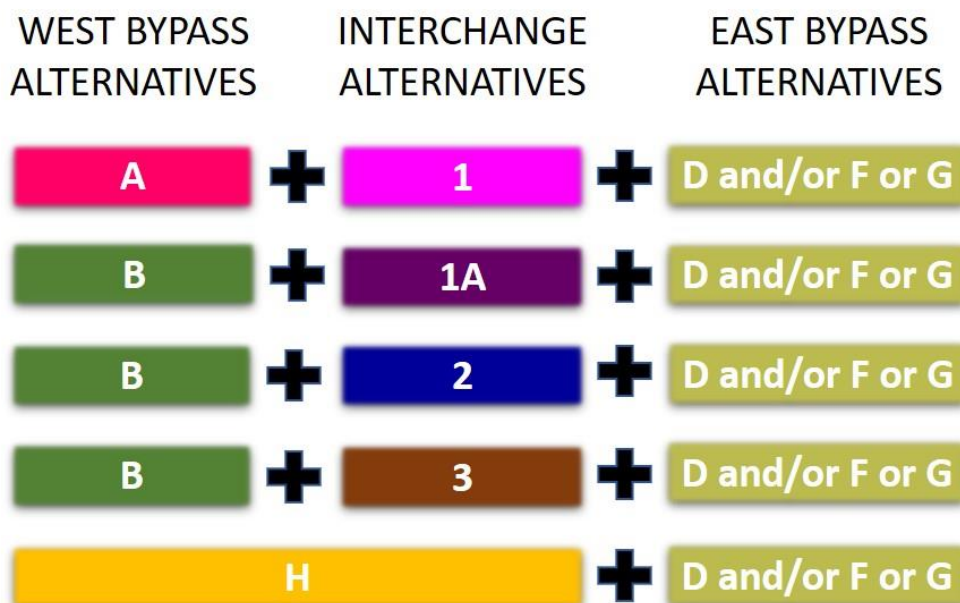




## 2.3 What alternatives are evaluated in this EA?

The No Action Alternative does not meet the purpose and need of the project because it would not reduce truck traffic through the CBD or improve safety. However, the No Action Alternative is considered in this EA as a baseline to compare impacts against the build alternatives.

West Bypass Alternatives A, B, and H; East Bypass Alternatives D, F, and G; and Interchange Alternatives 1, 1A, 2, and 3 are described below and will be discussed in the remainder of this EA. All bypass alternatives would be two-lane roadways. The city may choose to post Pine St. off limits to through trucks once the new bypass route is established. The Preferred Alternative likely will be a combination of a West Bypass Alternative and one or two East Bypass Alternatives (Alternative D could be selected in addition to Alternatives F or G) and may also include an Interchange Alternative if Alternative A or B is selected. Unlike the other bypass alternatives, Alternative H includes its own specific interchange improvements. The graphic below shows all possible alternative combinations. Not all West Bypass Alternatives can be paired with all Interchange Alternatives; however, any East Bypass Alternative can be paired with any West Bypass or Interchange Alternative.



### West Bypass Alternatives

**Alternative A** is the shortest of the West Bypass Alternatives at approximately 2.5 miles. Alternative A, which is entirely on new location, connects to Hwy. 67 just north of the airport and ties into Hwy. 51 just east of I-30 (**Figure 8**). Alternative A proceeds north from Hwy. 67 for a short distance, turns west and continues west-southwest, crosses 26<sup>th</sup> St., then swings north to tie into Hwy. 51 via Interchange Alternative 1. The typical section of Alternative A would be a two-lane rural road with open shoulders

(**Figure 9**) and the average right of way (ROW) width would be 200 feet. Alternative A would be signed as Hwy. 51.

**Alternative B** is the second shortest of the West Bypass Alternatives at approximately 2.9 miles. Alternative B is identical to Alternative A east of 26<sup>th</sup> Street; however, after crossing 26<sup>th</sup> St., Alternative B continues west-northwest and incorporates and improves existing Red Hill Rd. for 0.6 mile before tying into Hwy. 51 via Interchange Alternative 1A, 2, or 3 (**Figure 8**). The typical section of Alternative B would be a two-lane rural road with open shoulders (**Figure 9**) and the average ROW width would be 200 feet. Alternative B would be signed as Hwy. 51.

**Alternative H** is the longest of the West Bypass Alternatives at approximately 3.0 miles and is entirely on new location. Alternative H is identical to Alternatives A and B east of 26<sup>th</sup> St.; however, after crossing 26<sup>th</sup> St., Alternative H continues west-southwest, crosses Red Hill Rd., would construct a new overpass and diamond interchange at I-30, and then ties into Hwy. 51 on the west side of I-30 (**Figure 8**). Unlike the other bypass alternatives, which would incorporate one of the four Interchange Alternatives, Alternative H includes its own specific improvements to the I-30/Hwy. 51 interchange and to the surrounding area to the east. These improvements consist of the construction of collector-distributor (C-D) lanes (one single-lane road on each side of I-30) between the proposed I-30/Hwy. 51 interchange and the existing I-30/Hwy. 51 interchange as well as street improvements immediately east of the existing I-30/Hwy. 51 interchange. Due to the close spacing between the proposed and existing I-30/Hwy. 51 interchanges, weaving on the main lanes of I-30 may occur and these C-D lanes are incorporated to eliminate this potential weaving. These C-D lanes would be utilized in order to access both the existing and proposed I-30/Hwy. 51 interchanges. The proposed street improvements immediately east of the existing I-30/Hwy. 51 interchange would provide adequate separation between the I-30 on/off ramps and the local street intersections. This separation would be achieved by removing the existing Hwy. 51/Professional Park Dr. intersection and the existing Hwy. 51/Red Hill Rd. intersection and moving them 500 feet and 375 feet, respectively, to the east. The typical section of the bypass portion of Alternative H, which would be signed as Hwy. 51 and would be a two-lane rural road with open shoulders, is shown in **Figure 9**. The average ROW width of Alternative H ranges from 200 feet to 300 feet with the larger width needed for possible requirements of the interchange and ramps. The typical section of the ramps and C-D lanes associated with Alternative H is shown in **Figure 10**. A detailed view of the Alternative H proposed improvements near the I-30/Hwy. 51 interchange is provided in **Figure 11**.

**C-D lanes** are lanes specifically designed to handle entering and exiting traffic along an interstate or highway. These lanes are barrier separated from the main interstate and enhance safety by allowing more distance for vehicles to merge and move over to access on ramps. C-D lanes also enhance safety by providing a place for exiting traffic to wait to access cross streets, rather than backing up onto high-speed main lanes.



Figure 8: West Bypass Alternatives A, B, and H

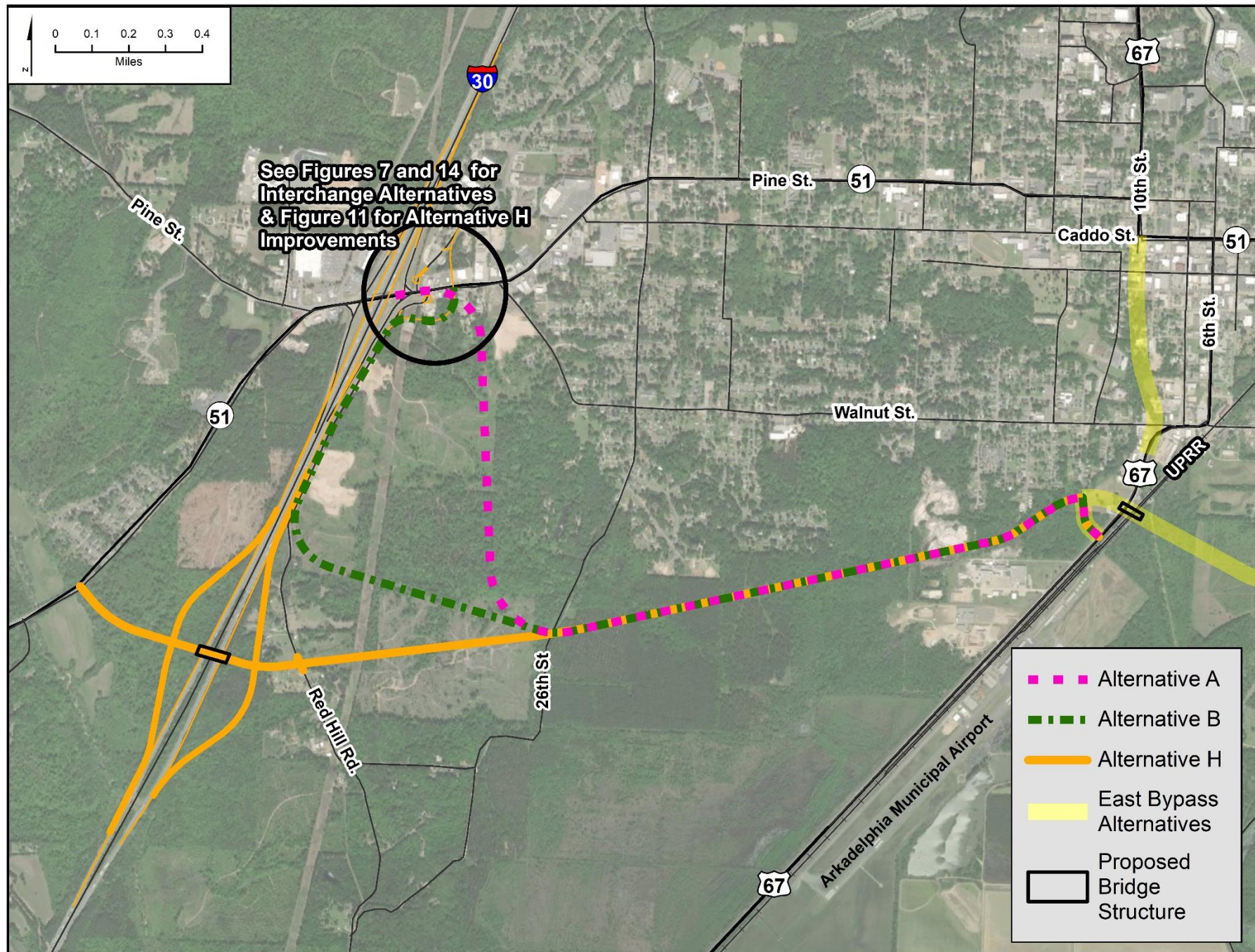




Figure 9: Typical Section of Alternatives A, B, G, and H

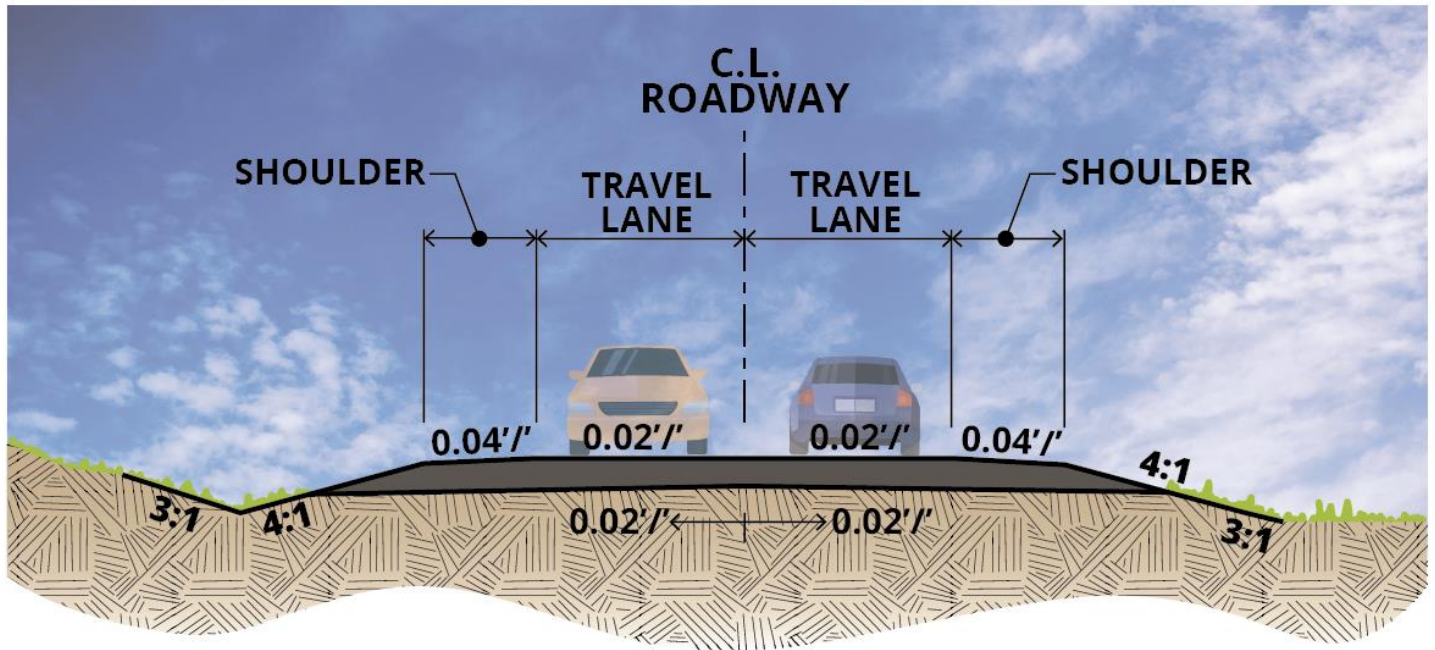


Figure 10: Typical Section of Alternative H Ramps and Interchange Alternatives 1, 1A, 2, and 3

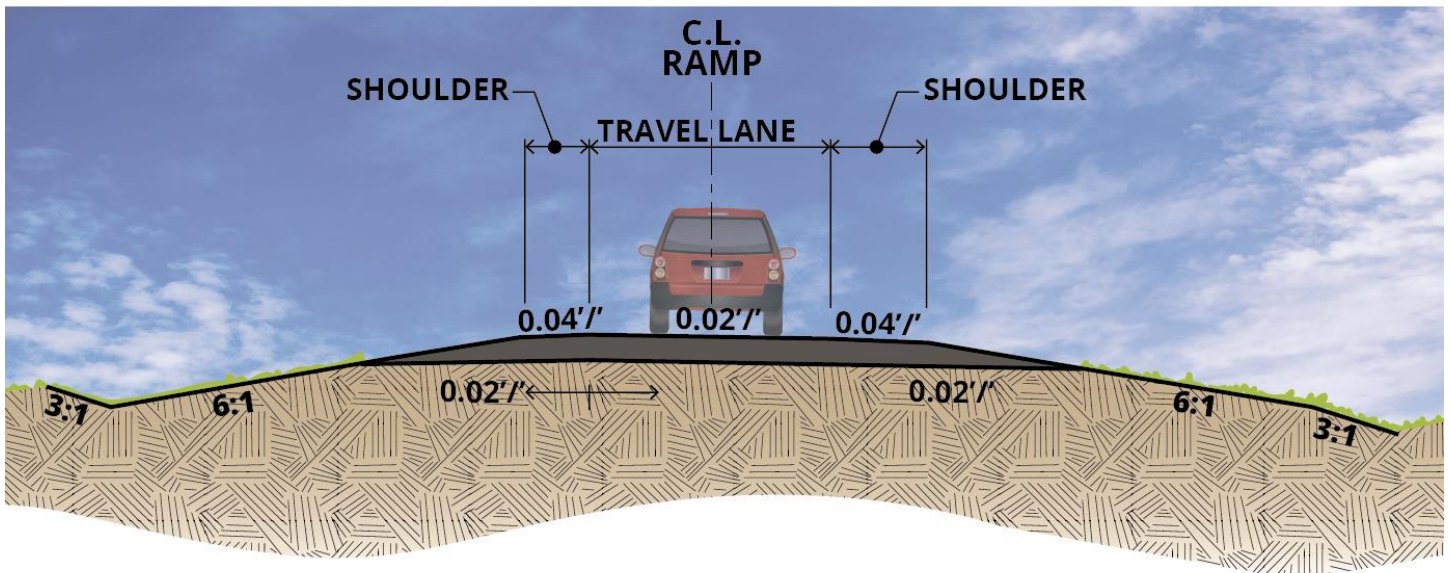
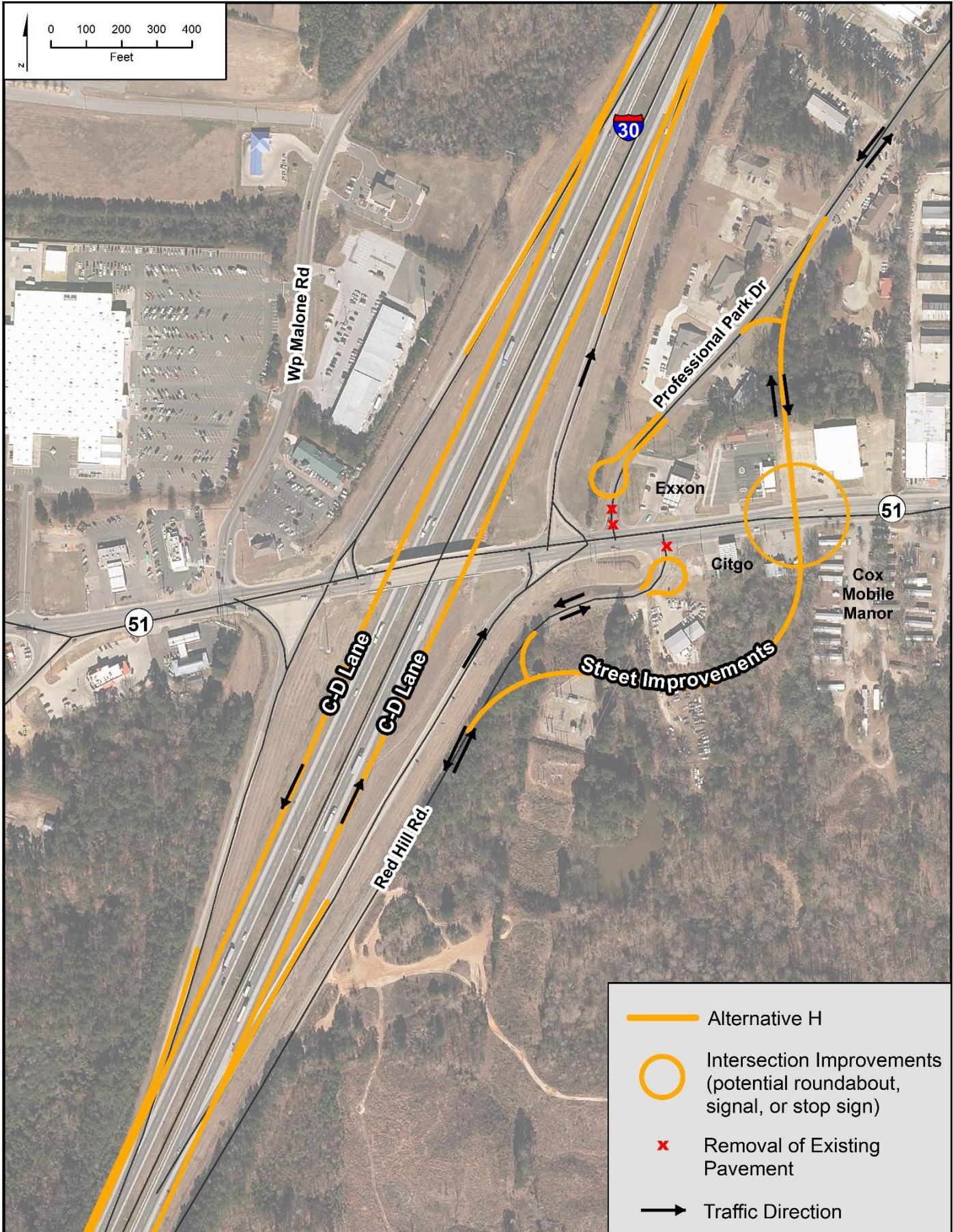




Figure 11: Alternative H Improvements Near the I-30/Hwy. 51 Interchange





## East Bypass Alternatives

**Alternative D**, which is shown in **Figure 12**, is the shortest East Bypass Alternative at approximately 0.6 mile. Alternative D would improve the existing roadway geometry at the intersection of Caddo St. and 10<sup>th</sup> St., improve 10<sup>th</sup> St. from Caddo St. to Clinton St., and then extend 10<sup>th</sup> St. (which currently dead ends at Clinton St.) south on new location until it ties into Hwy. 67 just south of Walnut Street. Because Alternative D is the only alternative that removes the north-south traffic from the CBD on Hwy. 67, but does not help alleviate east-west traffic on Hwy. 51, Alternative D could be combined with Alternatives F or G to meet project goals. With the exception of the short segment along 10<sup>th</sup> St., Alternative D is entirely on new location. The typical section of Alternative D would consist of two travel lanes with curb and gutter (**Figure 13**) and the average ROW width would be 100 feet. Alternative D would be signed as Hwy. 67.

**Alternative F** is the second longest of the East Bypass Alternatives at approximately 1.8 miles. Alternative F proceeds north from Hwy. 67 for a short distance, then turns east and crosses both Hwy. 67 and the UPRR with a new overpass (Figure 12). Alternative F then continues east-southeast, crosses 3<sup>rd</sup> St., and then swings northward and crosses Hemphill Road. North of Hemphill Rd., Alternative F would involve constructing a second new UPRR overpass near 1<sup>st</sup> St., where it would then merge with 1<sup>st</sup> St. until tying into Hwy. 51 at a stop sign or signal controlled intersection just west of the existing Ouachita River bridge abutment. With the exception of the short segment along 1<sup>st</sup> St., Alternative F is entirely on new location. Retaining walls are proposed to avoid direct impacts to the apartment complex located on the west side of 1<sup>st</sup> St. and to minimize impacts to the Riverfront Park located on the east side of 1<sup>st</sup> Street. The typical section of Alternative F would consist of two travel lanes with curb and gutter (Figure 13) and the average ROW width would be 100 feet north of the northern-most UPRR crossing and 200 feet south of this crossing. Alternative F would be signed as Hwy. 67.

**Alternative G** is the longest East Bypass Alternative at approximately 2.4 miles and would require constructing a new bridge over the Ouachita River. Alternative G is identical to Alternative F west of 3<sup>rd</sup> St.; however, where Alternative F swings to the north near Nowlin Pond, Alternative G continues to the northeast (Figure 12). Alternative G then crosses Hemphill Rd. before crossing over the Ouachita River on a new bridge. After crossing the river, Alternative G ties into Hwy. 51 East as the direct movement and uses a left turn to access Hwy. 51 West. Alternative G is entirely on new location. The typical section of Alternative G would consist of two travel lanes with open shoulders (Figure 9) and the average ROW width would be 200 feet. Alternative G would be signed as Hwy. 67.

Figure 12: East Bypass Alternatives D, F, and G

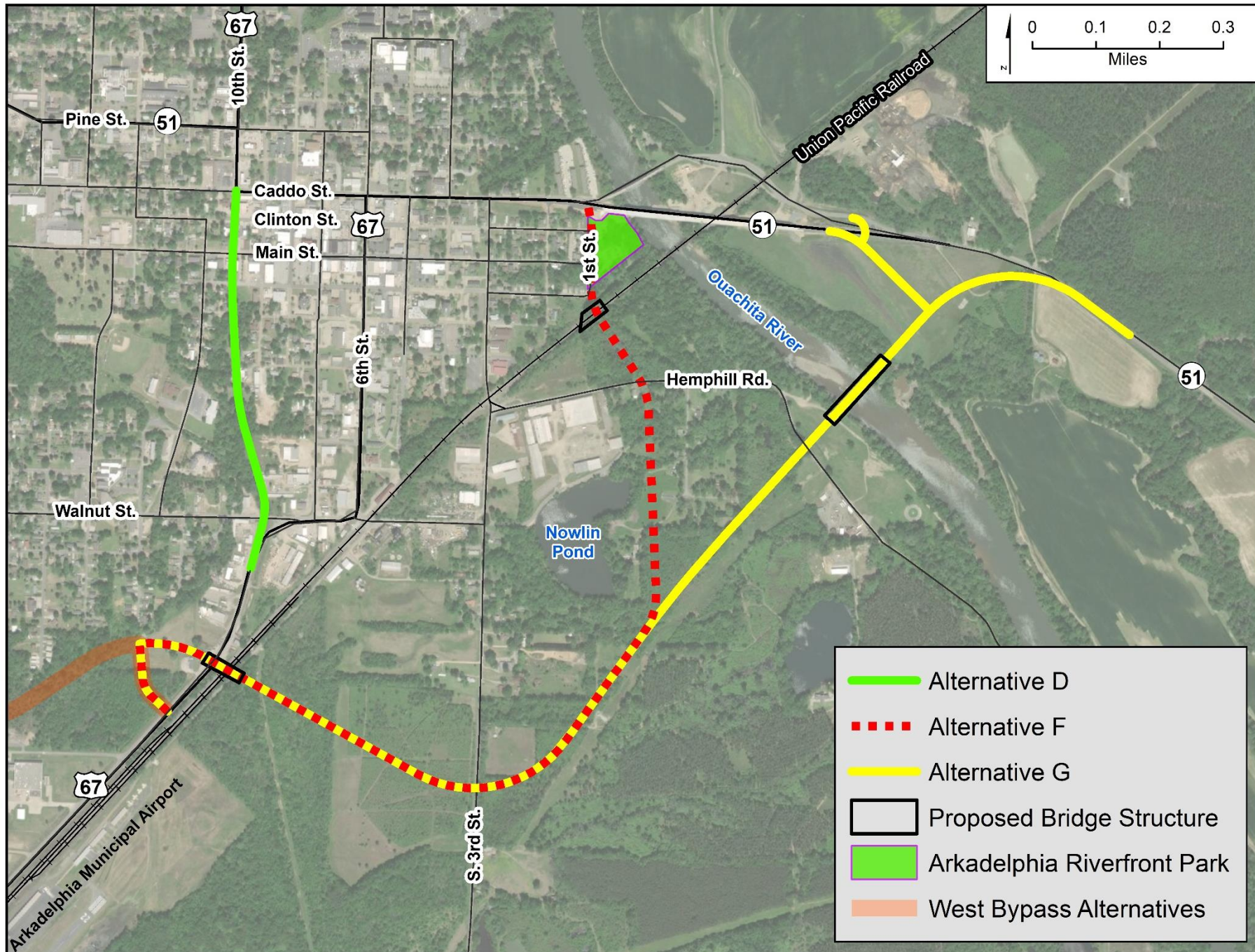
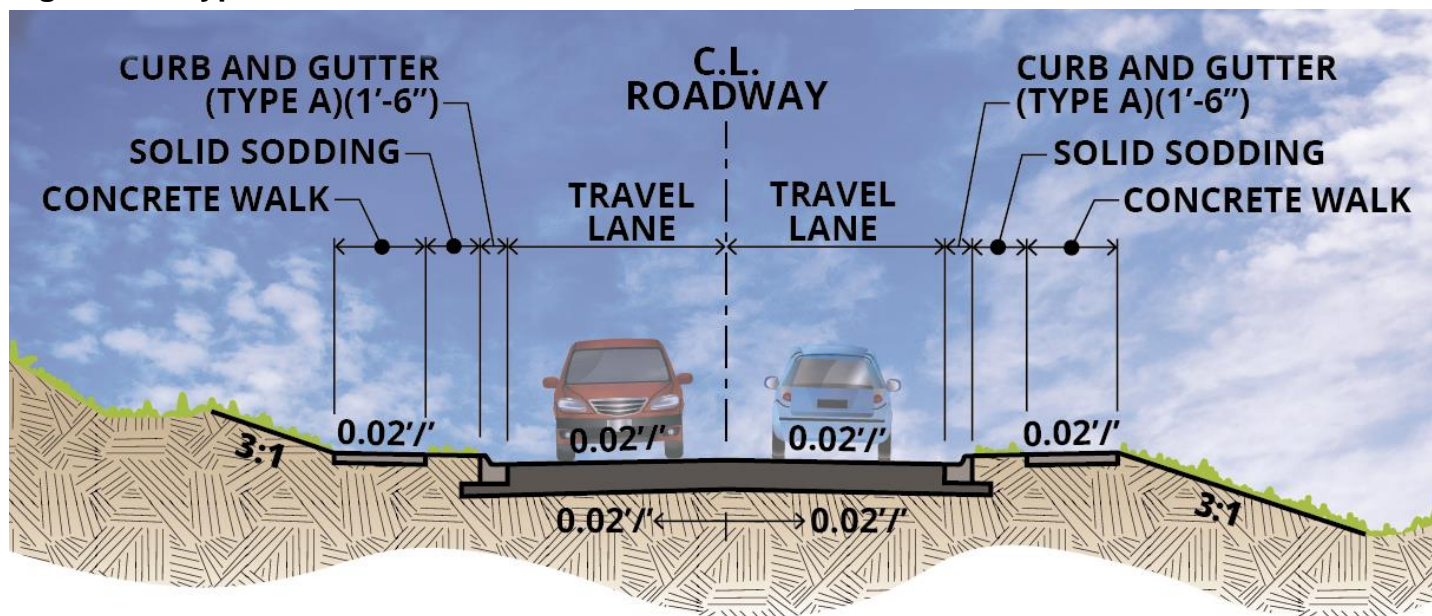




Figure 13: Typical Section of Alternatives D and F



## Interchange Alternatives

For each of the Interchange Alternatives, proposed intersection improvements (as indicated by circles on Figure 7) could be a roundabout, signal, or stop sign. The average ROW width of roadway improvements for each Interchange Alternative is 50 feet and the typical section of each is shown in Figure 10.

**Alternative 1** would require modifications to the existing diamond interchange to allow for better intersection spacing. Two new buttonhook ramps would be constructed that tie into Professional Park Dr. The new exit ramp would allow for a left or right turn onto Professional Park Dr. The right turn movement would also serve as access to Hwy. 51 westbound. The existing eastbound I-30 exit would be retained and modified to eliminate left turning movements and only allow access to eastbound Hwy. 51. The new eastbound I-30 on ramp connection would tie into Professional Park Dr. and connect to the existing I-30 eastbound on ramp, requiring removal of approximately 700 feet of the existing ramp. To the east of the Red Hill Rd. realignment, the new primary through movement would be the new bypass alignment instead of Hwy. 51. The existing Hwy. 51 alignment to the east of the interchange would be modified to tie into the new bypass alignment with a signalized intersection or roundabout.

**Alternative 1A (Figure 14)** would require the same modifications as Alternative 1 with the exception that it would not include the eastern-most intersection improvement that ties into Hwy. 51.

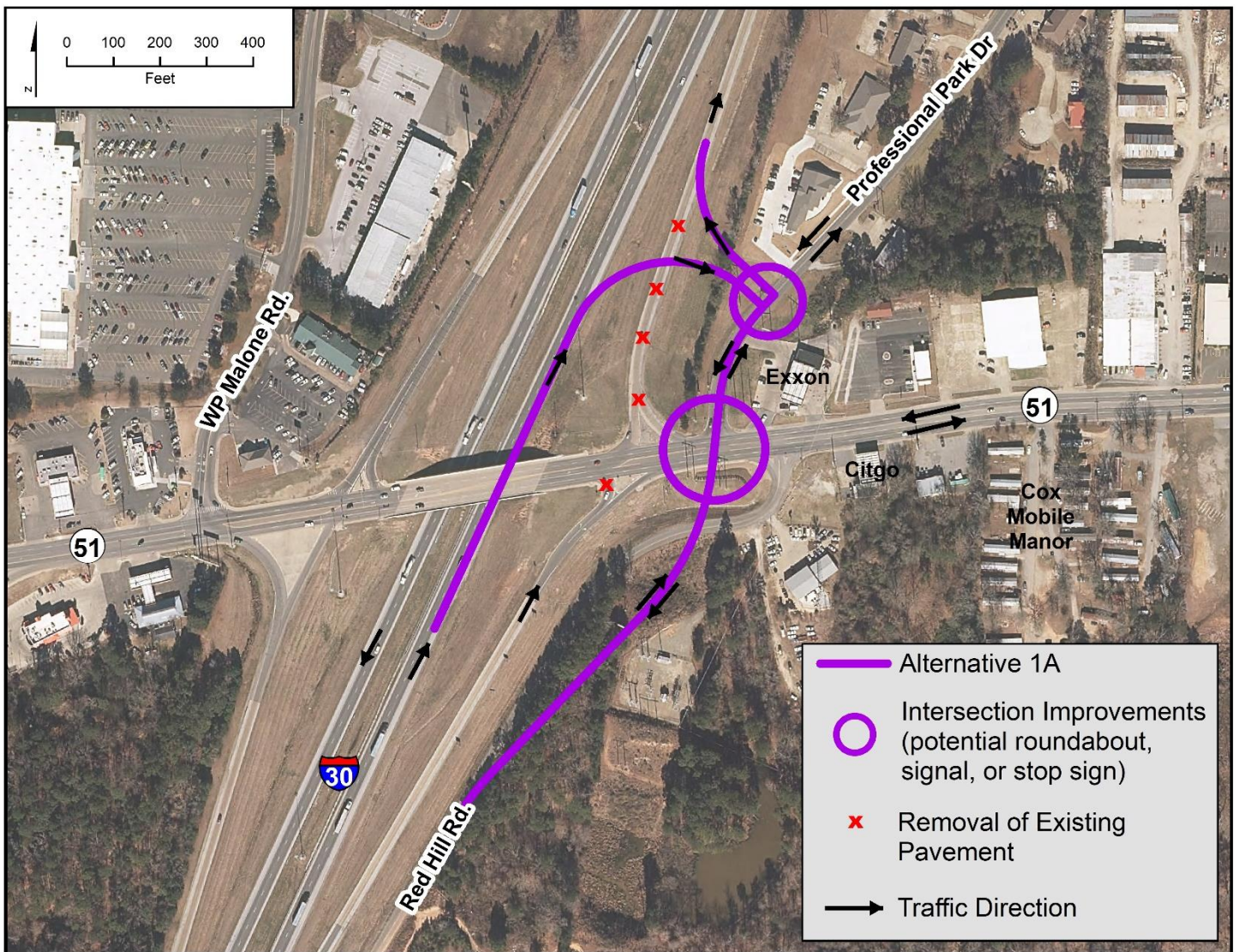
**Alternative 2** would require modifications to the existing diamond interchange. A new buttonhook ramp would be constructed that ties into Professional Park Dr. north of Hwy. 51, and a new buttonhook ramp would also be constructed that ties into the new bypass alignment to the south, which also serves as access to Red Hill Road. The new exit ramp, which ties into the existing exit ramp, would allow for a left or right turn onto the new bypass alignment. Approximately 700 feet of the existing ramp would be



removed to the north of the new ramp connection. The left turn movement from the ramp serves as access to Hwy. 51. The new eastbound I-30 on ramp connection would tie into Professional Park Dr. and connect to the existing I-30 eastbound on ramp. The existing Hwy. 51 alignment would largely remain the same as existing conditions.

**Alternative 3** would not require modifications to the existing diamond interchange. With this alternative, the ramps would remain in their existing location, and the intersection of Professional Park Dr. and Red Hill Rd. would be relocated to the east. The existing Hwy. 51 alignment would largely remain the same as existing conditions.

**Figure 14: Interchange Alternative 1A**



## 2.4 How well would each alternative improve mobility and how much would each cost?

Detailed traffic information is provided in Appendix A and the estimated total construction and ROW costs for each alternative are provided in **Table 2**. Total costs of bypass alternatives range from \$5.8 million to \$49.6 million, and total costs of Interchange Alternatives range from \$6.6 million to \$10.9 million.

**Table 2: Cost Estimate in 2019 Dollars**

Alternative and Location		Alternative Length	Construction Cost	ROW Cost	Total Cost
N/A	No Action	0 miles	\$0	\$0	\$0
West Bypass	Alternative A	2.5 miles	\$10,600,000	\$93,050	\$10,693,050
	Alternative B	2.9 miles	\$12,500,000	\$117,120	\$12,617,120
	Alternative H	3.0 miles	\$46,400,000	\$3,178,200	\$49,578,200
East Bypass	Alternative D	0.6 miles	\$3,800,000	\$1,965,120	\$5,765,120
	Alternative F	1.8 miles	\$10,400,000	\$377,750	\$10,777,750
	Alternative G	2.4 miles	\$18,000,000	\$191,700	\$18,191,700
Interchange Alternatives	Interchange 1	-	\$8,200,000	\$2,678,700	\$10,878,700
	Interchange 1A	-	\$5,900,000	\$668,000	\$6,568,000
	Interchange 2	-	\$9,600,000	\$746,250	\$10,346,250
	Interchange 3	-	\$4,800,000	\$2,656,000	\$7,456,000

### No Action Alternative

The No Action Alternative would not provide a bypass, create new infrastructure, change traffic patterns, or make improvements to traffic flow and safety. Thus, under the No Action Alternative, crash rates, traffic volumes, congestion, and travel delays would continue. The primary concern of logging and other large trucks passing through the CBD would not be addressed.

### West Bypass Alternatives

Alternatives A and B would route traffic through the existing I-30/Hwy. 51 interchange, while Alternative H would remove through traffic from the interchange by providing a new interchange to the south. All West Bypass Alternatives would relocate Hwy. 51 to a parallel route south of the city and provide an additional connection between I-30 and the CBD. I-30 traffic traveling to and from Hwy. 67 south of Arkadelphia would also utilize this route.

All West Bypass Alternatives would provide another route besides existing Hwy. 51 and Walnut St. for local traffic traveling between I-30 and the CBD. This would be especially beneficial for mobility and safety on Hwy. 51.

### **East Bypass Alternatives**

Alternative D would prevent most north and southbound traffic on Hwy. 67 from entering the CBD by extending 10<sup>th</sup> St. south and avoiding any difficult turns in the CBD. Alternative D would not significantly reduce traffic in the CBD traveling east or west on Hwy. 51. However, Alternative D would improve the geometry for the turning radius at the intersection of Caddo St. and 10<sup>th</sup> St. (i.e., the northern terminus of Alternative D). While this improved intersection would still require 90 degree turns for traffic heading east or west, the intersection design would have an adequate turning radius and allow safer and less problematic turns for traffic (especially large trucks). Alternative D is the most effective at reducing truck traffic traveling north and south on Hwy. 67 through the CBD.

Alternative F has the potential to prevent through westbound traffic on Hwy. 51 coming from east of Arkadelphia from entering the CBD. North and southbound traffic on Hwy. 67 and eastbound traffic on Hwy. 51 would pass through the north end of the CBD on Hwy. 51 to reach the bypass and then proceed south around the CBD. A stop sign or signal controlled intersection at Hwy. 51 and 1<sup>st</sup> St. (i.e., at the north terminus of Alternative F) would be required, and Clinton St. and Main St. would dead-end at the bypass. These elements may decrease mobility for local traffic.

Alternative G would function to improve mobility in the same manner as Alternative F with the exception that Alternative G would provide an easier connection to Hwy. 51 on the east side of the Ouachita River and avoid the stop-sign controlled intersection required by Alternative F at the existing Ouachita River bridge abutment.

### **Interchange Alternatives**

The short spacing between the I-30 ramps and the intersections of Professional Dr. and Red Hill Rd. at Hwy. 51 causes safety and mobility concerns at the existing interchange. Alternative H and all four Interchange Alternatives would improve safety and mobility on Hwy. 51 just east of I-30; however, this would be accomplished using different options. Interchange Alternatives 1, 1A, and 2 would modify the configuration of the existing off and on ramps to prevent a direct tie into Hwy. 51. Alternative 3 and Alternative H would incorporate the existing interchange and relocate the existing Professional Park Dr. and Red Hill Rd. intersections to a single intersection. This intersection improvement reduces the number of conflict points along the corridor where crashes could occur and would provide near equal signal spacing which is ideal in optimizing traffic flow. Signalizing this intersection would also reduce side street delay.

## **2.5 How has the public been involved?**

A public officials meeting and an open forum public involvement meeting were held on February 5, 2019, at Henderson State University. Including ARDOT and other staff, 19 people attended the public

officials meeting, and 145 people attended the public involvement meeting. Alternatives A-G and Interchange Alternatives 1-4 were presented. Fifty-two comment forms and five letters were received. A majority of those who commented expressed a need for a bypass (46 yes; 5 no) and did not prefer improvements to Hwys. 51 and 67 instead. The complete public involvement meeting synopsis is included in **Appendix B**. As referenced in Section 2.2, local official and public input subsequently resulted in the development of an additional West Bypass Alternatives (Alternative H) to connect the bypass directly to I-30 and an Interchange Alternative (Alternative 1A) was added.

A location public hearing will be held upon completion of the EA process and FHWA will determine if this project warrants an EIS due to significant impacts or if a FONSI will be issued.

## **2.6 How have government agencies been involved?**

As described above, input from public officials was solicited regarding the proposed project. Additionally, federal and state resource agencies were asked to review the proposed project and identify potential impact concerns. Responses from these agencies are provided in **Appendix C**.

## **2.7 How have tribal governments been involved?**

Section 106 of the *National Historic Preservation Act* requires federal agencies to consult with tribes where projects could affect tribal areas with historical or cultural significance. The FHWA initiated coordination with tribes having an active cultural interest in the area. The tribes contacted included the Caddo Nation, Chickasaw Nation, Choctaw Nation of Oklahoma, Jena Band of the Choctaw Indians, Osage Nation, Quapaw Tribe of Oklahoma, Shawnee Tribe of Oklahoma, and the Tunica-Biloxi Tribe of Louisiana, Inc. The Tribal Historic Preservation Officers were given the opportunity to comment on the proposed project. No objections to the proposed project were received. The final Cultural Resources report will be sent to any tribe requesting a copy of the report. Copies of the tribal correspondence are located in Appendix C.



## Chapter 3 – Environmental Impacts and Mitigation

*This chapter summarizes potential project impacts on people and the environment.*

### 3.1 How were potential impacts evaluated?

Environmental scientists conducted analyses to determine how the project would potentially impact the area's natural and built environments. Potential impacts are described in the text and, as applicable, additional information is incorporated by reference or included in the appendices.

The analyses considered both the intensity of the effects and their duration (e.g., short-term during construction or remaining permanently after construction). The effects discussed in this chapter are presumed to be long-term unless otherwise noted. Effects are generally described in terms such as beneficial or positive, and adverse or negative. Mitigation measures are sometimes available to minimize or neutralize negative effects and can enhance positive effects.

All the analyses in this section are based on preliminary design. As design progresses from preliminary to final design, every effort will continue to be made to avoid or minimize negative impacts. Off-site areas that might be required during construction (e.g., borrow pits, material and equipment storage areas, etc.) will be evaluated when they are identified during the construction phase of the project.

**Potential impacts** are changes or effects that could occur as a result of a proposed action. The impacts may be social or cultural, economic, or ecological. The terms “impact” and “effect” can be used interchangeably.

### 3.2 Would the project require any relocations or right of way acquisitions?

**Table 3** outlines the quantities of ROW acquisitions and the number of relocations necessary for each alternative, and the types and numbers of properties that would be displaced are described below. Relocation assistance will be provided in accordance with the *Uniform Relocation Assistance Act* and will mitigate any adverse effects. A conceptual stage relocation study is provided in **Appendix D**.

The United States Geological Survey 2016 National Landcover Dataset (NLCD) was used to identify land use/land cover types along the alternative alignments. As quantified in **Table 4** and shown in **Figure 15**, the construction of the proposed project would result in the direct conversion of land from its present use to a transportation use.

The preliminary ROW totals presented in Table 3 differ from those presented in Table 4. The Table 3 totals are based only on those areas where complete parcel data is known, and parcel data is not currently available for all areas. The exact quantities of required ROW and ROW conversions will be determined once the Preferred Alternative is identified.

**Relocations** occur when a residence, business, or nonprofit organization is impacted severely enough that they cannot continue to live or do business at their current location. This usually occurs when proposed ROW acquisition requires removing a structure, taking most of a business's parking, or severing access to a property.

**Table 3: Preliminary ROW and Relocations Required for Each Alternative**

Alternative and Location		Acres of Required ROW Acquisition			Number of Relocations		
		Residential	Other*	TOTAL**	Residential	Other*	TOTAL
N/A	No Action	0	0	0	0	0	0
West Bypass	Alternative A	3.5	52.5	56.0	0	0	0
	Alternative B	3.5	60.2	63.7	0	0	0
	Alternative H	12.0	129.5	141.5	6 <sup>†</sup>	6	12 <sup>†</sup>
East Bypass	Alternative D	1.1	4.2	5.3	4	10	14
	Alternative F	3.6	25.5	29.1	3	2	5
	Alternative G	1.1	36.8	38.0	1	2	3
Interchange Alternatives	Interchange 1	3.5	2.6	6.1	18 <sup>†</sup>	4	22 <sup>†</sup>
	Interchange 1A	0	1.3	1.3	0	1	1
	Interchange 2	0	3.4	3.4	0	1	1
	Interchange 3	0	5.3	5.3	3 <sup>†</sup>	5	8 <sup>†</sup>

\*"Other" includes churches, government facilities, and business properties.

\*\*Due to rounding, the sum of the residential and other acreage quantities may not equal the actual total.

<sup>†</sup> Includes mobile homes located at Cox Mobile Manor.

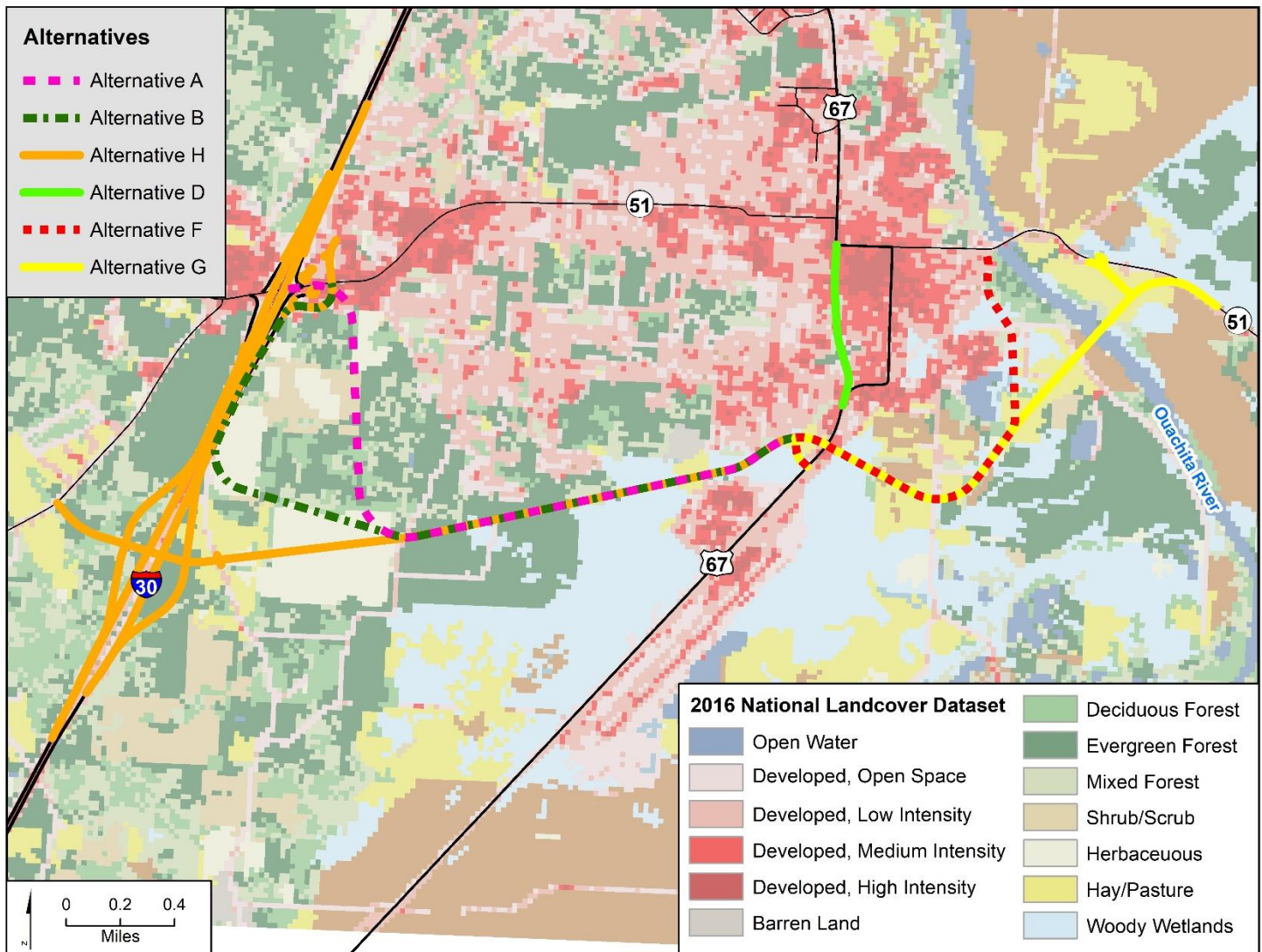
**Table 4: Land Cover Types to be Converted to Highway ROW**

Alternative and Location		Approx. Acres of Dominant Land Cover Types to be Converted to Hwy. ROW					
		Crops	Hay or Pasture	Herbaceous	Woodland or Scrub-Shrub	Developed	TOTAL*
N/A	No Action	0	0	0	0	0	0
West Bypass	Alternative A	0	3.8	4.7	49.7	1.9	60.0
	Alternative B	0	3.8	14.5	40.6	2.7	61.6
	Alternative H	0	12.8	19.9	93.1	38.8	165.4
East Bypass	Alternative D	0	0	0	1.3	4.0	5.3
	Alternative F	2.1	10.2	1.8	16.9	5.6	36.6
	Alternative G	3.7	24.6	1.0	9.9	4.4	43.8

Alternative and Location		Approx. Acres of Dominant Land Cover Types to be Converted to Hwy. ROW				
		Crops	Hay or Pasture	Herbaceous	Woodland or Scrub-Shrub	Developed
Interchange Alternatives	Interchange 1	0	0	0	0.9	13.7
	Interchange 1A	0	0	0	0.3	8.0
	Interchange 2	0	0	0.1	1.0	2.9
	Interchange 3	0	0	0	<0.1	6.4
		<b>TOTAL*</b>				

\*As only the dominant land cover types were listed and values were rounded, the sum of the land cover types may not equal the actual total of ROW that would be acquired.

**Figure 15: Land Cover Types Converted by Each Alternative**





## **No Action Alternative**

Since new ROW would not be needed, existing residences, businesses, or other properties would not be relocated, and no new ROW would be acquired or converted to other uses.

## **West Bypass Alternatives**

For Alternatives A, B and H, a total of approximately 56, 64, and 142 acres, respectively, of new ROW would need to be acquired. No residential or business relocations would be required by Alternatives A or B. For Alternative H at Red Hill Rd., three homes and the Grace Fellowship Church would require relocation. At the existing I-30/Hwy. 51 interchange, local street improvements under Alternative H would require three residential relocations within Cox Mobile Manor and additionally five business relocations.

Alternatives A and H are entirely on new location and would primarily convert woodlands to highway ROW. Alternative H would also convert previously developed land, herbaceous areas, and some hay/pastureland to ROW. The new location portion of Alternative B would primarily convert woodlands and herbaceous areas to highway ROW. However, Alternative B incorporates an existing roadway section, reducing the total amount of new ROW required.

## **East Bypass Alternatives**

Alternative D would require approximately 5.3 acres of new ROW. This includes four residential relocations, eight business relocations, Grace Bible Church, and one county government office.

For Alternative F, a total of approximately 29.1 acres of new ROW would need to be acquired. This includes three residential relocations and two business relocations. Retaining walls are proposed near the Forest Hills Apartment complex on the west side of 1<sup>st</sup> St. to avoid relocation impacts for this structure.

For Alternative G, a total of approximately 38.0 acres of new ROW would need to be acquired. This includes one residential relocation and two business relocations.

For Alternative D, most of the land being converted to highway ROW has been previously developed. Alternatives F and G would primarily convert woodlands and hay/pastureland to highway ROW, with Alternative F converting more woodlands and Alternative G converting more hay/pastureland.

## **Interchange Alternatives**

For Interchange Alternative 1, a total of approximately 6.1 acres of new ROW would need to be acquired. This includes four business relocations and 18 residential relocations within Cox Mobile Manor.

Alternative 1A would require a total of approximately 1.3 acres of new ROW to be acquired. This includes the relocation of one business property with no residential relocations.

Alternative 2 would require a total of approximately 3.4 acres of new ROW to be acquired. This includes the relocation of one business property with no residential relocations.

Alternative 3 would require a total of approximately 5.3 acres of new ROW. This includes the same five business relocations and same three residential relocations (within Cox Mobile Manor) as required by Alternative H.

Interchange Alternatives 1 and 2 would primarily convert already-developed land to highway ROW, but these alternatives also convert approximately 1 acre of woodland to highway ROW. Alternative 1A and Alternative 3 primarily only convert already-developed land to highway ROW.

### 3.3 How would the project affect the community?

An Environmental Justice (EJ) analysis was performed in accordance with Executive Order 12898. The EJ analysis was intended to identify and address any disproportionately high and adverse effects to low-income or minority populations within the project study area. A low-income household was defined as one whose income is at or below the 2019 Department of Health and Human Services poverty guidelines for a family of four (\$25,750). High minority areas are areas with a minority population greater than 50% of the total population.

Clark County and Arkadelphia respectively have estimated populations of 22,385 and 10,611 persons (U.S. Census Bureau, 2018). Most residents live south of Hwy. 51 and west of Hwy. 67.

U.S. Census Block and Block Group data were obtained to determine the presence of minority and low-income populations within the study area (U.S. Census Bureau, 2010 and 2017). Data from 115 Blocks and six Block Groups within two Census Tracts were used to better characterize populations that may be affected by the proposed project. **Figure 16** shows the location of two areas in the project limits for consideration under EJ guidelines.

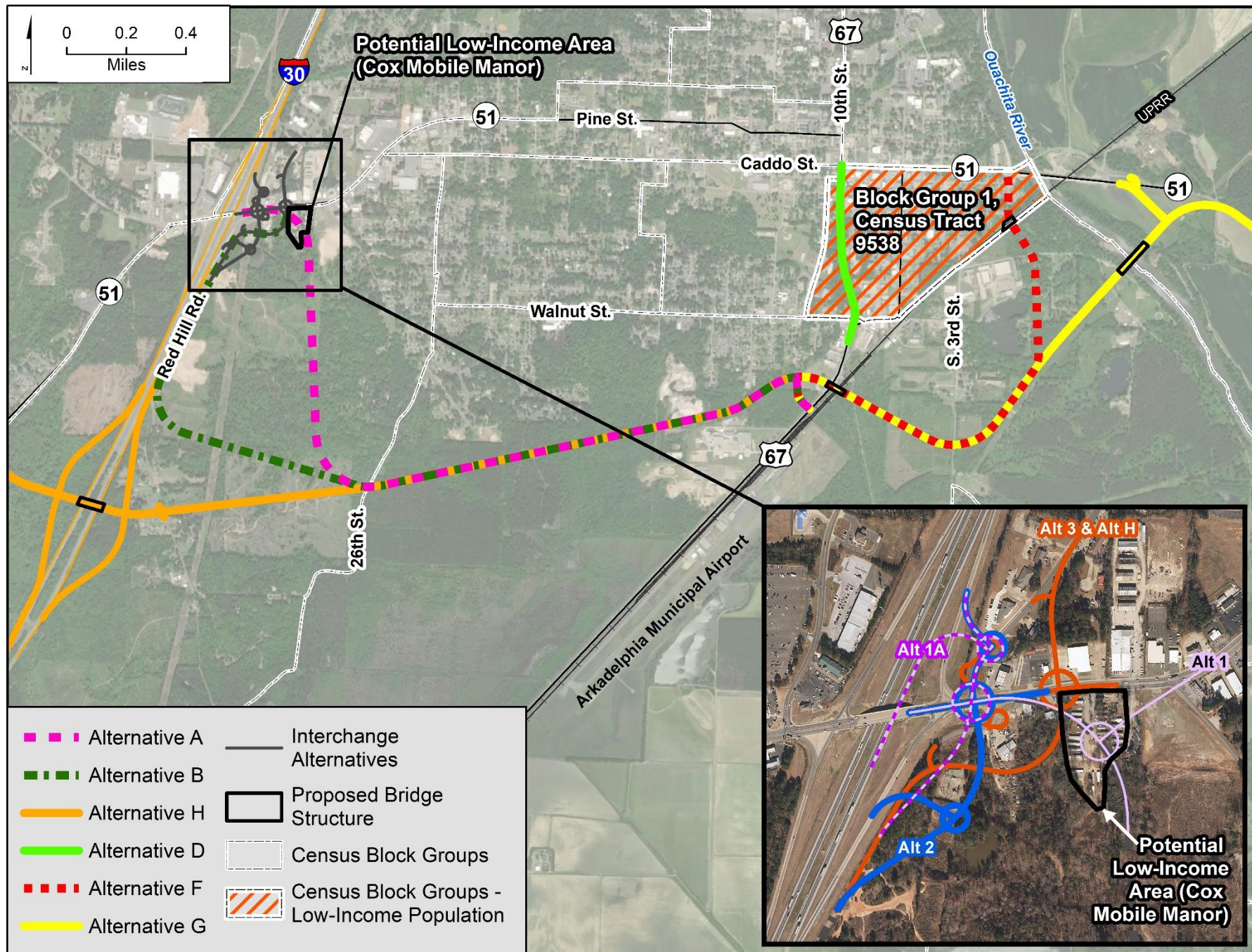
While all the build alternatives involve construction on new locations to some degree, no subdivisions or neighborhoods would be split as a result of the proposed project. Additionally, no adverse effects on community cohesion nor disruption of community services would occur from the project. Furthermore, implementation of a bypass would cause a reduction in traffic through the CBD and along Hwy. 51, which would encourage pedestrian traffic in the CBD and foster community cohesion.

**Environmental Justice** at the FHWA means identifying and addressing disproportionately high and adverse effects of the agency's programs, policies, and activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens.

A **minority population** is a readily identifiable group of minority (Black, Hispanic or Latino, Asian American, American Indian or Alaska Native, or Native Hawaiian or Other Pacific Islander) persons living close to a FHWA project who would be similarly affected by the project.



Figure 16: Potential Low-Income Areas



Eighteen of the 23 relocations associated with Interchange Alternative 1 occur in a single, low-income mobile home park. This alternative would cause disproportionate impacts to this low-income community. If Interchange Alternative 1 is carried forward, additional community outreach would be needed to address this concern and work with those residents to address this issue. The proposed improvements would also have beneficial impacts by improving safety and mobility, and by decreasing travel time. Relocation assistance will be provided in accordance with the *Uniform Relocation Assistance Act* to mitigate adverse effects. Specific impacts resulting from the alternatives are discussed below.

### **No Action Alternative**

The No Action Alternative would not require the relocation of any homes or businesses. However, by doing nothing to address traffic problems within the City, the No Action Alternative would not have a beneficial impact on the community and businesses.

### **West Bypass Alternatives**

In general, the construction of a bypass would enhance traffic flow within the community and benefit all residents, including minorities and low-income populations. No impacts to EJ populations are expected from Alternatives A or B. Alternative H would require three relocations within Cox Mobile Manor, which may house low-income populations.

### **East Bypass Alternatives**

In general, the construction of a bypass would enhance traffic flow within the community and benefit all residents, including minorities and low-income populations. This is especially true in the CBD, which includes the Block Group identified as a low-income population, as the proposed improvements would provide an alternate route for traffic to avoid the CBD and improve safety within this district for motorists and pedestrians.

Alternatives D and F require relocations within Block Group 1, which is identified as a low-income population area. Within Block Group 1, Alternative D requires 12 (four residential and eight business) relocations and Alternative F requires two residential relocations. No impacts to EJ populations are expected from Alternative G.

### **Interchange Alternatives**

In general, the construction of any of the Interchange Alternatives would enhance traffic flow within the community and benefit all residents, including minorities and low-income populations.

Alternative 1 would require 18 relocations within Cox Mobile Manor, which may house low-income populations. Alternative 3 would require three relocations within Cox Mobile Manor.

No impacts to EJ populations are expected from Alternatives 1A or 2.



### 3.4 Would noise levels change?

Traffic noise analysis is required for proposed Federal-aid highway projects that would construct a highway on new location, substantially alter an existing highway, or increase the number of through-traffic lanes. Screening level noise analysis (screening analysis) typically represents a worst-case scenario with higher sound levels than would be predicted by detailed noise analysis and may be used to determine the need for additional analysis. For screening analysis purposes, the ARDOT noise policy requires determining noise levels within 4 dBA of the Noise Abatement Criteria (NAC) values. The screening analysis completed for the proposed project identified NAC Activity Category B and C noise sensitive receptors (receptors) within the project footprint, representing land uses such as residential areas, parks, and churches. The screening analysis threshold would therefore be 63 dBA for NAC Categories B and C. The screening analysis also determined if any noise impacts would occur due to a substantial increase, which occurs when a design year noise level is predicted to increase 10 dBA or more above the existing noise levels. The screening analysis is provided in **Appendix E**.

**Sound** is anything we hear, while **noise** is unwanted or undesirable sound. **Traffic noise** is a combination of the noises produced by vehicle engines, exhaust, and tires.

A-weighted decibels, abbreviated **dBA**, are an expression of the relative loudness of sounds in air as perceived by the human ear.

#### No Action Alternative

The No Action Alternative was evaluated using existing conditions for a segment of Hwy. 51. Fifty-three receptors are impacted (66 dBA or more) by the existing noise levels. It should be noted there are no 66 dBA impacted receptors along any of the build alternatives in future conditions except the I-30 portion of Alternative H. One hundred fifty-five (primarily residences but also includes several hotel receptors, one school, and one park) receptors would be affected by future conditions as they are located within the 63 dBA screening analysis threshold. No substantial increases ( $\geq 10$  dBA) are predicted. Noise level increases would be attributable to projected design year traffic volumes.

Access points such as driveways and intersections are present along Hwy. 51. For engineering reasons, it would therefore not be possible to construct an effective noise barrier accommodating these access points. Therefore, a detailed noise analysis is not recommended for the No Action Alternative.

#### West Bypass Alternatives

Based on the screening analysis results, no receptors outside of the proposed ROW are predicted to experience noise impacts for Alternatives A or B. For Alternative H, no receptors outside of the proposed ROW are predicted to experience noise impacts for the route on new location. However, for the portion of Alternative H north and south of Hwy. 51 (i.e., the collector and merge lanes along I-30), five residences are predicted to be affected by noise within a distance of 550 feet from the centerline under future build conditions. Seven residences were predicted to experience noise impacts ( $\geq 66$  dBA) within

a distance of 450 feet and nine residences are impacted under existing conditions.

### East Bypass Alternatives

Screening analysis results indicate no receptors outside of the proposed ROW are predicted to experience noise impacts for Alternatives F or G. For Alternative D, substantial increases ( $\geq 10$  dBA) are predicted for eight residences with noise levels ranging from 10.6 to 12.6 dBA above ambient measurements. One residence would be within the 63 dBA screening analysis threshold at a distance of 50 feet from the centerline under the future build conditions. As a result of potential substantial increases for eight receptors, a detailed noise analysis would be warranted if Alternative D is chosen as a Preferred Alternative.

### Interchange Alternatives

Screening analysis results indicate the proposed ROW encompasses the future build 63 dBA screening analysis threshold at a distance of 20 feet from the centerline. Therefore, no residences would be within the 63 dBA screening analysis threshold under the future build conditions and no substantial increases ( $\geq 10$  dBA) are predicted.

## 3.5 How would the project affect parks and recreation areas?

As shown in **Figure 17**, the Riverfront Park (Park) is located within the project study area. The Park is considered a Section 4(f) resource and is subject to protections. The Park also received Land *and Water Conservation Fund* (LWCF) Act funds in 1989, affording it additional protections under Section 6(f). Potential recreational impacts and Section 4(f) and Section 6(f) requirements are discussed below.

The Park is owned and maintained by the City of Arkadelphia and recreational features include an outdoor performance stage/amphitheater, a trail along the Ouachita River, and picnic tables.

### No Action Alternative

The No Action Alternative would have no effect on the Park.

### West Bypass Alternatives

Alternatives A, B, and H would have no effect on the Park.

**Section 4(f) resources** are those protected by Section 4(f) of the US Department of Transportation (USDOT) Act. Section 4(f) resources include publicly owned parks, national wildlife and refuge areas, and significant historic sites.

The **LWCF** is a federal program that provides funds for the acquisition of land and water for the benefit of all recreating Americans. It is prohibited to convert property acquired or developed with LWCF grant money to non-recreational purposes without approval from the National Park Service, which administers the LWCF.

Figure 17: Arkadelphia Riverfront Park





## East Bypass Alternatives

Alternative F would require approximately 1.0 acres of the west side of the Park to be converted to ROW. While impacts would be minimized to the extent possible during detailed design, there would still be impacts to this resource. This area within the Riverfront Park primarily functions as a portion of the Park's parking lot. The parking lot spaces within the proposed ROW would be permanently relocated outside of proposed ROW. Additionally, traffic along 1<sup>st</sup> St., especially by large trucks, would increase at the park. Increased truck traffic along 1<sup>st</sup> St. could hinder public access to the Park, which is currently only accessible by vehicle from 1<sup>st</sup> Street.

If Alternative F is identified as a Preferred Alternative, a Section 4(f) evaluation will be conducted to assess whether the project would harm the protected features, assets, or activities that make the Park important for recreation. Additionally, mitigation and National Park Service approval will be necessary to meet Section 6(f) requirements.

## Interchange Alternatives

Interchange Alternatives 1, 1A, 2, and 3 would have no effect on the Park.

## 3.6 How would the project area's visual quality be affected?

Overall, the project study area east of 26<sup>th</sup> St. is relatively flat while the area west of 26<sup>th</sup> St. has hilltops and valleys that vary significantly in elevation. Elevations range from approximately 180 to 350 feet above mean sea level along the West Bypass Alternatives and Interchange Alternatives and from 150 to 240 feet along the East Bypass Alternatives. Except for the urban areas surrounding Alternative D and the urban areas at the Interchange Alternatives, alternative corridors are mostly wooded. Long distance views are uncommon due to a combination of elevation uniformity (primarily to the east), the screening effect of structures (in urban areas), and the screening effect of wooded areas (in new location routes). There are no officially designated scenic areas or visually sensitive resources in the project area.

**Visual quality** impacts are determined by predicting viewer responses to changes in the project area's visual resources.

A visual impact assessment technical memorandum (including a scoping questionnaire and visual impact definitions) is provided in **Appendix F**.

**Visual resources** include features such as roadway elements like cross sections and construction materials, buildings and other manmade structures, and vegetation.

## No Action Alternative

The No Action Alternative would not result in changes to visual resources.

## West Bypass Alternatives

Project corridors of the West Bypass Alternatives primarily consist of undeveloped wooded areas. Most commercial areas within the project area lack landscaping and are not architecturally uniform in appearance. Additionally, several sections within the residential and commercial areas lack sidewalks, curbs, and gutters.



All the West Bypass Alternatives would result in temporary and minor impacts to visual resources during construction as well as permanent changes to travelers' and neighbors' visual resources by creating new infrastructure and clearing vegetation. However, this is not anticipated to be out of character with the existing views, as highways are already incorporated into the visual character of their locations and are compatible with surrounding land development principles. Nevertheless, impacts may be adverse for residential neighbors for whom views of the roadway would become prominent.

Project viewers include **travelers** (drivers, bicyclists, and pedestrians) with views from the road and **project neighbors** (residents and businesses) with views to the road.

Additionally, Alternative H would remove existing buildings within its immediate footprint and would also introduce a structure (I-30 overpass) that would be relatively higher than others in the surrounding area. These changes would alter the corridor's appearance to both travelers and project neighbors.

Adverse impacts to overall visual quality are not expected as a result of the West Bypass Alternatives. As applicable, local planning and development guidelines would be taken into consideration during final design to ensure visual compatibility of the Preferred Alternative.

### East Bypass Alternatives

Alternative D's project corridor consists primarily of residential and commercial areas. The project corridors of Alternatives F and G primarily consist of undeveloped wooded areas, some agricultural fields, and the UPRR. Alternative G also crosses the Ouachita River. Most commercial and residential areas within the corridors are similar to those described for the West Bypass Alternatives.

Overall temporary and permanent visual impacts resulting from the East Bypass Alternatives would be identical to those discussed for the West Bypass Alternatives regarding the introduction of new infrastructure and the removal of existing structures and vegetation. Additionally, Alternatives F and G would introduce structures that are relatively higher than others in the surrounding area, which would increase neighbors' views of them and expand travelers' views of the surrounding area. For Alternative F and D, several residences and businesses would be in close proximity to the proposed roadway. However, the proximities of residential and commercial structures would not exceed zoning codes. Depending on viewer exposure and sensitivity, these changes could be experienced as either beneficial, neutral, or adverse.

Adverse impacts to overall visual quality are not expected as a result of any of the East Bypass Alternatives. As applicable, local planning and development guidelines would be taken into consideration during final design to ensure visual compatibility of the Preferred Alternative.

### Interchange Alternatives

The project corridor of the Interchange Alternatives primarily consists of commercial areas. Temporary and permanent visual impacts resulting from the Interchange Alternatives are identical to the bypass alternatives with the exception that the Interchange Alternatives would not introduce any structures that are higher than others in the surrounding area. Features similar to the proposed improvements are already incorporated into the visual character of the corridor and are compatible with surrounding land

development principles. Nevertheless, impacts may be adverse for residential neighbors for whom views of the roadway would become prominent.

Adverse impacts to overall visual quality are not expected as a result of any of the Interchange Alternatives. As applicable, local planning and development guidelines would be taken into consideration during final design to ensure visual compatibility of the Preferred Alternative.

### 3.7 Will any historic properties be affected by the project?

Section 106 of the *National Historic Preservation Act of 1966* requires agencies to consider the effects of federal actions to historic properties. In compliance with Section 106 requirements, the FHWA is conducting ongoing consultation with the appropriate Native American tribes. Consultation with the State Historic Preservation Officer (SHPO) was also conducted under Section 106 and is provided in Appendix C.

Records were checked to determine if historic properties have been documented in the project area. Checked records include the archeological site files kept by the Arkansas Archeological Survey (ARAS) and the historic structure database kept by the Arkansas Historic Preservation Program (AHPP). The Architectural Resources Survey (ARS) prepared for this project determined there are no properties/standing structures listed or considered eligible for listing in the National Register of Historic Places (NRHP) within, or immediately adjacent to, the project footprint. The final archeological assessment for this project has not been finalized; however, the preliminary archeological assessment indicates two properties of interest are in the project area. One of the properties has been recommended not NRHP-eligible, while the eligibility of the other has not yet been determined.

**Cultural resources** include elements of the built environment (buildings, structures, or objects) or evidence of past human activity (archeological sites). Cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP) are defined as **historic properties**.

A Phase I cultural resources survey that includes shovel tests will be conducted for the Preferred Alternative once it is identified. The survey report documenting the results of the survey, quantifying impacts to historic properties, and stating recommendations will be submitted to the SHPO for review. If no historic properties are identified, a recommendation of no further work will be submitted to the SHPO. Should any of the properties be found eligible or potentially eligible for nomination to the NRHP, and avoidance is not possible, site-specific data recovery plans would be prepared, and data recovery would be carried out at the earliest practicable time. The ARS and additional information on historic properties is provided in **Appendix G**.

#### No Action Alternative

The No Action Alternative would have no impacts on historic properties.

#### West Bypass Alternatives

The two properties of interest described above are within the Alternative A footprint.

## East Bypass Alternatives

The two properties of interest described above are within the Alternative G footprint.

## Interchange Alternatives

Based on the ARS and preliminary checks with ARAS and AHPP, none of the Interchange Alternatives (1, 1A, 2, or 3) would have impacts on historic properties.

### 3.8 How would water resources, wetlands, streams, and floodplains be impacted?

The Arkansas Department of Health (ADH) public water supply database was reviewed to identify surface water intakes, wellheads, or associated protection areas in the project area. A wellhead protection area is associated with the Arkadelphia Waterworks in the project vicinity; however, the ADH indicated that the project does not present concerns. Impacts to this water resource are therefore not anticipated. If any permanent impacts to private drinking water sources resulted from this project, action would be taken to mitigate these impacts.

A review of waters and wetlands within the project area revealed the presence of three perennial streams (the Ouachita River, Mill Creek, and Little Deceiper Creek), several intermittent streams (unnamed tributaries to the above-listed perennial streams), and numerous emergent and forested wetlands. Floodplain impacts were assessed using Federal Emergency Management Agency (FEMA) data. **Figure 18** shows the preliminarily identified wetlands and streams, as well as the floodplains located in the project study area. A full wetland delineation will be conducted for the areas impacted by the Preferred Alternative upon identification. Additional information on the preliminary wetland assessment is provided in **Appendix H**.

For any of the build alternatives, most stream impacts are expected to be minimal; however, construction may result in the realignment of any streams located parallel to the alternatives. Compliance with the *Clean Water Act* (CWA) - United States Army Corps of Engineers (USACE) Section 404 permit program, is required for any stream impacts. Once the Preferred Alternatives are identified and funding is available for final design and ROW acquisition, a wetland delineation will be conducted and the appropriate Section 404 permit will be determined. Unavoidable impacts to streams and/or wetlands would be mitigated by using an approved stream and/or wetland mitigation bank with a proximity factor applied as the project is not within the service area of any mitigation banks.

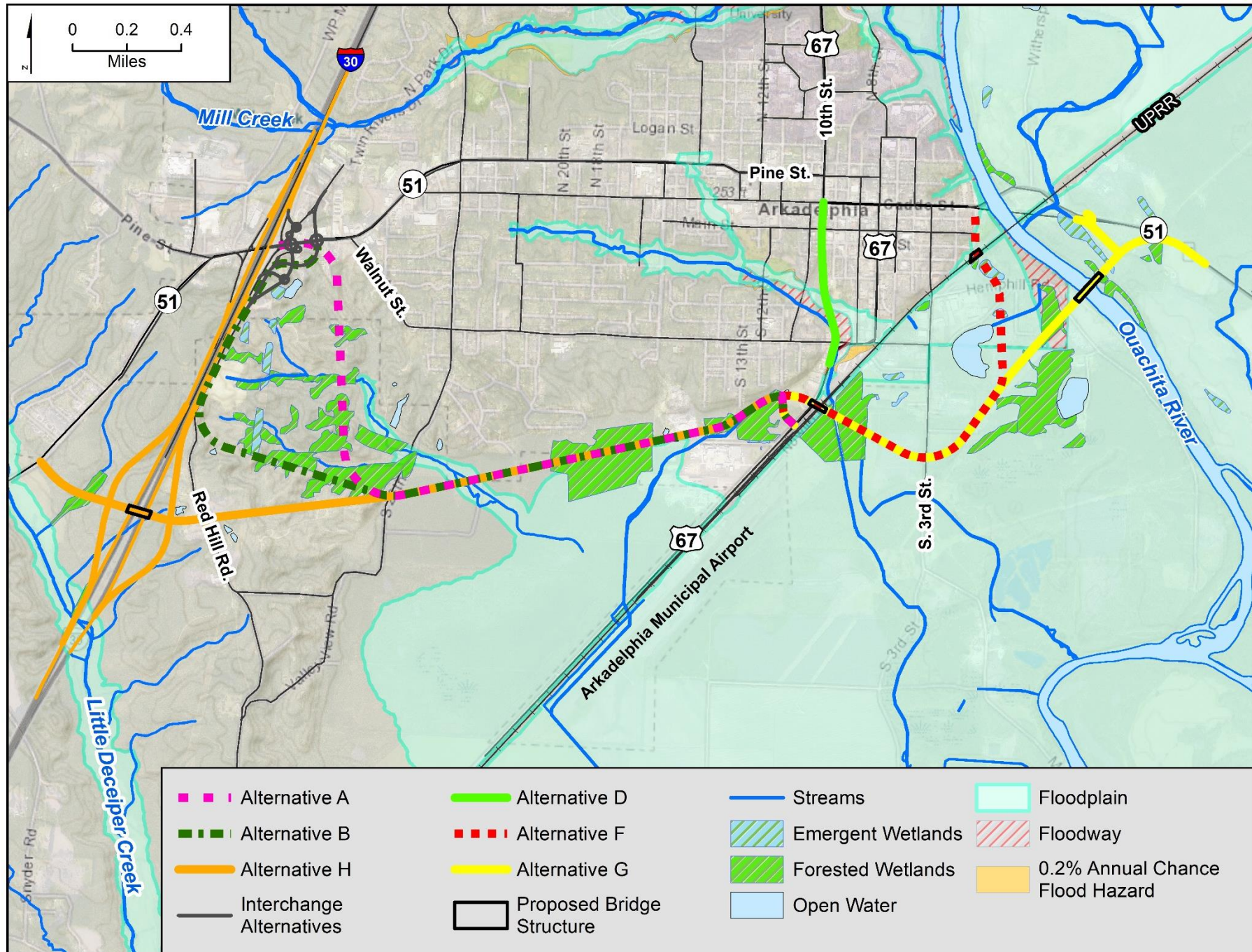
**Wetlands** are areas that can support vegetation adapted for life in wet soil conditions. Wetlands are protected under the *Clean Water Act* because they provide flood control, aid in water quality, and provide wildlife habitat.

**Parallel streams** are those that run parallel to the proposed roadway project. These streams are differentiated from perpendicular crossings because they could potentially incur significantly more impacts.

The ***Clean Water Act*** (CWA) is a federal regulation governing activities that could have harmful effects on the quality of the nation's water bodies. Section 404 of the CWA governs discharge of material into water bodies. Section 402 of the CWA governs the discharge of pollutants into water bodies. Section 401 of the CWA gives the states the authority to regulate the discharges that may affect water quality.



Figure 18: Wetlands, Streams, and Floodplains within Project Site





For any of the build alternatives, temporary impacts to water quality have the potential to occur during the construction phase of the project due to increased soil disturbance and associated runoff. Upon project completion and vegetation regrowth, water quality should return to pre-construction levels. All build alternatives will obtain coverage under the National Pollutant Discharge Elimination System (NPDES) general permit for Construction Activities. The provisions of this permit include implementing a Stormwater Pollution Prevention Plan (SWPPP) to minimize or prevent the discharge of pollutants during construction activities. Therefore, stormwater runoff would be controlled and monitored according to applicable federal regulations. Additionally, water quality regulations required by the Arkansas Department of Environmental Quality (ADEQ) will be implemented.

For any of the build alternatives, associated floodplain impacts would result in a no net rise of the floodplain elevation or affect water surface elevations.

**Table 5** summarizes the number of stream crossings and the total acreage of impacted wetlands and floodplains associated with each alternative.

**Floodplains** are areas that become covered by water in a flood event. A 100-year floodplain would be covered by a flood event that has a 1% chance of occurring (or being exceeded) each year, and is the category commonly used for insurance and regulatory purposes.

**Table 5: Wetland, Stream, and Floodplain Impacts**

Alternative and Location		Wetland Impacts	No. of Stream Crossings	Floodplain / Floodway Impacts
N/A	No Action	0 acres	0	0 acres
West Bypass	Alternative A	25.3 acres	5	6.2 acres
	Alternative B	23.2 acres	3	6.2 acres
	Alternative H	20.0 acres	12	10.5 acres
East Bypass	Alternative D	0 acres	1	2.4 acres
	Alternative F	7.2 acres	3	33.3 acres
	Alternative G	9.4 acres	3	49.6 acres
Interchange Alternative	Interchange 1	0 acres	0	0 acres
	Interchange 1A	0 acres	0	0 acres
	Interchange 2	0.2 acres	0	0 acres
	Interchange 3	0 acres	0	0 acres

## No Action Alternative

The No Action Alternative would not have wetland, stream, or floodplain impacts.

## West Bypass Alternatives

Under Alternative A, one of five stream crossings involves a parallel stream. Under Alternative B, one of three stream crossings involves a parallel stream. For Alternative H, three of its 12 stream crossings involve a parallel stream. Of the West Bypass Alternatives, Alternative H would cause the largest number of stream crossings and floodplain/floodway impacts and the least number of wetland impacts.

## East Bypass Alternatives

Alternative D requires crossing one parallel stream and incurs the fewest impacts to water resources compared to the other build alternatives. Alternative G involves crossing the Ouachita River and would require construction of a new span bridge. Approximately 1.3 miles upstream of the proposed bridge, the Ouachita River is considered an Ecologically Sensitive Waterbody by the ADEQ. Of the East Bypass Alternatives, Alternative D requires the fewest impacts, followed by Alternative F. Alternative G requires the greatest amount of impacts to water resources, with substantially more floodplain impacts than any other alternative.

## Interchange Alternatives

Interchange Alternatives 1, 1A, and 3 would require no wetland, stream, or floodplain impacts. Alternative 2 would impact 0.2 acre of wetlands but has no stream or floodplain impacts.

## 3.9 How would wildlife and protected species be affected by the project?

Undeveloped project areas primarily consist of deciduous and coniferous woodlands, scrub-shrub vegetation, cleared pastures or agricultural fields, and the Ouachita River. Numerous types of wildlife and their respective habitats occur throughout the project area and include aquatic, avian, forested, and open-land terrestrial species.

For federally-listed species, the U.S. Fish and Wildlife Service (USFWS) indicated that 11 threatened, endangered, or proposed threatened species have the potential to be present in or migrate through the project area. No critical habitats are present. Each species identified by USFWS as potentially occurring within the project area can be found in **Table 6** along with an overview of anticipated habitat impacts. The Arkansas Natural Heritage Commission (ANHC) provided information concerning the potential for species of concern to occur within the proposed project corridor. The habitat assessment and preliminary impacts analysis included in **Appendix I** provides detailed information regarding federally-listed species and ANHC species of concern. The USFWS Official Species List and correspondence with ANHC are also included in Appendix I.

An **endangered species** is one that is in danger of extinction throughout all or a significant portion of its range. Endangered species receive the highest level of protection.

A **threatened species** is one that is likely to become endangered in the near future.

**Table 6: Preliminary Impact Table for Federally-Listed Species**

Species	Preferred Habitat	Habitat Impacts Anticipated?									
		West Bypass			East Bypass			Interchange Alts.			
		Alt. A	Alt. B	Alt. H	Alt. D	Alt. F	Alt. G	Alt. 1	Alt. 1A	Alt. 2	Alt. 3
<b>Northern Long-eared Bat</b> ( <i>Myotis septentrionalis</i> )	Wooded areas	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Eastern Black Rail</b> ( <i>Laterallus jamaicensis ssp. jamaicensis</i> )	Wetlands	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	No
<b>Piping Plover</b> ( <i>Charadrius melodus</i> )	Sandbars	No	No	No	No	No	Yes	No	No	No	No
<b>Red Knot</b> ( <i>Calidris canutus rufa</i> )	Mudflats	No	No	No	No	No	No	No	No	No	No
<b>Red-cockaded Woodpecker</b> ( <i>Picoides borealis</i> , Endangered)	Pine Woodlands	Yes	Yes	Yes	No	No	No	No	No	No	No
<b>Ouachita Rock Pocketbook</b> ( <i>Arkansia wheeleri</i> )	Rivers	No	No	No	No	No	Yes	No	No	No	No
<b>Pink Mucket</b> ( <i>Lampsilis abrupta</i> )	Rivers	No	No	No	No	No	Yes	No	No	No	No
<b>Rabbitsfoot</b> ( <i>Quadrula cylindrica cylindrica</i> )	Streams / Rivers	No	No	No	No	No	Yes	No	No	No	No
<b>Spectaclecase</b> ( <i>Cumberlandia monodonta</i> )	Rivers	No	No	No	No	No	Yes	No	No	No	No
<b>Winged Mapleleaf</b> ( <i>Quadrula fragosa</i> )	Rivers	No	No	No	No	No	Yes	No	No	No	No
<b>American Burying Beetle</b> ( <i>Nicrophorus americanus</i> )	Native Vegetation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

For all build alternatives, suitable nesting habitat for migratory birds is present. Construction activities with the potential to affect migratory birds should occur between August 15 and March 31 to avoid the nesting season. Suitable habitat for non-migratory ground nesting birds is also present and construction should occur during the same time frame. Provided construction can be conducted within the non-nesting season, no adverse effects are anticipated to migratory birds.

Due to the proximity to the Ouachita River and the habitats within this area, it is likely that the Bald Eagle (*Haliaeetus leucocephalus*) inhabits the area. Bald Eagles are protected under the *Migratory Bird Treaty Act* and the *Bald and Golden Eagle Protection Act*. Prior to construction of any build alternative, the project area will be surveyed to ensure no nesting eagles are present or will be negatively impacted by the project.



Once the Preferred Alternatives are identified and funding is available for final design and ROW acquisition, consultation with the USFWS will occur to obtain clearance.

### No Action Alternative

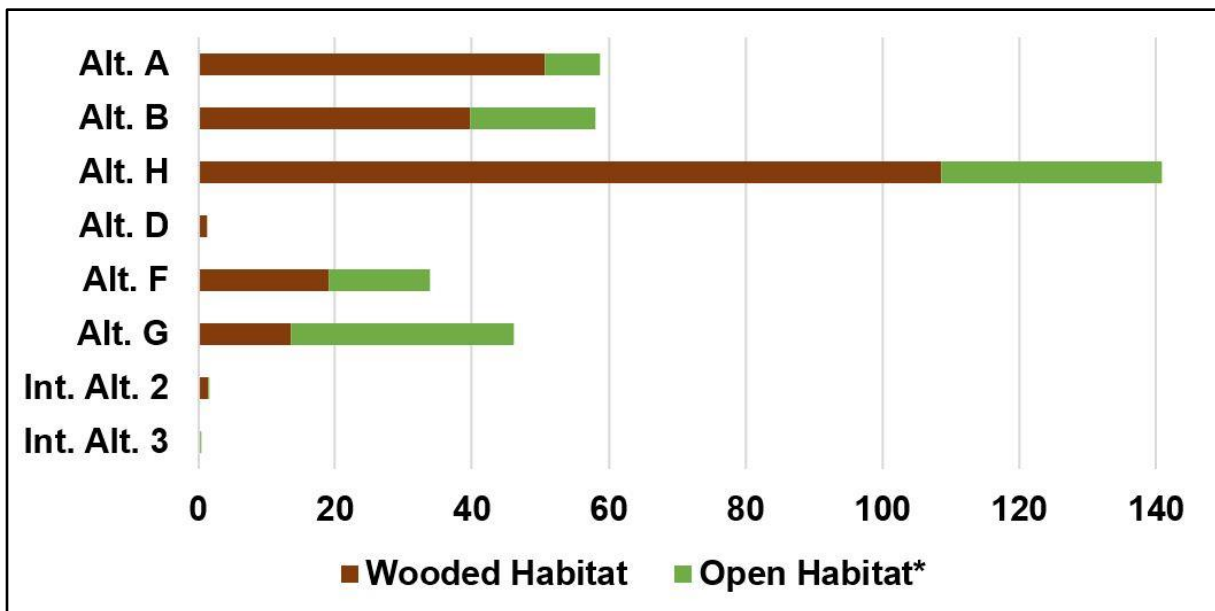
The No Action Alternative would have no effect on wildlife (including federally-listed species) or wildlife habitat.

### West Bypass Alternatives

All West Bypass Alternatives occur along new location to some extent and would, therefore, remove natural wildlife habitat. Because most terrestrial species would have some difficulty crossing the bypass, habitat fragmentation also would occur. As it requires the largest amount of disturbance to undeveloped land, Alternative H would remove and fragment the largest amounts of contiguous wildlife habitat, followed by Alternatives A and B. **Figure 19** compares the amount of wooded and open habitat that would be removed by each alignment based on 2016 National Land Cover Database (NLCD).

For federally-protected species, Alternatives A, B, and H, would each impact potentially suitable habitat of the following four species: Northern Long-eared Bat (NLEB), Eastern Black Rail, Red-cockaded Woodpecker, and the American Burying Beetle (Table 6). Foraging and roosting habitat for the NLEB is present within the project limits and the project appears to be within the NLEB consultation area. However, no known maternity roost trees or hibernaculum occur in Clark County based on the NLEB Consultation Area and Final 4(D) Rule Guidance document for Arkansas (USFWS, 2016). For all federally-listed species, USFWS concurrence/clearance will be obtained for the Preferred Alternative prior to construction.

**Figure 19: Acres of NLCD Habitat Types\* Impacted within each Build Alternative**



\*In addition to herbaceous areas, open habitat includes crops, hayfields, and pasturelands.

## East Bypass Alternatives

All East Bypass Alternatives occur along new location to some extent and would, therefore, remove natural wildlife habitat and fragment habitat. Alternative D would impact the least amount of wildlife habitat as it is entirely within city limits and existing habitat is minimal, already fragmented, and in poor condition. As it requires the largest amount of disturbance to undeveloped land, Alternative G would remove and fragment the largest amounts of contiguous wildlife habitat followed by Alternative F (Figure 19). Additionally, Alternative G requires temporary construction impacts to aquatic habitat due to the proposed bridge over the Ouachita River.

For federally-protected species, all East Bypass Alternatives would impact potentially suitable NLEB habitat (foraging and roosting, but no known maternity roost trees or hibernaculum) and the American Burying Beetle (Table 6). Additionally, Alternative F would impact potentially suitable habitat of the Eastern Black Rail (Table 6). Alternative G would impact the greatest number of species (nine total) due to the proposed bridge over the Ouachita River, which is within the known range of five federally-listed threatened and endangered freshwater mussels. In August 2011, ARDOT personnel conducted a freshwater mussel survey within the Ouachita River to determine the presence or absence of listed mussel species prior to the 2018 construction of the Hwy. 51 bridge. The survey occurred approximately 0.45 mile upstream of the Alternative G proposed bridge. No threatened or endangered species were collected during the 2011 survey and it was determined that the Hwy. 51 bridge construction would not adversely affect threatened or endangered mussel species due to the overall poor quality of the habitat within the survey area. For all federally-listed species, USFWS concurrence/clearance will be obtained for the Preferred Alternative prior to construction.

## Interchange Alternatives

The Interchange Alternatives are not anticipated to substantially alter habitat through removal or fragmentation as they are entirely within city limits and existing habitat is minimal, already fragmented, and in poor condition. For federally-protected species, Interchange Alternatives 1, 1A, and 3 are anticipated to impact potentially suitable habitat of two species, while Interchange Alternative 2 is anticipated to impact potentially suitable habitat of three species (Table 6).

### 3.10 Would any Prime Farmland be impacted by the project?

Prime Farmland and farmland of statewide importance is present within the project area, some of which is currently used for silviculture (west of Hwy. 67) or being farmed (east of the Ouachita River). Appendix C provides a copy of the Farmland Conversion Rating Form that was submitted to and received from the Natural Resources Conservation Service. **Figure 20** shows the amount of prime farmland or farmland of statewide importance to be converted by each alternative.

**Prime farmland** is defined by the U.S. Department of Agriculture as land that has the best combination of characteristics for producing crops. In some areas, land that does not meet the criteria for prime or unique farmland is considered to be **farmland of statewide importance** and may include lands that are nearly prime farmland and produce high crop yields when treated and managed using acceptable farming methods.

### No Action Alternative

Since new ROW would not be needed, Prime Farmland would not be acquired or converted under the No Action Alternative.

### West Bypass Alternatives

Alternative H would convert the largest amount of prime farmland and farmland of statewide importance to transportation uses, while Alternative B would convert the least among the West Bypass Alternatives.

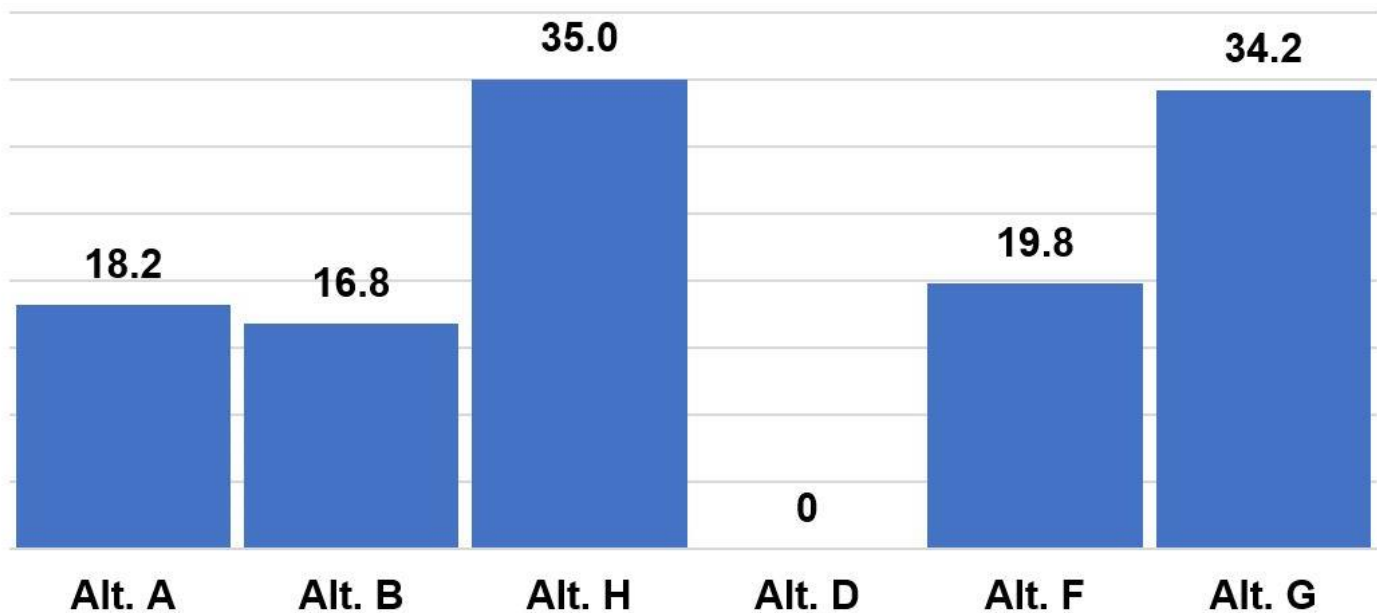
### East Bypass Alternatives

Alternative G would convert the largest amount of prime farmland and farmland of statewide importance to transportation uses for the East Bypass Alternatives, followed by Alternative F (Figure 20). Alternative D does not contain prime farmland as it is entirely within city limits.

### Interchange Alternatives

Interchange Alternatives 1, 1A, 2, and 3 are entirely within city limits and, therefore, do not contain prime farmland.

**Figure 20: Acres of Prime Farmland or Farmland of Statewide Importance to be Converted**





### 3.11 Are there any hazardous materials, wastes, or contaminated sites in the project area?

A site assessment and database search of ADEQ and Environmental Protection Agency (EPA) records were performed to determine if any hazardous materials were located in the project area. As shown on **Figure 21**, one historical underground storage tank (UST), one UST with a previous leaking underground storage tank (LUST) case that currently has active aboveground storage tanks (ASTs), and two USTs with previous LUST cases that currently have active USTs are located in the immediate project study area. Additionally, one electrical substation is present in the project vicinity. Two of the USTs are located near the Interchange Alternatives just east of the I-30/Hwy. 51 interchange and are associated with current gasoline stations (Exxon and Citgo). Summarized below are potential impacts under each alternative.

A **hazardous material** is any item or chemical that can cause harm to people, plants, or animals when released into the environment

#### No Action Alternative

The No Action Alternative would not have any effects on hazardous material or waste sites.

#### West Bypass Alternatives

None of the West Bypass Alternatives come into contact with any known hazardous materials, wastes, or contaminated sites. However, all West Bypass Alternatives cross an unknown fill area located southwest of the terminal end of S. 15<sup>th</sup> St. and on property owned by Siplast Incorporated.

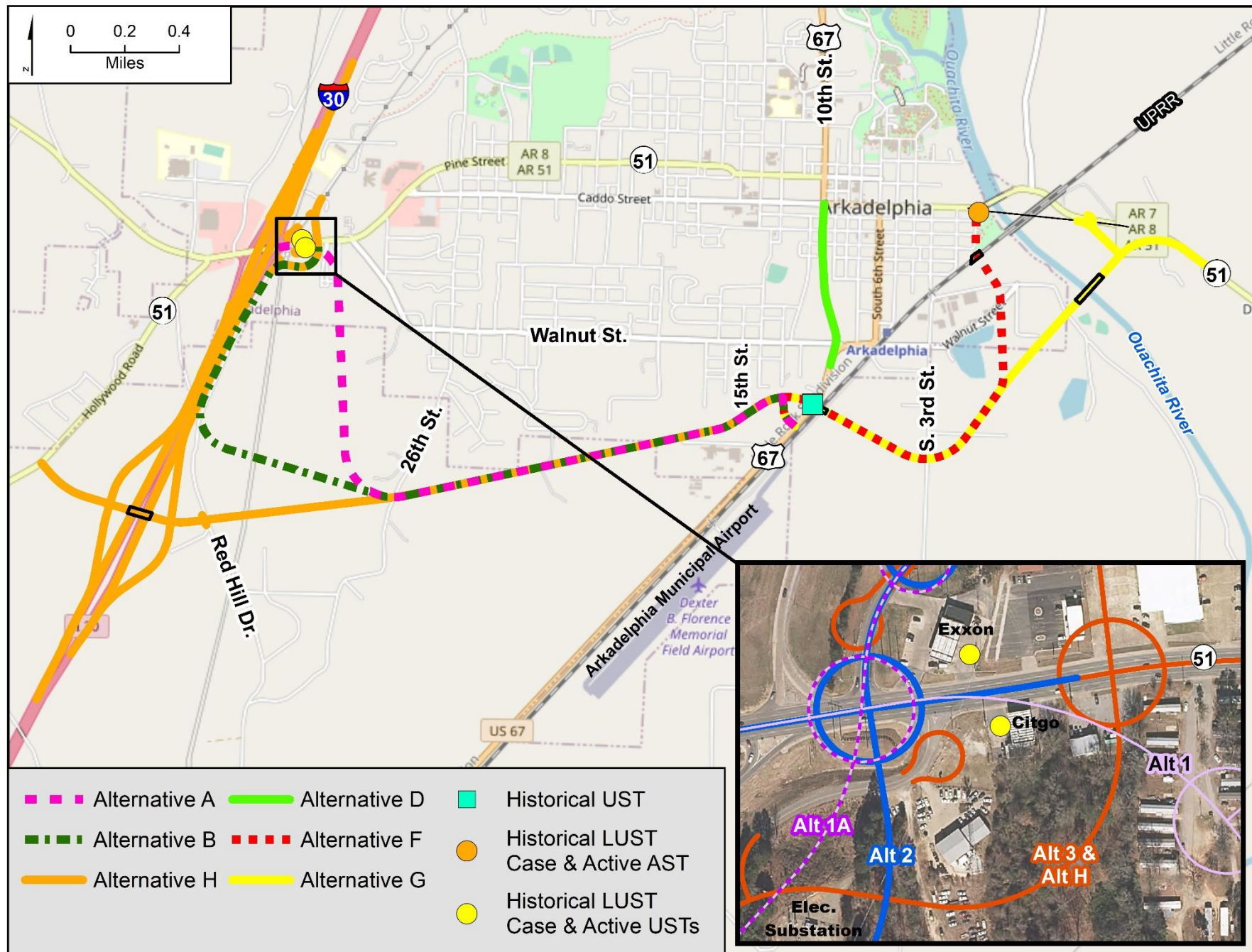
#### East Bypass Alternatives

Alternative F would result in impacts to two hazardous materials/waste sites: an historical UST site and a site with a historical LUST case. The historical UST site, shown in the photograph below, is adjacent to Hwy. 67 and has no associated ADEQ permitting information but appears to have once functioned as a service station. This building is one of the relocations associated with Alternative F. The historical LUST site, which is located southeast of the intersection of Hwy. 51 and 1<sup>st</sup> St., had a confirmed leak in 1998 and a no further action letter issued by ADEQ the following year. This site historically had several USTs and currently has five aboveground storage tanks (ASTs). No building structures on this site would be relocated, but the proposed ROW for Alternative F does encroach onto the property so some property acquisition would be required.



Alternative G would only impact the historical UST site, which is one of the relocations associated with its alignment.

Figure 21: Hazardous Material and Hazardous Waste Sites



## Interchange Alternatives

Alternatives 1, 1A, and 2 would result in impacts to an Exxon gasoline station with active USTs that also has a previous LUST case recorded. This site is also a relocation impact associated with each of these alternatives. Based on ADEQ available records, it is unknown if the Exxon's LUST case resulted in environmental contamination, but a no further action letter was issued by ADEQ. The Exxon site currently has three active USTs with capacities ranging from 4,000-12,000 gallons; closure and/or removal of these tanks would be required.

Alternative 1 would additionally impact a Citgo (formerly Shell) gasoline station with active USTs that also has a previous LUST case recorded. This site is also a relocation impact associated with this alternative. Based on ADEQ available records, the extent of environmental contamination resulting from the leak is unknown, but a no further action letter was issued by ADEQ. The Citgo site currently has two active USTs with capacities ranging from 6,000-8,000 gallons and one 6,000-gallon UST that is temporarily out of service. Closure and/or removal of all three of these tanks would be required.

Alternative 3 would require no gas station relocations or tank closures.

No impacts to the electrical substation, which has the potential for PCB (polychlorinated biphenyls) contamination to be present, are anticipated by any Interchange Alternative.

For the build alternatives involving LUST sites, it is possible that future excavations could encounter pockets of subsurface contamination in or near LUST sites. Similar risk of contamination is present with any facility historically or currently associated with gasoline or service stations. All USTs would be removed by an ADEQ licensed contractor qualified for UST removal operations. If hazardous materials are identified, observed, or accidentally uncovered by any ARDOT personnel, contracting company(s), or state regulating agency, work would be halted, and the appropriate entities would be notified. Prior to resuming construction, the type of contaminant and extent of contamination would be identified. If necessary, a remediation and disposal plan would be developed. All remediation work would be conducted in conformance with the ADEQ, EPA, and Occupational Safety and Health Administration (OSHA) regulations.

Additionally, an asbestos survey by a certified asbestos inspector would be conducted on each building identified for demolition. If the survey detects the presence of any asbestos-containing materials, plans would be developed for the safe removal of these materials prior to demolition. All asbestos abatement work would be conducted in accordance with ADEQ, EPA, and OSHA asbestos abatement regulations.

### 3.12 Does the project have any indirect effects?

All build alternatives would have the potential for stormwater runoff due to ground disturbance during construction and, therefore, may temporarily cause indirect impacts to surface water quality. Those alternatives that are additionally impacting streams and/or wetlands (all but Interchange Alternatives 1, 1A, and 3), would have a greater potential for these indirect

**Indirect effects** are reasonably foreseeable effects that may be caused by the project but would occur in the future or outside of the project area.



impacts. These temporary impacts would likely include increased rates of sedimentation in some areas or even sources of surface water pollutants such as petroleum or related pollutants from construction vehicles. However, best management practice (BMP) measures would be implemented as part of the design and construction of the bypass to avoid and/or reduce indirect impacts to surrounding resources resulting from stormwater runoff.

Additionally, indirect impacts to land use and other growth effects related to induced changes in the pattern of land use or population density may occur with all the build alternatives. An analysis of induced growth effects was conducted and city planners/officials for the City of Arkadelphia (City) and Clark County were interviewed. The County stated they thought the project would induce development in general, but they did not identify any reasonably foreseeable projects or have further comment. The City's comments are incorporated in the below sections and provided in **Appendix J**.

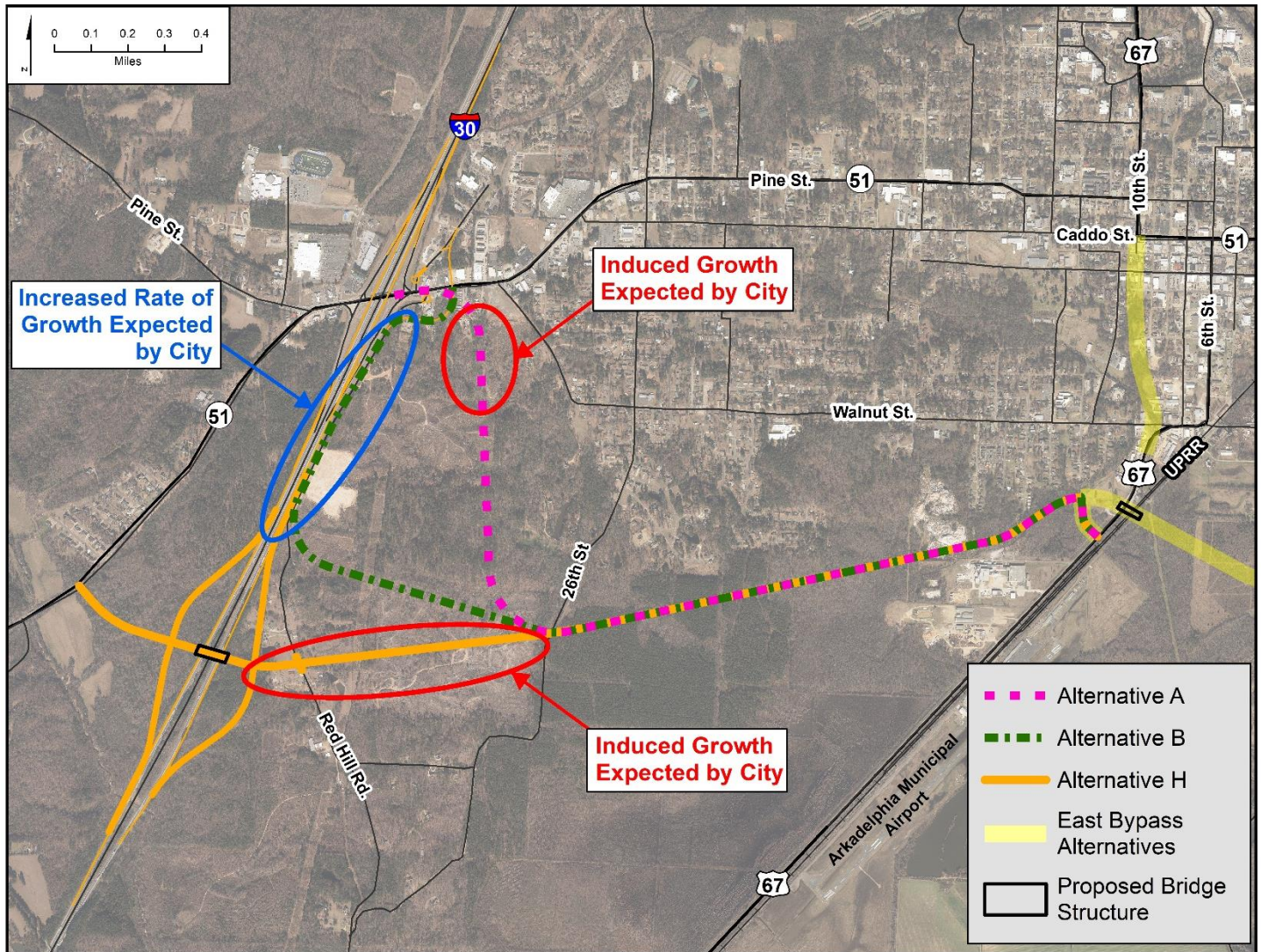
**Induced growth impacts** are changes in the location, magnitude, or pace of future development that result from changes in accessibility caused by the project. An example of an induced growth effect is commercial development occurring around a new interchange and the environmental impacts associated with this development.

### **No Action Alternatives**

The No Action Alternative would not result in any indirect effects.

### **West Bypass Alternatives**

Although all bypass alternatives have the potential to increase accessibility at each of their terminal ends, not all of these areas can accommodate induced growth as numerous areas are already significantly developed and there is not a strong market demand for development given the city's relatively flat population growth. However, the City does expect the proposed project to result in induced growth at three locations (Error! Reference source not found.), one of which would be increasing the growth rate of an already growing area. Induced growth associated with Alternative H is expected near the proposed alignment's connection with Red Hill Road. Sensitive resources in this area that would be impacted include aquatic features (approximately 1 acre of ponds) and wildlife habitat (36 acres of woodlands and 4 acres of open habitat). Induced growth associated with Alternative A is expected near the north terminal end of the alignment and sensitive resources in this area that would be impacted include 14 acres of wooded habitat. Development along Alternative B near I-30 and Red Hill Rd. is expected independently of the proposed project (per City), but it is believed the proposed project would increase the rate of development in that area. Urban development (resulting from induced growth) is associated with temporary decreases in water quality, commonly due to increased rates of sedimentation from stormwater runoff from disturbed soils during construction. However, significant impacts to aquatic features are not anticipated as BMPs related to minimization of erosion and sedimentation would be required for future developments. Additionally, induced growth impacts are not expected to substantially impact wildlife habitat (including federally-protected species) as undeveloped land is abundant in the region and future projects would occur within areas immediately adjacent to already-urbanized areas and further habitat fragmentation would be minor.

**Figure 22: Areas Expected by City to Experience Induced Growth as a Result of the Project**

### East Bypass Alternatives

Indirect impacts to land use and other growth effects related to induced changes in the pattern of land use or population density were not identified for East Bypass Alternatives.

### Interchange Alternatives

Interchange Alternatives 1, 1A, and 3 would not result in any indirect effects to water quality. Indirect impacts to land use and other growth effects related to induced changes in the pattern of land use or population density may occur for any of the Interchange Alternatives, but these indirect impacts are primarily associated with the above-described West Bypass Alternatives rather than Interchange Alternatives.



### 3.13 Does the project have any cumulative impacts?

The No Action Alternative would not result in any cumulative effects.

For the build alternatives, cumulative impacts to aquatic features (wetlands and streams) and wildlife habitat (including federally-listed species) are analyzed. Direct impacts to other resources were not considered substantial enough to warrant a cumulative impacts analysis. For example, although floodplains are identified to have direct impacts, the effects are not considered substantial since no net rise in the floodplain would occur and no building structures are proposed. Additionally, although indirect and direct land use impacts are anticipated, undeveloped areas represent a large portion of the study area, land resources are not considered a declining resource, and the proposed project is not incompatible with current zoning. In addition to the direct and indirect impacts considered, Appendix J lists other actions and provides an assessment of impacts resulting from those other actions.

**Cumulative impacts** are defined as the impact on the environment which results from the incremental direct and indirect impacts of the proposed 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 action (CFR 40 §1508.7).

#### Aquatic Features

The resource study area (RSA) for the cumulative analysis for water resources was delineated using the 12-digit hydrologic unit code (HUC12) watershed unit. Based on USFWS National Wetlands Inventory (NWI) data, an estimated 680 acres of streams and 670 acres of wetlands and ponds are found in the RSA. These numbers are likely lower than the actual wetlands acres. Many of the wetlands and streams within undeveloped areas of the RSA are in good condition while those adjacent to or within Arkadelphia are typically more degraded due to human-effects such as channelization. As summarized in Section 3.8, direct impacts to aquatic features could total to approximately 35 acres of wetland impacts and up to 16 stream crossings depending on the combination of alternatives selected (for an estimated total of 36 acres). Indirect impacts described in Section 3.12 include up to 1 acre of impact to ponds. The direct and indirect impacts to aquatic features equate to an estimated 37 acres of impacts to water resources. These impacts combined with an additional 2-acre impact of aquatic features from other actions is anticipated within the RSA. This results in an estimated cumulative impact to 39 acres of aquatic features, which is approximately 0.1% of the total acreage for water resources found within the RSA.

#### Wildlife Habitat

The cumulative analysis for wildlife habitat utilized the same RSA identified for aquatic features as this RSA includes several diverse biotic communities and is sufficiently large-enough to encompass the home range of the majority of wildlife species utilizing the area. Based on the NLCD for 2016 (most recent year available), an estimated 52% of the RSA is wooded and 34% is open habitat (with the remaining 14% developed). These numbers are likely higher than the actual habitat present given the data is four years old and intended to be approximations. Much of the wildlife habitat in rural areas is in good condition while those adjacent to Arkadelphia and major roadways are more fragmented and of poorer quality (as contiguous habitats are generally of higher quality than fragmented sites). Direct



impacts to wildlife resources summarized in Section 3.9, could total to approximately 195 acres of habitat impacts depending on the combination of alternatives selected. Indirect impacts described in Section 3.12 include up to 54 acres of habitat impacts. In addition to these direct and indirect impacts, Appendix J lists other actions and provides an assessment of impacts resulting from those other actions. The project's direct and indirect impacts to wildlife habitat equate to an estimated 249 acres. Additionally, an estimated 36 acres of habitat within the RSA due to other actions is anticipated to be impacted. This results in an estimated cumulative impact to 285 acres of wildlife habitat, which is approximately 1.2% of the total acreage of undeveloped land within the RSA.

### **Cumulative Impact Conclusion**

For both of the above-described resources, minimization and mitigation for impacts are expected. The Arkadelphia Bypass and presumably any other action using federal funding would comply with the ESA and with the CWA as it relates to stormwater (Section 402) and point-source (Section 404) discharges. While substantial impacts to wetlands can result in wildlife habitat loss and habitat fragmentation and may limit the ability to reconstruct and repair wetlands (Dahl, 2011), the above-discussed impacts to water resources and wildlife habitat are considered minor compared to the amount of each resource that remains. Additionally, as the proposed project and the reasonably foreseeable projects occur within areas immediately adjacent to already-urbanized areas or adjacent to a roadway, further habitat fragmentation would be minor. Thus, for the above-described reasons, coupled with the use of construction BMPs, substantial cumulative impacts to water resources and wildlife habitat are not expected to influence other areas of the watershed.

## **3.14 What resources are either not present or not affected?**

### **Air Quality**

The proposed project is located within an area designated by the EPA as being in attainment for all the National Ambient Air Quality Standards (NAAQS). There may be temporary, localized impacts to surrounding residential or commercial communities during construction of the project due to emissions from construction equipment. These air quality impacts are considered negligible. There are no air quality impacts associated with the No Action or the build alternatives.

### **Landforms and Geology**

The landforms and geological resources of the area would not be impacted by the proposed project.

### **Wild and Scenic Rivers**

No Wild and Scenic Rivers or other federal or state regulated waterbodies would be impacted by the proposed project.

## Chapter 4 – Results and Recommendations

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*This chapter summarizes environmental analysis results and recommendations.*

### 4.1 What are the results of this EA?

**Table 7** and **Table 8** summarize natural and social environmental impacts of the alternatives for comparison purposes. These tables also include public comments and city preferences. Each of the build alternatives would provide beneficial improvements to mobility and safety within the study area, and all would similarly affect land use. None of the build alternatives would have permanent adverse impacts to the overall visual quality of the project area. Impacts to historic properties are unknown at this time but are addressed in Section 3.7.

Overall, the environmental analysis of the proposed project did not identify any significant impacts to the natural and social environment resulting from the No Action Alternative or any of the build alternatives. All build alternatives address the purpose and need of the project. The alternative identified as the Preferred Alternative will be a combination of an East Bypass, a West Bypass, and an Interchange Alternative. The Preferred Alternative will demonstrate a balance between best addressing the purpose and need and requiring the least impacts.

### 4.2 What commitments have been made?

The ARDOT's standard commitments regarding relocation procedures, hazardous waste abatement, cultural resources discovery, water quality impact controls, and revegetation have been made for this project. They are as follows:

- All land acquisitions and relocation assistance will comply with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* of 1970. A residential relocation plan for the Preferred Alternative will be required prior to any acquisition of property. A review of sufficient replacement housing within the City of Arkadelphia should be included in a relocation plan prior to acquisition.
- If hazardous materials, unknown illegal dumps, or USTs are identified or accidentally uncovered by ARDOT personnel or its contractors, the type and extent of the contamination will be determined according to the ARDOT's response protocol. In cooperation with the ADEQ, appropriate remediation and disposal methods will be determined.
- An asbestos survey will be conducted by a certified asbestos inspector on each building slated for acquisition and demolition. All detected asbestos-containing materials will be removed prior to demolition in accordance with ADEQ, EPA, and Occupational Health and Safety regulations.

**Table 7: Summary of Impacts for Bypass Alternatives**

Resource Category Impacted	No Action	West Bypass Alternatives			East Bypass Alternatives		
		Alt. A	Alt. B	Alt. H	Alt. D	Alt. F	Alt. G
ROW Cost <sup>1</sup>	\$0	\$93,050	\$117,120	\$3,178,200	\$1,965,120	\$377,750	\$191,700
Construction Cost <sup>2</sup>	\$0	\$10.6	\$12.5	\$46.4	\$3.8	\$10.4	\$18
Total Cost <sup>2</sup>	\$0	\$10.7	\$12.6	\$49.6	\$5.8	\$10.8	\$18.2
Alternative Length (miles)	0	2.5	2.9	3.0	0.6	1.8	2.4
Total ROW Required (acres)	0	56.0	63.7	141.5	5.3	29.1	38.0
Residential Relocations	0	0	0	6 <sup>†</sup>	4	3	1
Business Relocations	0	0	0	6	10	2	2
Total Relocations Required	0	0	0	12 <sup>†</sup>	14	5	3
Low-Income Areas Present	0	0	0	1	1	1	0
Noise (# affected of receivers)	155	0	0	22	8	0	0
Park Impacts	0	0	0	0	0	1	0
Wetland Impacts (acres)	0	25.3	23.2	20.0	0	7.2	9.4
Stream Crossings (number)	0	5	3	12	1	3	3
Floodplains/Floodway (acres)	0	6.2	6.2	10.5	2.4	33.3	49.6
T&E Species Affected <sup>3</sup>	0	4	4	4	2	3	10
Farmland Present (acres)	0	18.2	16.8	35.0	0	19.8	34.2
Known HazMat Sites	0	0	0	0	0	2	1
Bypass Operations (2040 vpd)	N/A	1,600	1,600	2,200	3,000	1,200	1,100
Interchange LOS <sup>4</sup>	N/A	N/A	N/A	A / A	N/A	N/A	N/A
Public Comment (#pro/#con)	N/A	27 / 10	24 / 9	N/A	29 / 12	13 / 16	20 / 13
City Preference	N/A	1 <sup>st</sup>			1 <sup>st</sup>		

**FOOTNOTES**

<sup>1</sup> Estimated cost in 2019 dollars.

<sup>2</sup> Estimated cost in millions of 2019 dollars.

<sup>3</sup> T&E Species Affected” refers to the number of federally-protected species that have potentially suitable habitat impacted by the project.

<sup>4</sup> Level of Service (LOS) in 2040 at Hwy.

51/Professional Park Dr. intersection for a signal / roundabout. LOS range from A (best operating conditions from traveler’s perspective) to F (worst conditions).

<sup>†</sup> Includes homes located at Cox Mobile Manor.



**Table 8: Summary of Impacts for Interchange Alternatives**

Resource Category Impacted	No Action	Hwy. 51 Interchange Alternatives			
		Alt. 1	Alt. 1A	Alt. 2	Alt. 3
ROW Cost <sup>1</sup>	\$0	\$2,678,700	\$668,000	\$746,250	\$2,656,000
Construction Cost <sup>2</sup>	\$0	\$8.2	\$5.9	\$9.6	\$4.8
Total Cost <sup>2</sup>	\$0	\$10.9	\$6.6	\$10.3	\$7.5
Alternative Length (miles)	0	N/A	N/A	N/A	N/A
Total ROW Required (acres)	0	6.1	1.3	3.4	5.3
Residential Relocations	0	18 <sup>†</sup>	0	0	3 <sup>†</sup>
Business Relocations	0	4	1	1	5
Total Relocations Required	0	22 <sup>†</sup>	1	1	8 <sup>†</sup>
Low-Income Areas Present	0	1	0	0	1
Noise (# affected of receivers)	0	0	0	0	0
Park Impacts	0	0	0	0	0
Wetland Impacts (acres)	0	0	0	0.2	0
Stream Crossings (number)	0	0	0	0	0
Floodplains/Floodway (acres)	0	0	0	0	0
T&E Species Affected <sup>3</sup>	0	2	2	3	2
Farmland Present (acres)	0	0	0	0	0
Known HazMat Sites	0	2	1	1	0
Traffic Operations (2040 vpd) <sup>4</sup>	N/A	26,000	26,000	26,000	23,500
LOS at Key Intersection <sup>5</sup>	N/A	B / A	B / A	B / A	B / A
Public Comment (#pro/#con)	N/A	12 / 17	N/A	15 / 11	11 / 17
City Preference	N/A				1 <sup>st</sup>

**FOOTNOTES:**

<sup>1</sup>Estimated cost in 2019 dollars.

<sup>2</sup>Estimated cost in millions of 2019 dollars.

<sup>3</sup>"T&E Species Affected" refers to the number of federally-protected species that have potentially suitable habitat impacted by the project.

<sup>4</sup>Estimated vehicles per day (vpd) in 2040 at Hwy. 51/Professional Park Dr. intersection.

<sup>5</sup>Level of Service (LOS) in 2040 at Hwy. 51/Professional Park Dr. intersection for a signals/roundabout. LOS range from A (best operating conditions from traveler's perspective) to F (worst conditions).

<sup>†</sup> Includes homes located at Cox Mobile Manor.

- A structure survey to determine eligibility for inclusion in the NRHP and a Phase I cultural resources survey that includes shovel tests will be conducted for the Preferred Alternative. A report documenting the survey results and recommendations will be prepared and submitted for SHPO review. Should any of the sites be determined as eligible or potentially eligible for nomination to the NRHP and avoidance is not possible, site-specific data recovery plans would be prepared, and data recovery would be carried out at the earliest practicable time. All borrow pits, waste areas, and work roads will be surveyed for historic properties when locations become available.
- A formal wetland delineation on the Preferred Alternative will be conducted and submitted to the USACE and the appropriate Section 404 permit will be determined at that time.
- Project construction will be in compliance with all applicable CWA, as amended, requirements. This includes obtaining Section 401 Water Quality Certification; Section 402 National Pollutant Discharge Elimination Permit; and Section 404 Permit for Dredged or Fill Material.
- Stream and wetland mitigation will be offered at an approved mitigation bank site with a proximity factor applied as the project is not currently within the service area of any mitigation banks with available credits. The mitigation ratio will be approved during the Section 404 permitting process.
- A Water Pollution Control Special Provision would be incorporated into the contract to minimize potential water quality impacts.
- Appropriate action will be taken to mitigate any permanent impacts to private drinking water sources should they occur due to this project.
- A wildflower seed mix will be included in the permanent seeding for the project.
- Clearance/concurrence from USFWS regarding federally-protected species will be obtained for the Preferred Alternative prior to construction.

### **4.3 Is the NEPA process finished?**

If this EA is approved by the FHWA for public dissemination, a Location Public Hearing would be held. After a review of comments received from citizens, public officials, and public agencies, the Preferred Alternatives will be identified. Detailed design to 60% level and additional environmental studies such as Cultural Resource Surveys and noise barrier analysis will be completed, as needed. Once these additional efforts are completed, a Design Public Hearing will be held. After a review of comments received from citizens, public officials, and public agencies a FONSI document would be prepared and submitted to the FHWA or the project would be recommended for an EIS study if significant, unmitigable impacts are identified. If the FHWA issues a FONSI, it would identify the Selected Alternative and conclude the NEPA process.

## Chapter 5 – References

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