ENVIRONMENTAL ASSESSMENT

AHTD Job Number 061190
FAP Number HPP2-3745(1)
I-40 Interchange (Maumelle)(F)
Pulaski County

AUGUST 2011

Prepared by:
SAIC Energy, Environment & Infrastructure, LLC
1701 Centerview, Suite 207
Little Rock, AR 72211
501.228.4420

SAIC
From Science to Solutions

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Submitted Pursuant to 42 U.S.C. 4332(2)(C)
By the
U.S. Department of Transportation
Federal Highway Administration
Arkansas State Highway and Transportation Department

August 2011

August 29 2011
Date of Approval

Randal Looney
Environmental Specialist
Federal Highway Administration

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1.0 PROJECT DESCRIPTION

The City of Maumelle is proposing a new interchange on Interstate 40 (I-40) to provide an additional access point into Maumelle. This Environmental Assessment (EA), which evaluates the environmental impacts associated with this project, has been prepared in conformance to the guidelines of the National Environmental Policy Act (NEPA) and the Federal Highway Administration (FHWA), as Maumelle anticipates using Federal-aid highway funds for the project.

Maumelle has long recognized the need for an additional access to I-40. The first study initiated by the city began in 1991 in consultation with the Arkansas State Highway and Transportation Department (AHTD) and the FHWA. At that time, the city proposed a new access by extending Carnahan Drive from Highway 100, interchanging with I-40 at the former rest area location, and continuing eastward to intersect with Highway 365 just east of I-40. The AHTD in consultation with the FHWA conducted a second Maumelle / Oak Grove I-40 interchange feasibility study in October 1996. Pulaski County updated this report in May 2003 outlining the future traffic demand and the inadequacy of the existing interchange ramps at I-430 / Highway 100 to handle the future traffic while also justifying the need for a third access from I-40.

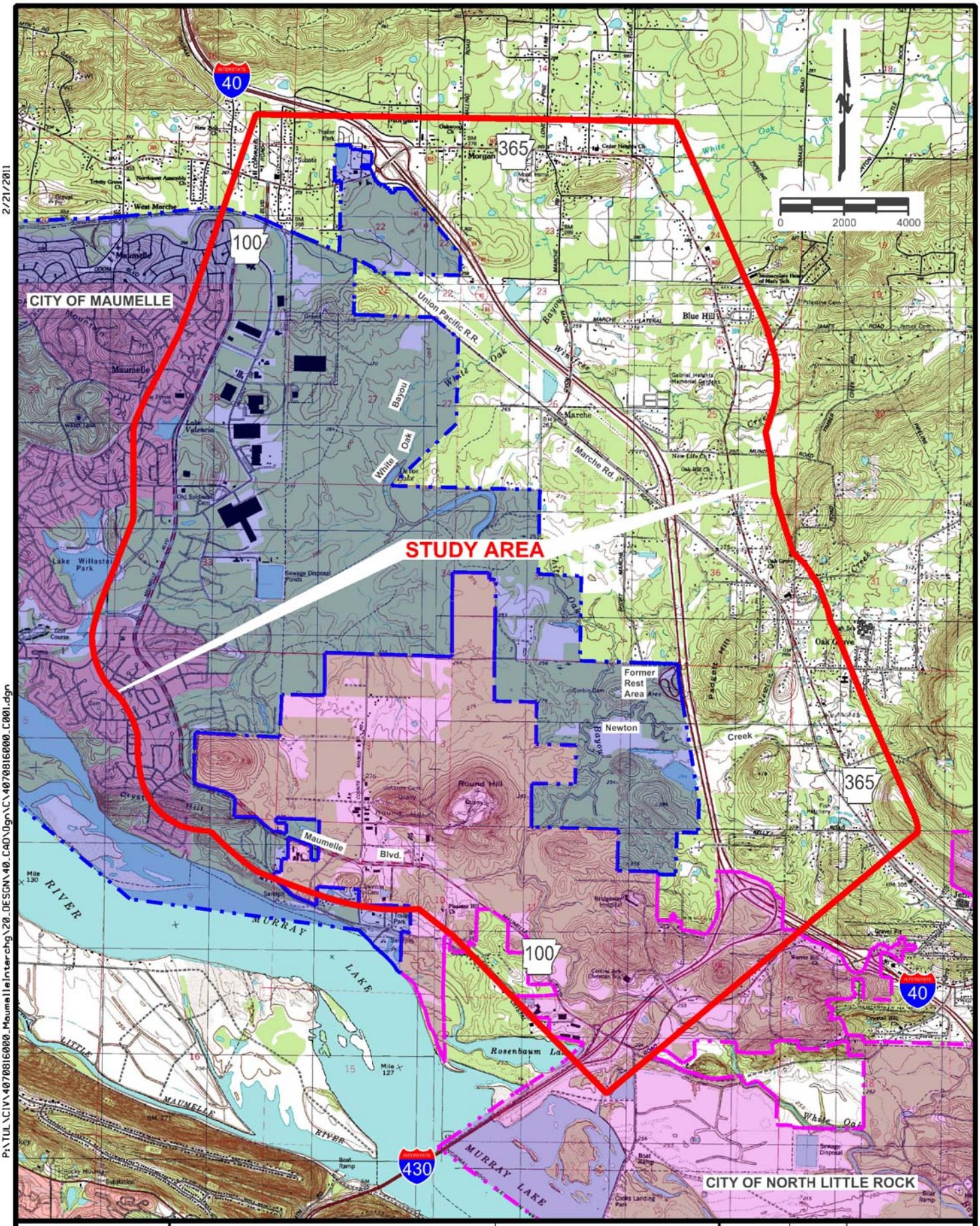
On August 10, 2005, Federal Public Law 109-59, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users included two specific monetary earmarks for Maumelle to begin the process to create a third entrance from I-40.

This EA evaluates a new connection from Highway 100 (also referred to as Maumelle Boulevard) and the densely-settled areas of the mid-section of Maumelle eastward to I-40 between the Marche Road overpass of I-40 (southeast of the Highway 365 interchange) and Newton Creek (northwest of the existing Interstate 430 interchange). The EA evaluates four (4) alternatives: the No-Action and three (3) build Alternatives.

The project study area includes the existing interchanges to the north and south of Maumelle that currently provide access to I-40 and I-430, because of the importance of

evaluating the traffic operations at these locations. The project study area also encompasses the area from I-40 easterly to just beyond Highway 365, in order to allow a cursory evaluation of the feasibility of a future connection from I-40 to Highway 365. **Figure 1** illustrates the project study area.

The EA explains the purpose and need for the project in Section 2.0 and describes the alternatives considered in Section 3.0. Section 4.0 contains the results of an evaluation of the potential impacts associated with each of the Alternatives. Section 5.0 includes a summary of public involvement. Section 6.0 discusses the viability of a future facility connecting the new I-40 interchange eastward to Highway 365. Section 7.0 lists the project commitments and Section 8.0 summarizes the EA findings.



SAIC From Science to Solutions	FIGURE TITLE: *PROJECT STUDY AREA*	CLIENT: City of Maumelle	DATE: FEB 2011	PROJECT NUMBER: 4070816000
	DOCUMENT TITLE: I-40 Interchange Maumelle Environmental Assessment	LOCATION: Pulaski County, Arkansas	SCALE: AS SHOWN	
			DESIGNED BY:	FIGURE NUMBER: 1
			APPROVED BY:	
			DRAWN BY: PB	

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2.0 PURPOSE AND NEED

2.1 Purpose

The purposes of the proposed project are to:

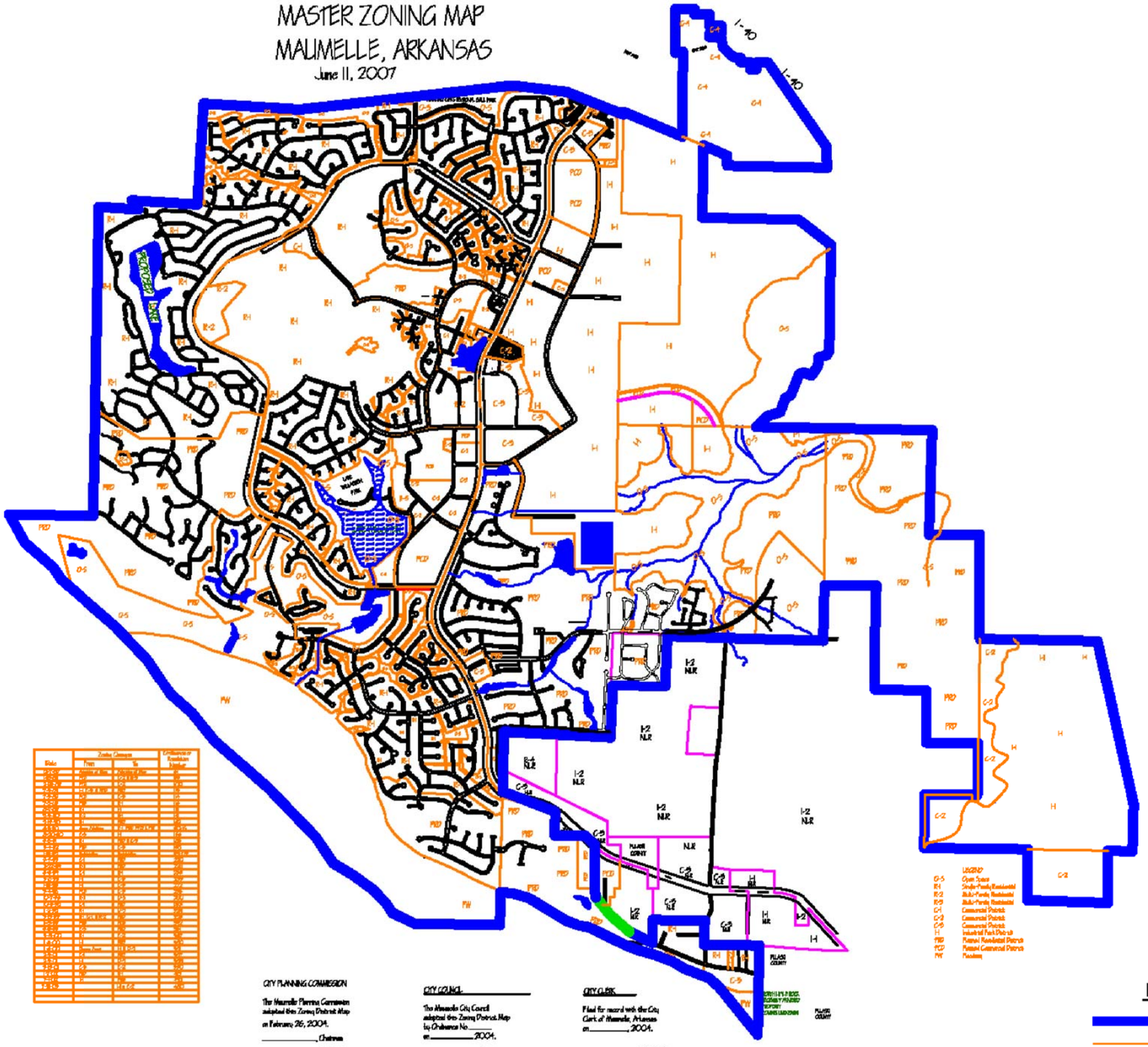
- Improve vehicular access to rapidly growing areas of Maumelle and North Little Rock that are currently underserved
- Relieve congestion along Highway 100 (i.e., Maumelle Boulevard) in the Cities of Maumelle and North Little Rock
- Relieve congestion at the I-40/Highway 365 and the I-430/Highway 100 interchanges
- Improve public safety by providing an additional access point into and out of the Cities of Maumelle and North Little Rock for emergency services

2.2 Needs

Maumelle is located in Pulaski County, bordering the north shore of the Arkansas River northwest of Little Rock and west of North Little Rock. Maumelle is part of the Little Rock–North Little Rock–Conway Metropolitan Statistical Area (MSA), which in turn is part of the Transportation Management Area (TMA) for central Arkansas. Metroplan is the local Council of Governments (COG) for the region and is the Metropolitan Planning Organization (MPO) for Maumelle.

Maumelle's land use plan indicates significant areas that are presently undeveloped and zoned for future commercial, industrial, and residential development. The master zoning map of Maumelle is included as **Figure 2**. These areas, when developed, will generate and attract additional traffic to the area between Highway 100 and I-40. Metroplan's 2030 Metropolitan Transportation Plan (MTP) identifies Maumelle as one of the fastest-growing areas of new residential development, which will increase commuter trips and travel times. During the ten-year period between 1990 and 2000, the

MASTER ZONING MAP
MAUMELLE, ARKANSAS
June 11, 2007



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1701 Centerview, Suite 207
Little Rock, AR 72211
(501) 228-4420

FIGURE TITLE	*Master Zoning Map, Maumelle, AR*
DOCUMENT TITLE	I-40 Interchange Maumelle Environmental Assessment
CLIENT	City of Maumelle
LOCATION	Pulaski County, Arkansas

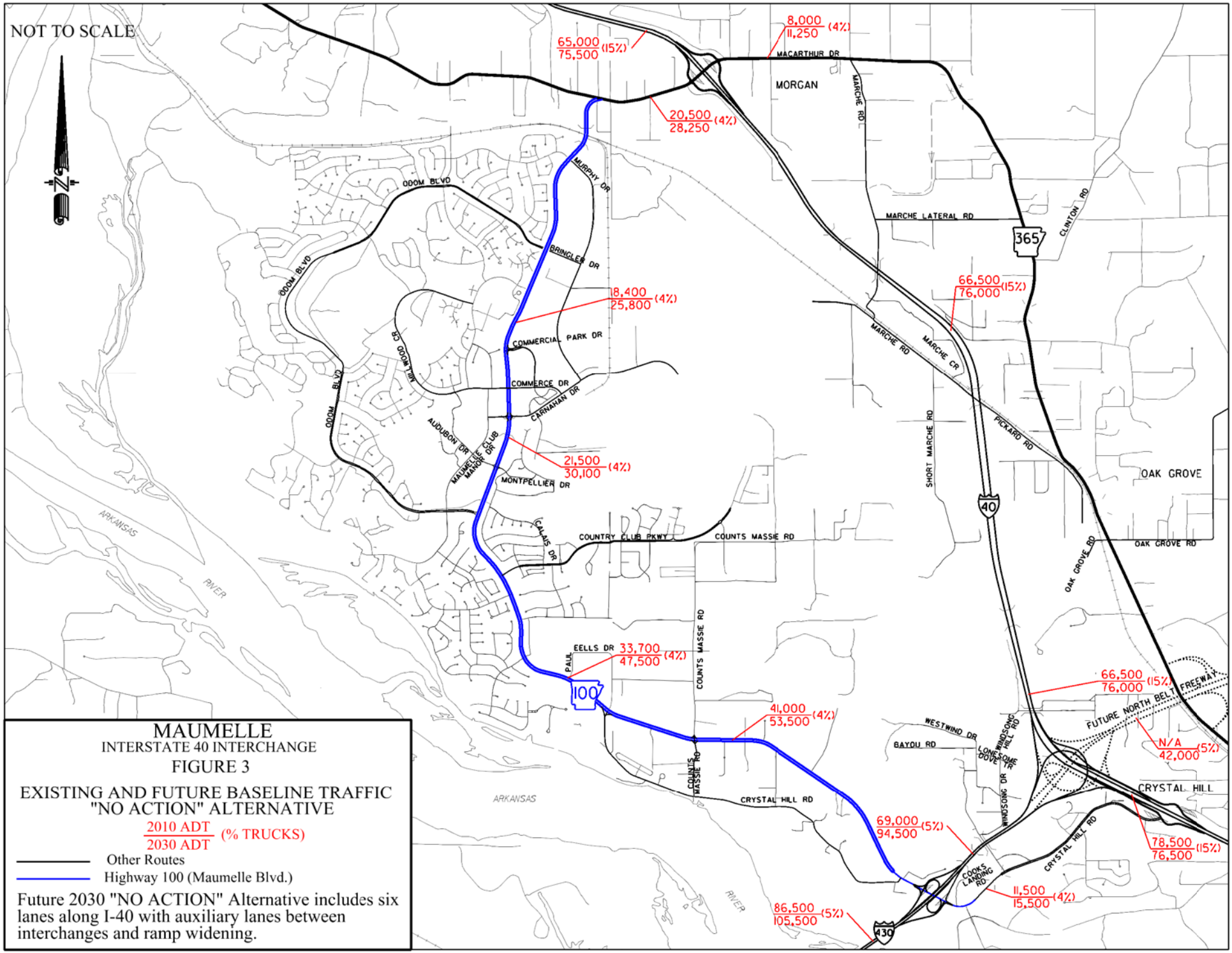
DATE	FEB 2010
SCALE	AS SHOWN
DESIGNED BY	
APPROVED BY	
DRAWN BY	PB

PROJECT NUMBER
4070816000
FIGURE NUMBER
2

population increased from 6,714 to 10,557, nearly 57%, based on U.S. Census data. In the 10-year period of 2000 to 2010, the population increased to 17,163, an increase of 63%.

As with many other geographical areas experiencing high growth, demand on the transportation system also increases. Maumelle is primarily a “bedroom” type community, with most residents traveling to other nearby cities for employment. Maumelle’s primary arterial, Highway 100, suffers from diminishing levels of service due to the rapid growth in traffic. However, commercial business nodes exist along Highway 100 and manufacturing and distribution companies are located on Murphy Drive just north of Carnahan Drive. These companies provide employment opportunities within the city. **Figure 3** displays the traffic volumes occurring in 2010 and the predicted traffic volumes for 2030 at selected locations. On the north end of Highway 100, the traffic volume approaching I-40 is predicted to increase by 38% and on the south end approaching I-430, the volume is predicted to increase by 30%. Since the city straddles Highway 100 with its only accesses to the interstate system located to the north and south, and its growth occurring to the east and west, the congestion will become more severe on Highway 100. Much of Maumelle’s residential growth is occurring east of Highway 100 spreading directly toward I-40. In North Little Rock, much of the commercial development is along Highway 100 near Crystal Hill West and Counts Massie Road intersections, e.g., a large Wal-Mart supercenter with various related small businesses in close proximity. On Counts Massie Road, three large apartment complexes have been constructed in recent years, i.e., Frenchman’s Woods, The Links at the Rock, and the newest, Fontainebleau, a large gated community. In addition, a large rock quarry and asphaltic concrete production facility are located west of Counts Massie Road. Trucks hauling crushed rock and asphalt travel south on Counts Massie Road, then turning onto Highway 100, add to the area’s truck traffic volume.

The result of this ongoing development is the creation of a large area with underserved traffic and insufficient access to the interstate. All traffic into and from the city must use the two existing interchanges at Highways 365 and 100. Vehicular trips from the


NOT TO SCALE
65,000 (15%) / 75,500
8,000 (4%) / 11,250
MACARTHUR DR
MORGAN
20,500 (4%) / 28,250
MARCHE RD
MURPHY DR
ODOM BLVD
BRINGLER DR
MARCHE LATERAL RD
CLINTON RD
365
66,500 (15%) / 76,000
18,400 (4%) / 25,800
COMMERCIAL PARK DR
COMMERCE DR
CARNAHAN DR
MARCHE RD
MARCHE CR
PICKARD RD
SHORT MARCHE RD
AUDUBON DR
MAUMELLE CLUB MANOR DR
21,500 (4%) / 30,100
MONTPELLIER DR
OAK GROVE
40
CALAIS DR
COUNTRY CLUB PKWY
COUNTS MASSIE RD
OAK GROVE RD
ARKANSAS RIVER
EELLS DR
33,700 (4%) / 47,500
100
66,500 (15%) / 76,000
FUTURE NORTH BELT FREEWAY
41,000 (4%) / 53,500
WESTWIND DR
BAYOU RD
LONESOME DOVE
WINDSONG DR
N/A (5%) / 42,000
CRYSTAL HILL
CRYSTAL HILL RD
69,000 (5%) / 94,500
78,500 (15%) / 76,500
COOKS LANDING RD
11,500 (4%) / 15,500
86,500 (5%) / 105,500
430
MAUMELLE
INTERSTATE 40 INTERCHANGE
FIGURE 3
EXISTING AND FUTURE BASELINE TRAFFIC
"NO ACTION" ALTERNATIVE
2010 ADT / 2030 ADT (% TRUCKS)
Other Routes
Highway 100 (Maumelle Blvd.)
Future 2030 "NO ACTION" Alternative includes six lanes along I-40 with auxiliary lanes between interchanges and ramp widening.

underserved area between Highway 100 and I-40 must access the Interstate System via indirect routes, and this indirection causes more traffic on Highway 100, longer travel times, and more congestion and trip delays.

The new proposed access directly to I-40 via a new interchange to the east will provide transportation service to the underserved area, as well as diverting traffic from Highway 100 and the two existing interchanges. The diversion of this traffic to the proposed interchange will greatly enhance traffic flow on Highway 100 by decreasing the signal time necessary to accommodate traffic entering Highway 100 from signalized side streets.

2.3 Mobility

Mobility is expected to become more difficult as traffic congestion worsens due to continuing growth. Traffic from Maumelle can access I-40 from only two existing interchanges: the Highway 365 interchange on the north side of the city and the I-430 interchange on the south side of the city. Most of Maumelle's commuting traffic travels south on Highway 100 (Maumelle Boulevard) to the I-430/Highway 100 interchange. From that point, commuters either travel north on I-430 and east on I-40 to the Little Rock / North Little Rock central business district, or south on I-430 to employment in west and central Little Rock, which includes the medical centers and the Little Rock mid-town business district. Both the I-40/I-430 and I-430/Highway 100 interchanges experience severe congestion during the morning and evening peak hours with traffic backups and delays, resulting in lower travel speed and increased travel time.

Mobility is adversely affected as the number of large trucks in the traffic stream increase. About 4% of the vehicles on Highway 100 are large trucks. This volume ranges from about 700 trucks on Highway 100 south of Murphy Drive to about 1,600 trucks in the Counts Massie Road area. These trucks increase congestion due to their size and vehicle characteristics of slow acceleration and slow turning speeds.

Commuters select their travel routes for many reasons, including perceived convenience, travel distance, travel time, intermediate stops, and levels of congestion on specific routes that are more acceptable than other levels on other routes. Commuters traveling south on Highway 100 from the large residential areas west of Highway 100 experience severe congestion and stop and go travel while traveling toward I-430. While travel in this direction is highly congested, commuters prefer this route rather than traveling north on Highway 100 to access I-40 and then east on I-40 to access southbound I-430. Perhaps the main reason for this preference is travel indirection. As an example, a vehicle entering Highway 100 at south Odom Boulevard would travel about four miles to reach the I-430 interchange. A vehicle traveling north on Highway 100 from the same starting point, then east on I-40, and then south on I-430 to the Highway 100/I-430 interchange, would travel nearly ten miles.

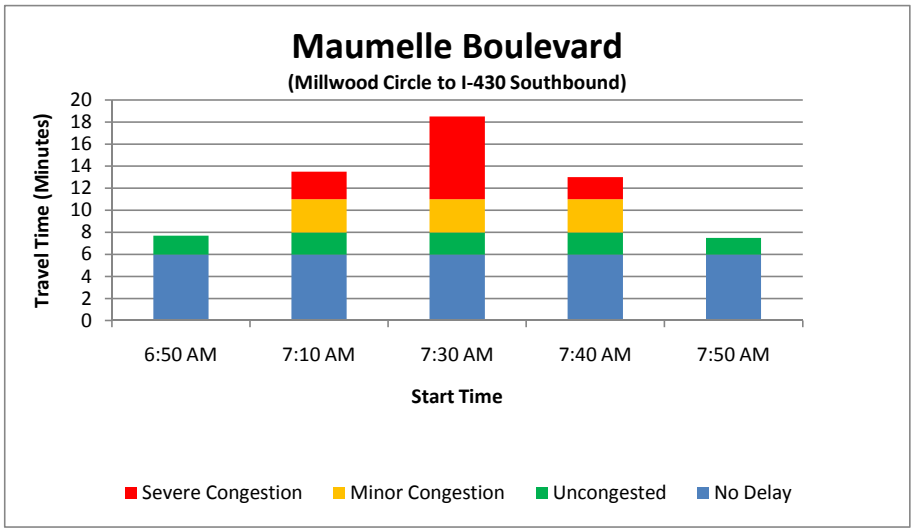
In 2008, Metroplan published a Congestion Management Study for the Central Arkansas Regional Transportation Study (CARTS) area. This report stated that the major interstates and highways within the project study area are operating with high delays and long travel times. Metroplan classified Highway 100 as one of the facilities experiencing severe to serious congestion during the AM peak hour. The congestion was attributed to heavy commuter traffic demand to the Little Rock/North Little Rock area, commercial development, only one interchange serving southbound traffic to access I-430, and poor signal coordination on Highway 100. **Table 1** displays selected data of the 2008 CARTS study.

In the fall of 2008, Metroplan conducted Operation Bottleneck, a public outreach effort that asked citizens to identify common traffic backups within central Arkansas area. Metroplan received 77 comments about Highway 100, which was the highest number of comments about any arterial route in the area.

Table 1: Routes Experiencing Traffic Operational Problems							
ROUTE	**FROM**	**TO**	**DISTANCE (miles)**	**PEAK PERIOD**	**CONGESTION CATEGORY**	**OPERATING SPEED**	**MAJOR CONGESTION CAUSES**
I-40	Highway 365	I-430	5.12	Morning	Moderate	48.2	• High traffic demand • Interchange delays at Highway 365 and I-430 • High percentage of trucks • Major commuter corridor
I-40	I-430	Crystal Hill Road	0.70	Morning	Serious	40.0	
Highway 100	Millwood Circle	Crystal Hill Road west	2.40	Morning	Severe	15.6	• High traffic demand • Commercial development • Poor traffic signal coordination
Highway 100	Counts Massie	I-430	2.20	Morning	Serious	27.5	
I-430	Highway 100	I-40	2.10	Morning	Moderate	45.1	• I-40 inadequate capacity • Interchange delay at I-40 / I-430

Source: Metroplan 2008 Congestion Management Study (CMS) Analysis

In 2009, Metroplan released a draft report of the Congestion Management Process (CMP) analysis that included the Operation Bottleneck feedback and listed Highway 100 as experiencing severe delays. According to the report, much of the morning peak congestion is due to residents traveling to jobs in Little Rock and North Little Rock. While congestion on Highway 100 approaching I-430 has been severe, the level of congestion has been eased somewhat by recent improvements to the interchange. The worst congestion on Highway 100 now occurs in the section between the southern intersection of Odom Boulevard and Highway 100 and Counts Massie Road. The following chart from the 2009 CMP report presents the travel times for five different time periods during the morning peak travel period.



This chart illustrates that a traveler heading to work at 6:50 AM would need about 7½ minutes to travel between Millwood Circle and I-430, a distance of about 4¾ miles. A traveler heading to work at 7:30 AM would need about 18½ minutes for the same trip. By 7:50 AM, the highway has become uncongested once again.

According to Metroplan's draft report, the worst congestion is in the traffic queues at the Crystal Hill Road west intersection on Highway 100. Some of the queues extend 1½ miles, adding as much as 10 minutes to the average travel time between Millwood Circle and I-430. The queues at Crystal Hill Road west begin as early as 7:00 AM and the queues at I-430 begin about 7:15 AM.

According to Metroplan's analysis, short-term potential solutions include adjusting the signal timing at Crystal Hill Road west and making intersection improvements at both the Crystal Hill Road west and Counts Massie Road intersections. Long-term potential solutions include additional interchange ramps and ramp widening at the two existing interchanges, development of the proposed interchange detailed in this EA, and widening Highway 100 to six lanes.

Mobility will continue to be impaired until improvements are implemented.

2.4 Traffic and Level of Service

The AHTD provided the 2010 traffic volumes in the study area to Metroplan. Metroplan then used the traffic data to generate the projected year 2030 traffic volumes using its Travel Demand Model (TDM) software. The projected traffic includes generated and distributed trips from proposed future land use developments.

An industry-wide approach to assess a facility's operational condition is Level of Service (LOS), defined as a qualitative measure describing operational conditions in terms of such factors as speed, freedom to maneuver, traffic interruptions, comfort, convenience, and delay. Six LOS's are defined and are given letter designations from "A" to "F," with a LOS "A" representing the best and a LOS "F" representing the worst. Ideally, it is preferred for the LOS for highways to be LOS D or better. **Table 2** provides a narrative description of each designation.

Table 2: Level of Service Summary		
Level of Service	**Flow Characteristics**	**Description**
A	Free flow	Individual drivers are free to select desired speeds, a high degree of maneuverability is present within the traffic stream, and drivers are generally unaffected by the presence of other vehicles. The general level of comfort and convenience is excellent.
B	Low-density stable flow	Drivers remain free to select desired speeds but a slight decline in maneuverability occurs compared with LOS A and the presence of other vehicles becomes noticeable. The level of comfort and convenience is somewhat less that LOS A.
C	Medium-density stable flow	Selection of speed is affected by the presence of other vehicles, maneuvering within the traffic stream requires substantial driver vigilance, and driver operations are affected significantly by others in the traffic stream. The general level of comfort and convenience is noticeably less at this level than at LOS A or B.
D	High-density stable flow	Selection of speed and freedom to maneuver are severely restricted and small increases in traffic flow will generally cause operational problems. The level of comfort and convenience is generally poor.
E	Unstable flow	Speed is reduced to a low, relatively uniform value and freedom to maneuver is extremely difficult. Operating conditions are at or near the capacity level. Comfort and convenience levels are extremely poor, and driver frustration is generally high.
F	Forced/Breakdown flow	Operations are extremely unstable. The amount of traffic approaching a point exceeds the amount that can traverse the point and arrival flow exceeds discharge flow. Queues form behind such locations and operations within the queue are characterized by stop-and-go waves.

The latest version of the Highway Capacity Manual and accompanying software (HCS+) was employed to determine the LOS's in this EA. The LOS's contained in the tables are for the movements with higher peak hour directional flows, either morning peak or evening peak. The LOS's were determined for continuous free flow conditions and provide a simplistic method of comparing the travel conditions of the existing roadways

to the proposed build alternatives of this EA. Entrance and exit ramp sections, mainline freeway sections, and intersections were analyzed as stand-alone segments. The free flow operational analysis using HCS+ is primarily determined based on the type of highway, the amount of traffic, the number of lanes, and the travel speed. Most of the HCM procedures assume that the operations of one intersection or roadway segment do not adversely affect the operations of adjacent intersections or roadway segment. Long queues from one location interfering with operations of another adjacent location would violate this assumption and will not be accurately reflected in the LOS analysis.

Tables 3, 4, and **5** contain the existing and future traffic volumes and free-flow LOS at key locations. The tables illustrate that the amounts of traffic are forecast to increase during the next twenty years while the LOS's are forecast to deteriorate, a very common situation. Detailed discussions explaining the traffic operations and flow performance are included following each table.

Table 3: Traffic Volumes and LOS in the Corridor between the I-40/Highway 365 and I-430/Highway 100 Interchanges

Location	Traffic Volume (ADT)		Level of Service (LOS)	
	2010	2030	2010	2030
Highway 365 west of I-40	20,500	28,250	B	C
Highway 100 near north Odom Boulevard intersection	18,400	25,800	C	D
Highway 100 south of Carnahan Drive	21,500	30,100	C	D
Highway 100 at Paul Eells Drive	33,700	47,500	D	F
Highway 100 east of Counts Massie Road	41,000	53,500	E	F

Along the Highway 100 corridor between I-430 and I-40/Highway 365, insufficient roadway capacity affects the traffic operations and free-flow conditions, causing serious traffic queuing and stop and go conditions, especially in the section between Paul Eells

Drive (about 0.9 miles west of Counts Massie Road, see **Figure 3**) and I-430. While the AHTD coordinates and monitors the traffic signals, queuing still occurs. The LOS that drivers actually experience is more likely to be "E" or "F" due to the heavy traffic demand that exceeds intersection capacities. Travelers along this route routinely experience this unstable or breakdown in traffic flow, primarily eastbound in the morning peak period and westbound in the afternoon peak period.

Table 4: Highway 365 and I-40 Interchange Traffic Volumes and LOS

Location	Bi-Directional Traffic Volume (ADT)		Level of Service (LOS)	
	2010	2030	2010	2030
Highway 365 south of I-40	20,500	28,250	B	C
Highway 365 north of I-40	8,000	11,250	C	D
I-40 west of Highway 365	65,000	75,500	D*	E*
I-40 east of Highway 365	66,500	76,000	D*	E*

*Results reflect free-flow conditions only and in real life are not applicable to the shown letter grade. Results based on existing peak hour traffic flow conditions and planning level analysis indicate breakdown / forced flow conditions with the actual LOS deteriorating to unacceptable levels LOS E / F.

Highway 365 north of I-40 is a two-lane section and operates at a level of service worse than that of the section south of I-40, which is a four-lane section with a center two-way left turn lane. Existing I-40 is a four-lane freeway section and experiences congestion in the eastbound direction during the morning peak period and in the westbound direction during the evening peak period.

Table 5: Highway 100 and I-430 Interchange Traffic Volumes and LOS				
Location	**Bi-Directional Traffic Volume (ADT)**		**Level of Service (LOS)**	
	2010	**2030**	**2010**	**2030**
Highway 100 west of I-430	41,000	53,500	E	F
Highway 100 east of I-430	11,500	15,500	A	B
I-430 north of Highway 100	69,000	94,500	***	***
I-430 south of Highway 100	86,500	105,500	***	***

*** Based on HCM planning level analysis concepts and existing peak hour traffic flow conditions, the LOS deteriorates to unacceptable level not applicable to a letter grade. Intersection and roadway capacities have been reached/ exceeded and traffic operates at LOS E / F.

Highway 100 west of I-430 is a heavily traveled four-lane divided roadway and experiences severe congestion during the morning and evening peak periods. Traffic flow breaks down in the morning approaching the Highway 100/ I-430 interchange operating in a stop and go like condition.

North of the I-430/Highway 100 interchange, I-430 tapers from a six-lane to a four-lane freeway section as it approaches I-40, where I-430 currently ends. The northbound lane drop causes drivers to merge into the right two lanes and then maneuver into the lane of choice to exit west on I-40 toward the City of Conway or east on I-40 toward downtown North Little Rock, resulting in a recurring bottleneck. Both of these directional ramps are one lane and have insufficient capacity to handle the peak period traffic demand. More vehicles arrive at the ramps than can efficiently enter I-40, resulting in severe traffic queues. The queuing extends back to the I-430 mainline and further southbound past the Highway 100 interchange.

South of the I-430/Highway 100 interchange, existing I-430 is a six-lane full access controlled freeway operating at congested conditions during the morning peak period. A

large amount of traffic enters I-430 from Highway 100 in the morning peak period. The entrance ramp from Highway 100 to southbound I-430 is one lane. I-430 already carries a large amount of traffic and its outside lane is congested primarily with vehicles trying to exit at the next interchange immediately south of the I-430/Highway 100 interchange. Therefore, the gaps between vehicles in the outside lane are insufficient to allow the entering traffic to efficiently merge. The lack of gaps causes stop and go traffic in the merge area on the entrance ramp that results in traffic queues backing onto Highway 100 affecting the arterial operations. Southbound I-430 south of Highway 100 degrades in operations to "E" or "F" during the morning peak period each day.

The AHTD recognizes the need to widen I-40, as documented in its Arkansas State Highway Needs Study.[1] A corridor study of I-40 between I-430 in North Little Rock and the City of Conway is now underway by AHTD to clarify specific needs and their associated environmental impacts. The AHTD has included the widening of I-40 between the City of Conway and the Pulaski County line in the 2010-2013 Statewide Transportation Improvement Program, with the widening scheduled for 2012.

Another major project in the project area is the construction of a new freeway commonly known as the North Belt Freeway. This freeway would complete the loop around the Little Rock/North Little Rock metropolitan area. The freeway would begin at the I-40/I-430 interchange on the west and loop northeast to Highway 67, then southeast to the I-40/I-440 interchange. The eastern section between Highway 67 and the I-40/I-440 interchange is complete and open. This project is not in the current Statewide Transportation Improvement Program; however, it is contained in the Arkansas State Highway Needs Study.

The I-40 corridor study to identify needed improvements will likely contain recommendations to eliminate the recurring congestion on I-40 and I-430 due to insufficient ramp capacities at the I-40/I-430 interchange. One method is to reconstruct the ramps by adding another lane as well as improved alignment to increase the ramp

[1] 2006-Arkansas State Highway Needs Study and Highway Improvement Plan, Updated 2007

design speed. Reconstruction of the I-40/I-430 interchange will also include the additional lanes on I-40, as well as providing space for future extension of the I-430 roadway northward as the North Belt Freeway. While these types of modifications are anticipated, the final analysis has not been completed to fully identify all of the necessary modifications.

Because the widening of I-40 is a near-term improvement, and because levels of service without widening for the long term will result in forced or breakdown flow conditions, the future year forecast traffic volumes and levels of service were determined as if I-40 were six lanes and the North Belt Freeway constructed. This provides the best scenario to compare the impacts of the proposed additional interchange to the system. **Table 6** lists the traffic volumes and LOS's at several locations on I-40 for both the existing four-lane configuration and the eventual six-lane configuration.

Without widening of I-40 to six-lanes, the LOS is predicted to deteriorate to a "breakdown / forced flow" condition in 2030, with the forecast demand exceeding the existing roadway capacity. However, if I-40 were widened to six-lanes, future 2030 LOS would improve to acceptable urban area traffic flow conditions. Since widening a portion of the I-40 corridor is already part of the AHTD's current Statewide Transportation Improvement Program, year 2030 traffic analyses in this EA are performed for I-40 as six lanes.

The freeway mainline levels of service shown in **Table 6** were determined as free-flow conditions for traffic flow unaffected by upstream or downstream conditions. However, this is not the situation during morning and evening peak periods. In the morning peak period, a very high percentage of the eastbound I-40 traffic queues into the outside lane seeking to exit onto southbound I-430. This queuing causes extended sections of I-40 to experience stop and go conditions, which can be worsened by aggressive drivers weaving from the inside lane into the congested outside lane to exit to southbound I-430 near the exit gore area.

Table 6: I-40 Traffic Volumes and LOS						
Location	**Directional Traffic Volume (ADT)**			**Level of Service [3]**		
	2010 4 Lanes	**2030 [1] 4 Lanes**	**2030 [2] 6 Lanes**	**2010 4 Lanes**	**2030 [1] 4 Lanes**	**2030 [2] 6 Lanes**
Eastbound between Mayflower and Morgan	33,000	38,500	48,000	D	E	D
Eastbound between Highway 365 and I-430	33,500	38,500	48,500	D	E	D
Eastbound between I-430 and Crystal Hill Road	42,000	39,000	40,500	E	E	C
Westbound between Crystal Hill Road and I-430	37,500	38,500	40,000	E	E	C
Westbound between I-430 and Highway 365	33,000	37,500	47,500	D	E	D
Westbound between Morgan and Mayflower	32,000	37,000	47,250	D	E	D

[1] The 2030 traffic volumes and LOS's for a four lane I-40 freeway system were determined with the assumption that North Belt Freeway is completed and in place.

[2] The 2030 traffic volumes and LOS's for a six lane I-40 freeway system were determined with the assumption that North Belt Freeway is completed and in place.

[3] Level of Service (LOS) Analysis was conducted using the latest version of the Highway Capacity Software (HCS+) freeway module. Project design hour traffic volumes were determined using a 10% K-Factor. Results indicated only for the design hour traffic demand under free flow conditions. However, existing peak period observations indicate breakdown flow conditions with actual levels of service being LOS E / F.

2.5 Safety

An additional interchange can improve public safety in three ways: reduce the response time to fire and medical emergencies, provide enhanced access to and within the community during times of natural or manmade disasters, and reduce the potential for vehicular collisions by reducing congestion.

Two fire and police stations are adjacent to Highway 100, Maumelle Boulevard. Of primary concern is ambulance service to and from the underserved area east of Highway 100. Maumelle does not have a major medical facility and, therefore, ill and injured people must be transported to the hospitals in the northern area of North Little Rock, the central or western areas of Little Rock, or to Conway medical facilities. An additional access to I-40 from this area would decrease the transport time.

A third access from I-40 is also essential to provide expanded access during times of natural or manmade disasters. During a period of calamity such as a tornado, one of the two access points could be blocked, closed, or become highly congested. A third entry will allow first responders an additional route into the city and allow citizens to evacuate more quickly. A third entry becomes more important if large numbers of people are injured or affected and must be evacuated or transported to medical facilities.

The relative safety of a facility can be determined by comparing the crash rate, i.e., number of crashes per million vehicle miles traveled, of the facility to a statewide crash rate for similar facilities. Crash data for I-40 between the Highway 365 and I-430 interchanges, Highway 100 between Highway 365 and I-430, and Highway 365 between Highway 100 and I-40 for the years 2004, 2005, 2006, 2007, and 2008 are listed in **Tables 7, 8, and 9**.

Table 7: Crash Severity along I-40, I-430, Highway 100, and Highway 365				
Crash Severity	**I-40**	**I-430**	**Highway 100 (Maumelle Boulevard)**	**Highway 365**
Property Damage Only Crashes	288	88	496	52
Non-Fatal Injury Crashes	167	50	222	26
Fatal Crashes	6	3	4	1
Total Crashes	461	141	722	79

Table 8: Crash Type along I-40, I-430, Highway 100, and Highway 365				
Crash Type	**I-40**	**I-430**	**Highway 100 (Maumelle Boulevard)**	**Highway 365**
Rear End	238	72	281	17
Angle	16	4	269	41
Sideswipe	68	28	92	15
Single Vehicle	137	36	73	5
Backing	0	1	5	0
Head-On	2	0	2	1

The most predominant crash types along I-40 were Rear End and Single Vehicle crashes. These crash types can be attributed to traffic congestion and queuing, causing drivers to brake suddenly or swerve to avoid other vehicles and run off the road striking roadside objects.

The most predominant crash types along Highways 365 and 100 were Rear End, Angle, and Sideswipe. These crashes can be attributed to traffic congestion, queuing, traffic signal timing, unsignalized intersection traffic control, turning into and from intersections and driveways, and lane changing.

Table 9 does not include the crash rate on I-430 between Highway 100 and I-40, i.e., 1.20 crashes per million vehicle miles traveled, as comparison to a statewide rate would not be valid. This segment of I-430 is not representative of a typical freeway, because

Table 9: Crash Rate along I-40, Highway 100, and Highway 365				
Crash Rate	**I-40 (urban) [1]**	**I-40 (rural) [2]**	**Highway 100 (Maumelle Boulevard)**	**Highway 365**
Actual crash rate	0.84	0.80	2.41	4.31
Five-year state-wide average, same type facility (per million vehicle miles)	0.93	0.40	2.49	6.05

1 The approximate 3-mile section between I-430 and the Marche Road overpass

2 The approximate 2-mile section between the Marche Road overpass and Highway 365

the number of lanes varies from four to six, and portions of some of these lanes function as either acceleration or deceleration lanes.

In summary, review of the crash data indicates the following:

- The crash rate of the approximately 2.0 mile rural portion of I-40 is twice as high as the state-wide crash rate for similar facilities, while the crash rate for the approximately 3.0 mile urban portion is lower than the statewide average.
- The crash rate for Highway 100 is nearly the same as the statewide average for similar facilities.
- The crash rate for Highway 365 is about 70% of the statewide average for similar facilities.

The addition of a third interchange would likely lower the number of rear end, angle, and sideswipe types of crashes on Highway 100, because when traffic diverts to the new interchange, traffic volumes on Highway 100 near the I-430 interchange would be lower, in turn decreasing congestion, the amount of lane changing/merging, and turning movements. Likewise, the addition of lanes to I-40 and the eventual reconstruction of the I-40/I-430 interchange should also reduce the number of crashes by reducing the congestion and queuing in the interchange area.

3.0 DESCRIPTIONS OF ALTERNATIVES CONSIDERED

This section describes the alternatives considered for the project, which includes the No-Action and three (3) build Alternatives. **Figure 4** illustrates the alignment of the three (3) Build Alternatives. **Figures 4A** and **4B** illustrate the proposed typical sections for the new location roadway and the proposed widened sections of Counts Massie Road. The build alternatives address the project goal of providing a new access on I-40 and a new access road to Highway 100 in Maumelle. It was also determined prudent to look eastward of the proposed interchange location toward Highway 365, to determine if a future link from I-40 to Highway 365 was feasible. The detailed results of that evaluation are contained in Section 6.0, Cursory Evaluation of Connection between I-40 and Highway 365.

3.1 No-Action Alternative

The No-Action Alternative would consist only of maintaining existing facilities, with no construction of a new I-40 interchange and associated roadway from I-40 to Highway 100.

3.2 Alternative 1

Alternative 1 consists of an I-40 diamond interchange located approximately three miles north of the I-40/I-430 interchange at the existing Marche Road overpass, and construction of a new four-lane divided roadway extending southwest from the interchange, crossing the Union Pacific Railroad and White Oak Bayou before connecting to the end of existing Carnahan Drive near the new high school. Existing Carnahan Drive would be widened to a four-lane undivided roadway, beginning just east of the new high school and extending west to Murphy Drive. Carnahan Drive between Murphy Drive and Highway 100 would remain as is, i.e., a four-lane undivided roadway. A five-lane bridge would be required over I-40, and four-lane bridges would be required over the Union Pacific Railroad, and the wetlands of White Oak Bayou. See **Figure 5** for an illustration of Alternative 1.

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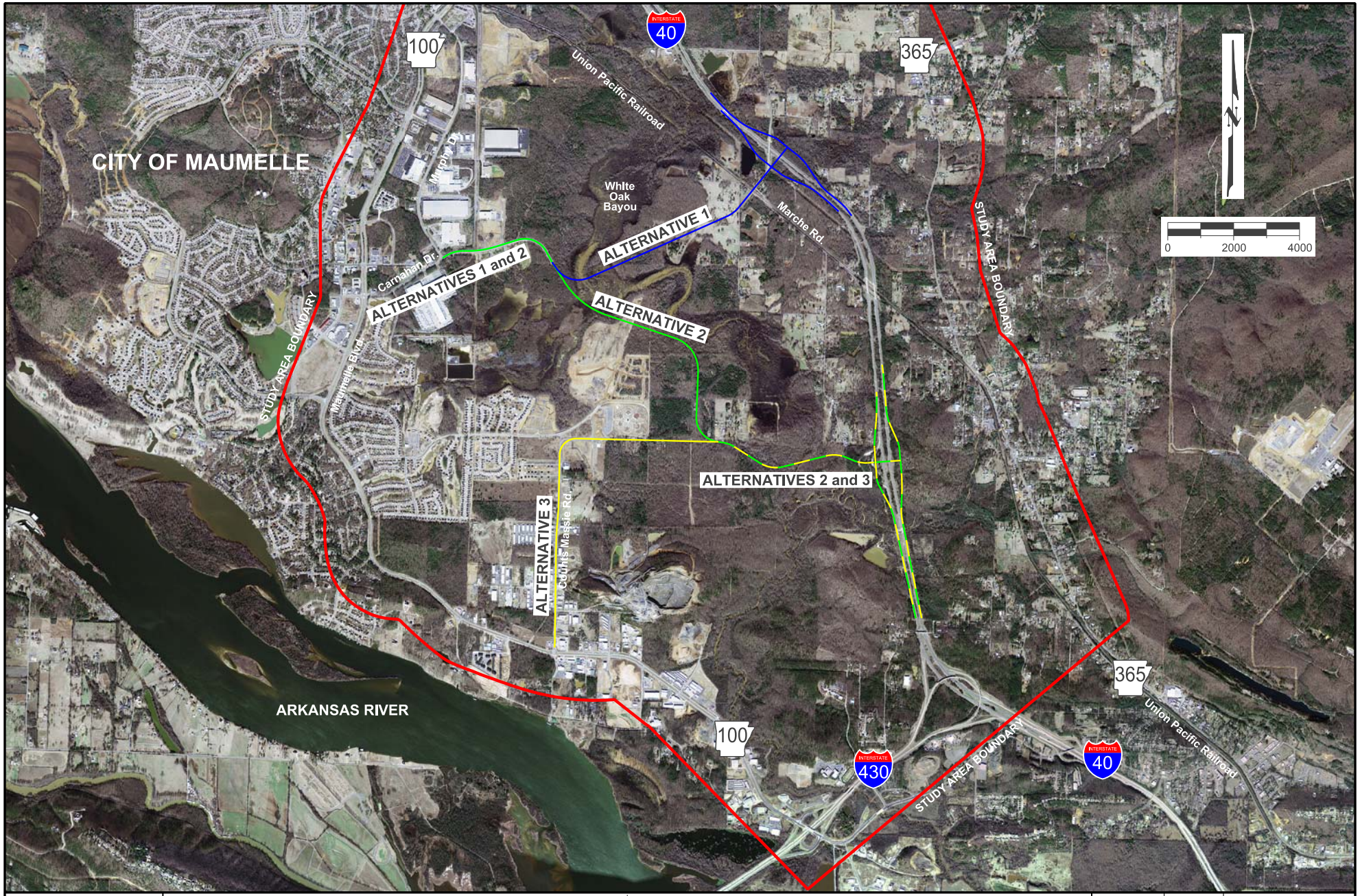

SAIC From Science to Solutions	FIGURE TITLE: *LOCATION OF BUILD ALTERNATIVES*	CLIENT: City of Maumelle	DATE: FEB 2011	PROJECT NUMBER: 4070816000	
	DOCUMENT TITLE: I-40 Interchange Maumelle Environmental Assessment	LOCATION: Pulaski County, Arkansas	SCALE:	FIGURE NUMBER: 4	
			DESIGNED BY:		
			APPROVED BY:		
			DRAWN BY:		

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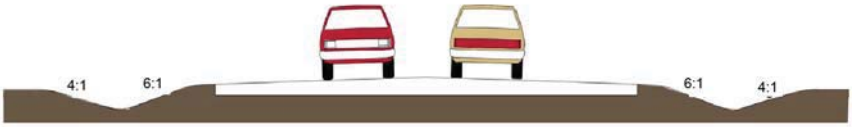
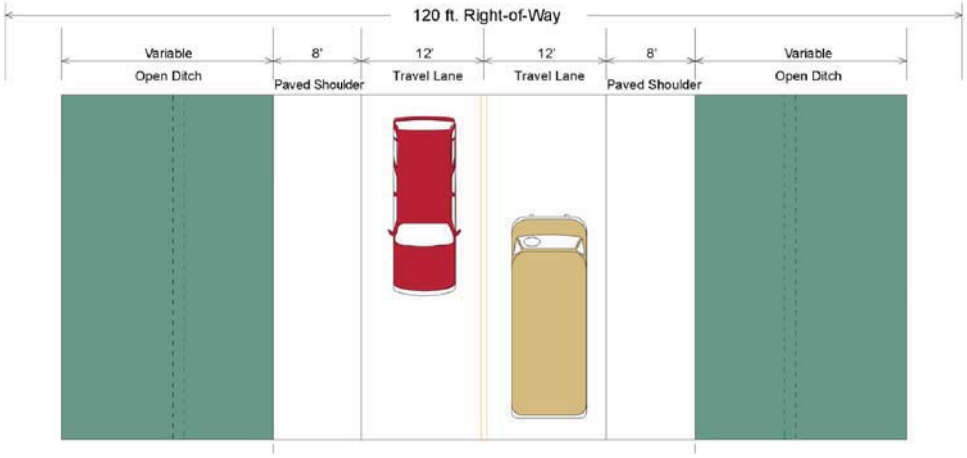
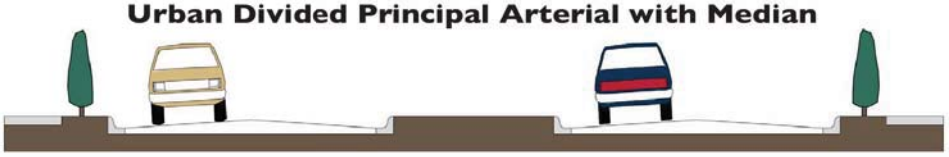
Class III Principal Arterial Roadway

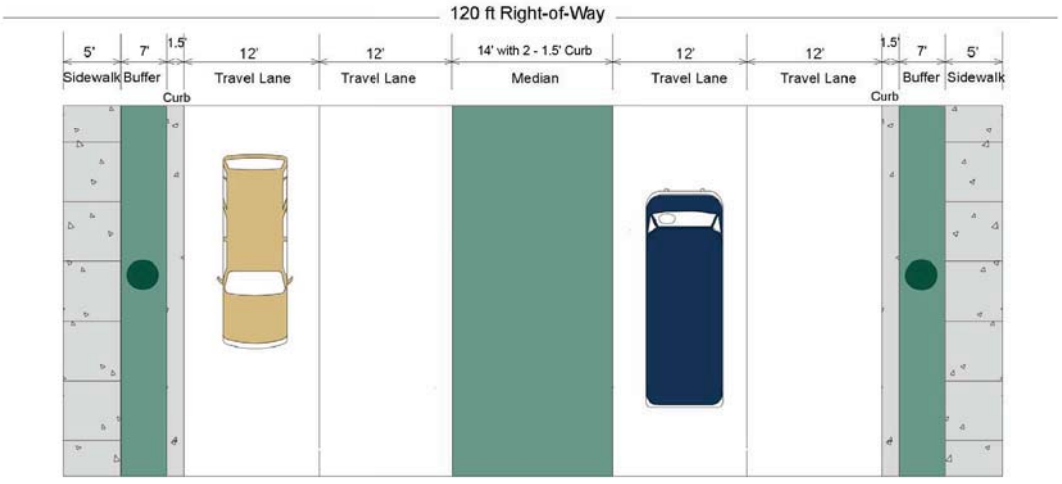
Rural Principal Arterial





Urban Divided Principal Arterial with Median





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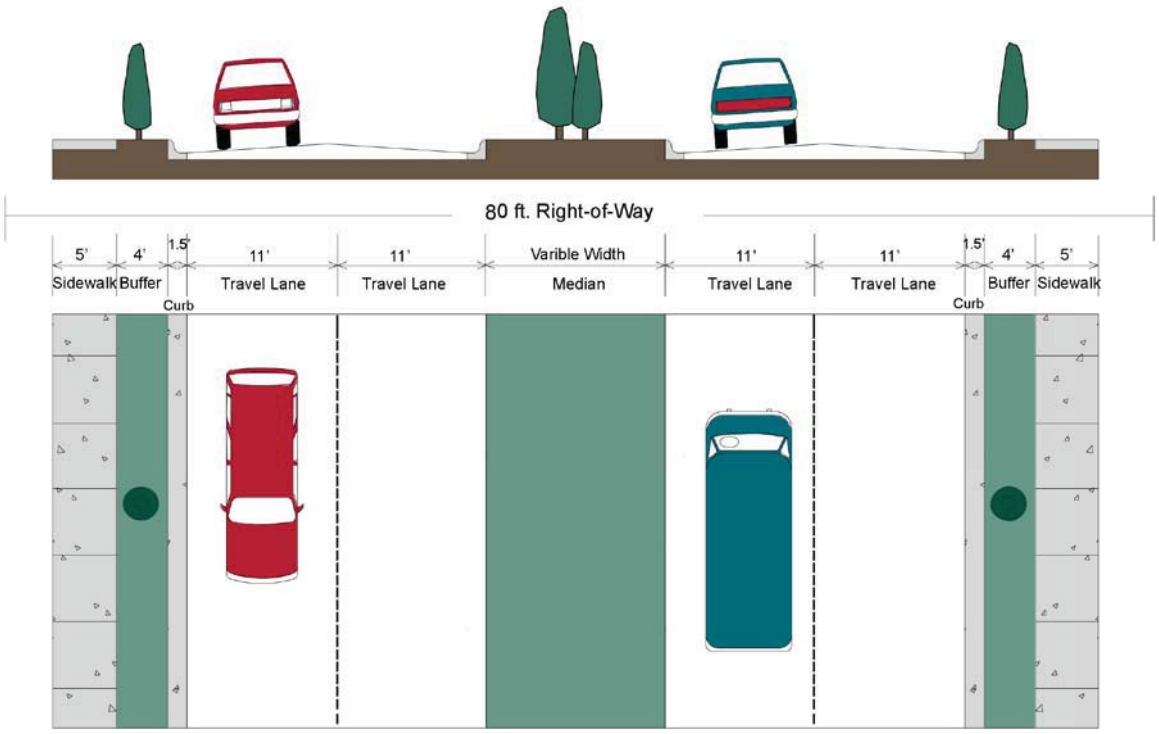
			SCALE:	4070816000	
	DOCUMENT TITLE: I-40 Interchange Maumelle Environmental Assessment	LOCATION: Pulaski County, Arkansas	DESIGNED BY:	FIGURE NUMBER	
			APPROVED BY:	4A	
			DRAWN BY:		

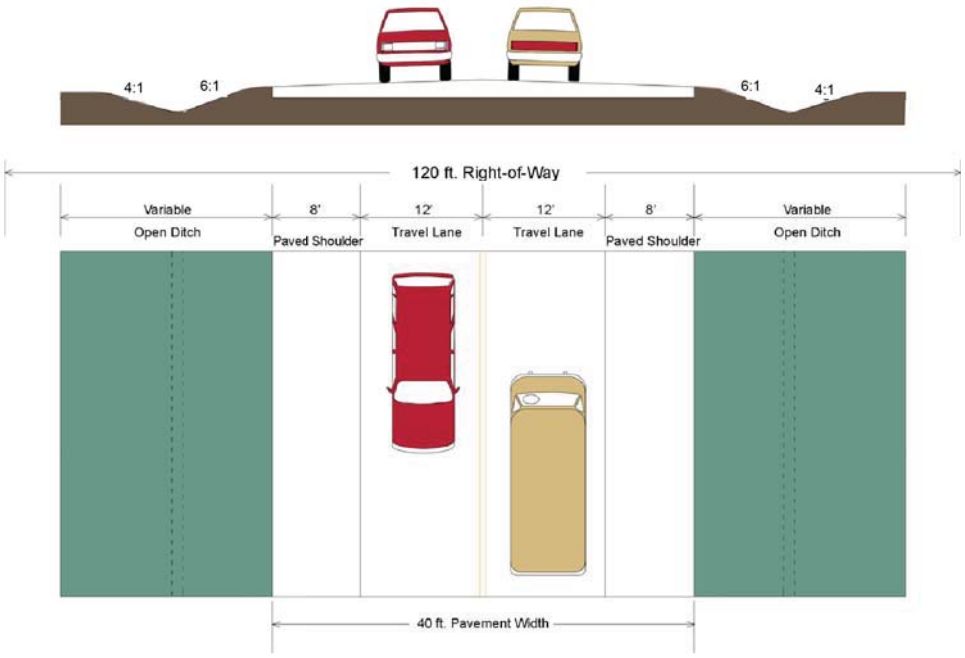
Counts Massie Road

Urban Divided Minor Arterial with Median



Class III Principal Arterial Roadway

Rural Principal Arterial



SAIC From Science to Solutions	FIGURE TITLE: ALTERNATE 3 TYPICAL SECTIONS	CLIENT: City of Maumelle	DATE: FEB 2011		PROJECT NUMBER
			SCALE:		4070816000
	DOCUMENT TITLE: I-40 Interchange Maumelle Environmental Assessment	LOCATION: Pulaski County, Arkansas	DESIGNED BY:		FIGURE NUMBER
			APPROVED BY:		4B
			DRAWN BY:		

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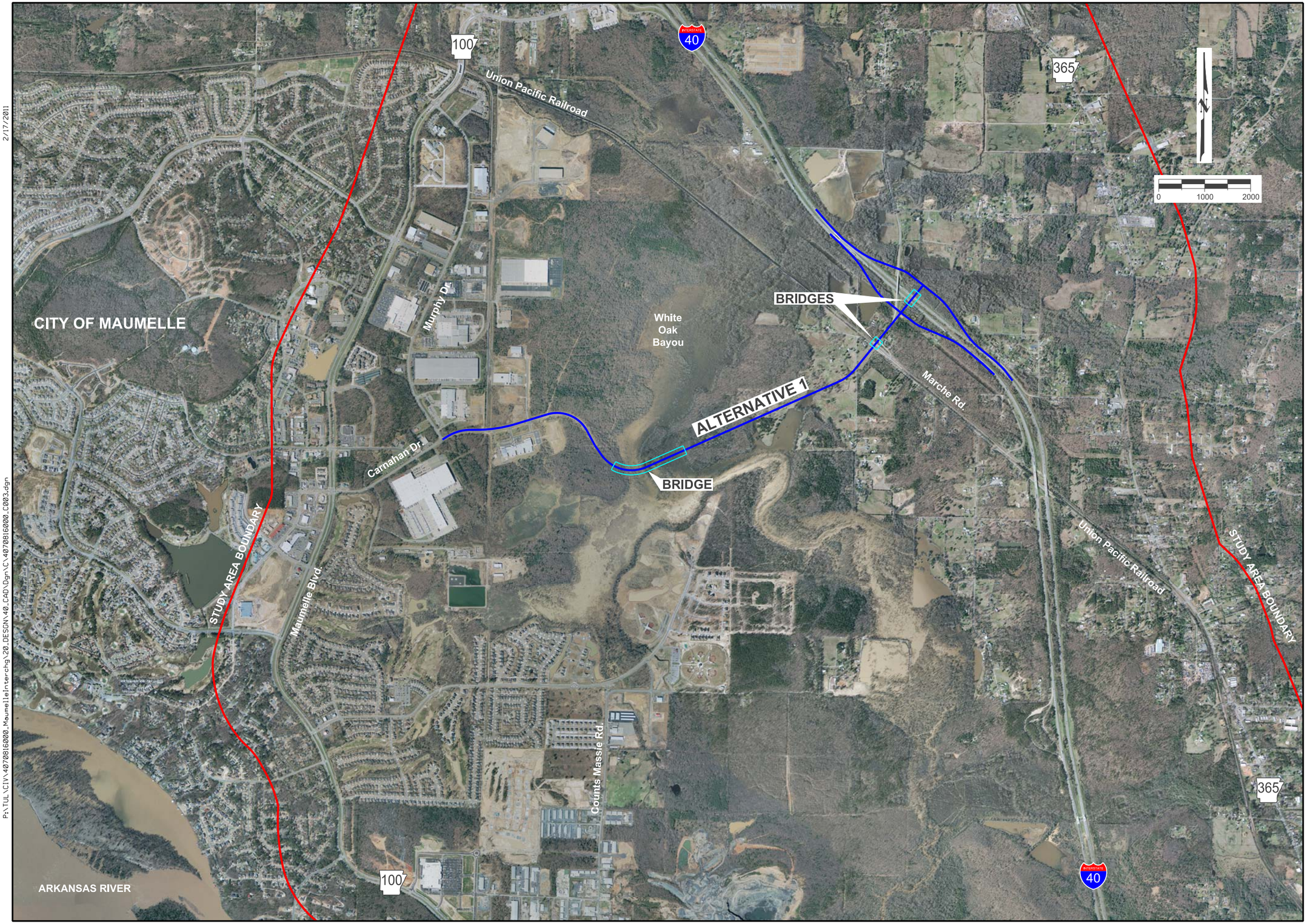

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FIGURE TITLE	*ALTERNATIVE 1*
DOCUMENT TITLE	I-40 Interchange Maumelle Environmental Assessment
CLIENT	City of Maumelle
LOCATION	Pulaski County, Arkansas

DATE	FEB 2010
SCALE	AS SHOWN
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PROJECT NUMBER
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FIGURE NUMBER
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3.3 Alternative 2

Alternative 2 consists of an I-40 diamond interchange located approximately 1.5 miles north of the I-40/I-430 interchange, near a former I-40 rest area, and a new four-lane divided roadway between I-40 and the end of existing Carnahan Drive near the new high school. From the interchange, Alternative 2 extends westward toward existing Counts Massie Road, crossing the White Oak Bayou. Upon reaching Counts Massie Road, Alternative 2 turns to the north, and then to the northwest, again crossing White Oak Bayou before connecting to existing Carnahan Drive and continuing westerly to Highway 100. Existing Carnahan Drive would be widened to a four-lane undivided roadway, beginning just east of the new high school and extending west to Murphy Drive. Carnahan Drive between Murphy Drive and Highway 100 would remain as is, i.e., a four-lane undivided roadway. A five-lane bridge over I-40 would be required to accommodate the traffic movements at the new interchange, and an existing bridge length box culvert under I-40 would need to be extended to accommodate the new ramps for the new interchange. A new eastbound auxiliary lane will be needed between the new interchange and the I-40/I-430 interchange to provide sufficient distance for merging eastbound vehicles entering I-40 to cross the substantial I-40 traffic stream exiting to I-430 southbound. This lane would also serve as an additional exit lane for traffic exiting to the south onto I-430. A new westbound auxiliary lane is also anticipated between I-430 and the new interchange connecting the existing entrance ramp from northbound I-430 and the new exit ramp to the proposed interchange. These new auxiliary lanes would require the lengthening of the Norman Road Bridge over I-40. In addition to the bridge over I-40, two (2) bridges would be required for the crossings of White Oak Bayou. See **Figure 6** for an illustration of Alternative 2.

3.4 Alternative 3

Alternative 3 consists of an I-40 diamond interchange located approximately 1.5 miles north of the I-40/I-430 interchange, near a former I-40 rest area, i.e., the same interchange location considered in Alternative 2. From the interchange, Alternative 3 consists of a new four-lane divided roadway extending west across White Oak Bayou connecting to the end of existing Counts Massie Road. Alternative 3 continues

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FIGURE TITLE	***ALTERNATIVE 2***
DOCUMENT TITLE	I-40 Interchange Maumelle Environmental Assessment
CLIENT	City of Maumelle
LOCATION	Pulaski County, Arkansas

DATE	**FEB 2010**
SCALE	AS SHOWN
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APPROVED BY	
DRAWN BY	PB

PROJECT NUMBER
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FIGURE NUMBER
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westward along Counts Massie Road and then southward to Highway 100. The divided four-lane roadway would transition to an undivided four-lane roadway as it nears the Maumelle Diamond Center Baseball Complex and would continue as a four-lane undivided roadway until its intersection with Highway 100. A five-lane bridge over I-40 would be required to accommodate the traffic movements at the new interchange, and a bridge length box culvert under I-40 would need to be extended to accommodate the ramps on the south side of the new interchange. A new eastbound auxiliary lane will be needed between the new interchange and the I-40/I-430 interchange to provide adequate weaving distance for the merging eastbound vehicles entering I-40 to cross the substantial I-40 traffic stream exiting to I-430 southbound. This lane would also serve as an additional exit lane for traffic exiting to the south onto I-430. A new westbound auxiliary lane is also anticipated between I-430 and the new interchange connecting the existing entrance ramp from northbound I-430 and the new exit ramp to the proposed interchange. These new auxiliary lanes would require the lengthening of the Norman Road Bridge over I-40. In addition to the bridge over I-40, a bridge would be required for the White Oak Bayou crossing. See **Figure 7** for an illustration of Alternative 3.

3.5 Comparison of Alternatives

3.5.1 No-Action Alternative

The No-Action Alternative would provide no new access from I-40 into the City of Maumelle. No interchange would be constructed and no roadway into the city connecting to Highway 100 (Maumelle Boulevard) would be undertaken. As previously illustrated in **Tables 3, 4, 5, and 6**, traffic volumes are predicted to increase and the levels of service will decrease to unacceptable levels on Highway 100 and the two interchanges currently serving the city. The project goals to improve mobility, relieve congestion, and enhance public safety would not be realized.

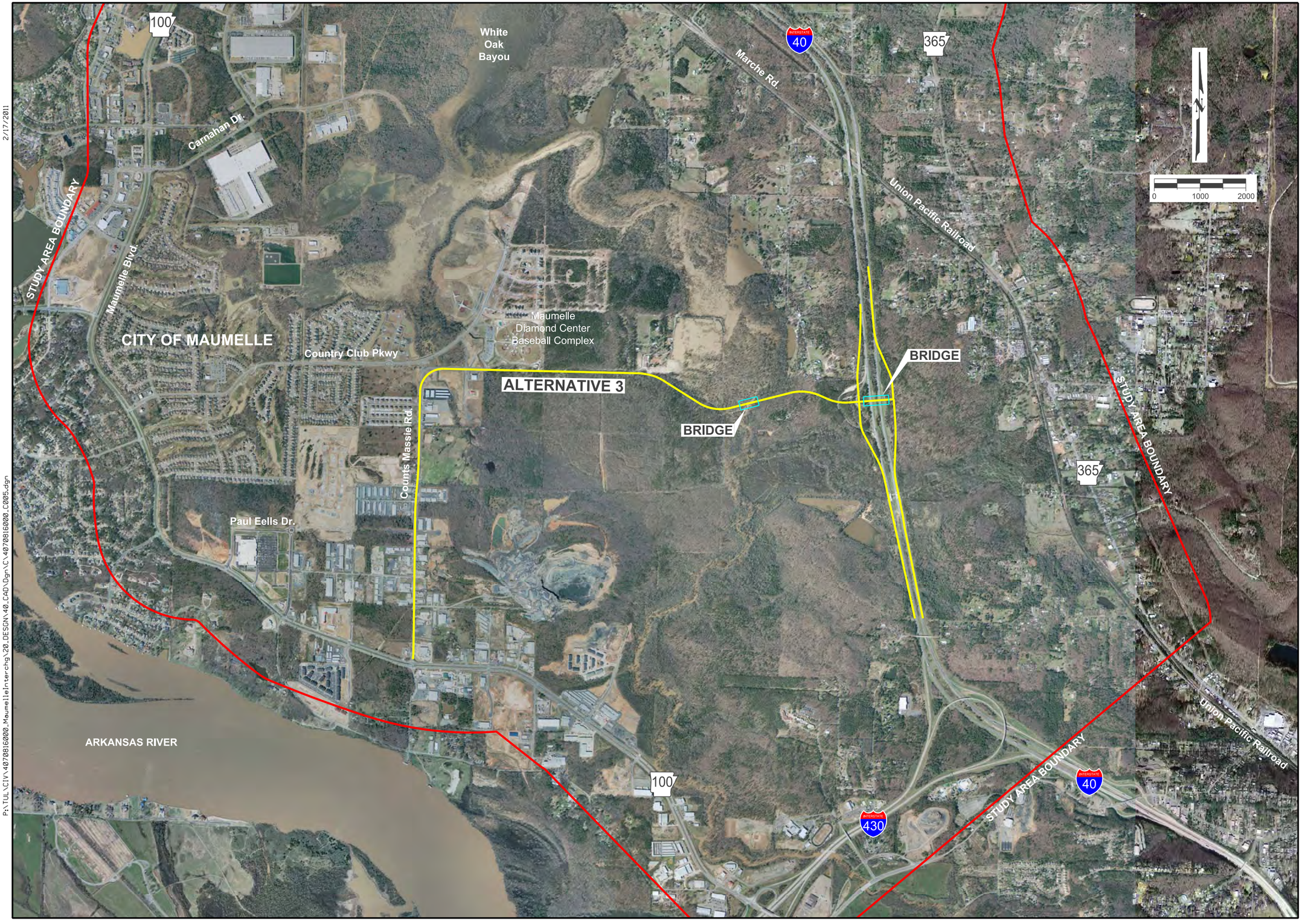

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FIGURE TITLE	*ALTERNATIVE 3*
DOCUMENT TITLE	I-40 Interchange Maumelle Environmental Assessment
CLIENT	City of Maumelle
LOCATION	Pulaski County, Arkansas

DATE	FEB 2010
SCALE	AS SHOWN
DESIGNED BY	
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FIGURE NUMBER
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3.5.2 Comparison of the Build Alternatives

After developing preliminary environmental and engineering information, Alternatives 1, 2, and 3 were initially evaluated to determine if there was a basis for eliminating any of them from further, more detailed evaluation. Based upon this initial evaluation, Alternative 1 was eliminated from further evaluation because of the following reasons:

Purpose and Need: The purpose and need for the new I-40 interchange includes additional access, increased mobility, and improved public safety. While all three (3) build Alternatives address these needs, Alternative 1 does not address them as well as Alternatives 2 and 3, because Alternative 1 does not improve the safety or increase the mobility for the numerous new residential and commercial developments occurring to the southwest of the White Oak Bayou along Country Club Drive and Counts Massie Road. It is traffic from those neighborhoods entering Highway 100 that is the primary cause of the congestion delay at signals.

Traffic: Peak hour traffic volumes were estimated for each of the Alternatives and are contained in **Table 10**.

Table 10: Comparison of Peak Hour Ramp Traffic Volumes for Build Alternatives

Description		Alternative 1		Alternative 2		Alternative 3	
		AM	PM	AM	PM	AM	PM
I-40 Proposed Interchange	Eastbound exit ramp	100	80	150	120	150	120
	Eastbound entrance ramp	650	610	800	750	550	510
	Westbound exit ramp	600	650	730	800	410	450
	Westbound entrance ramp	100	100	150	150	150	150

This data demonstrates that Alternative 1 attracts less traffic than Alternative 2.

Wetlands/Floodplains: White Oak Bayou is located in the center of the project study area, between I-40 and Highway 100. A comparison of wetlands impacts was conducted, using desktop-level information such as National Wetlands Inventory (NWI) maps and Federal Emergency Management Agency (FEMA) 100-year floodplain maps. This comparison indicated that Alternative 1 would cause the greatest impacts to wetlands (about 9.4 acres), i.e., more than those associated with Alternative 2 (about 6.5 acres) and nearly four (4) times those associated with Alternative 3 (about 2.4 acres). The floodplain impacts associated with Alternative 1 (45 acres) were estimated to be nearly five (5) times those for Alternative 2 (10 acres), and nearly eight (8) times those for Alternative 3 (6 acres).

Maumelle Street Plan: Alternative 1 is not part of Maumelle's Master Street Plan, and is the City's least preferred of the three (3) build Alternatives.

Constructability and Cost: Alternative 1 would require construction of an overpass of the Union Pacific Railroad, as well as an additional at-grade railroad crossing near the bridge structure. Alternatives 2 and 3 do not require any railroad overpasses or crossing improvements.

Copies of correspondence documenting the decision to eliminate Alternative 1 as a viable Alternative for further consideration are contained in **Appendix A**.

4.0 POTENTIAL IMPACTS

Alternatives 2 and 3, as well as the No-Action Alternative, were evaluated for potential impacts to various environmental parameters. All field reconnaissance activities focused on a project corridor width of 200 feet, centered about the proposed alignment, for the portions of the alignments on new location. For the portions of alignments on existing streets, a corridor width of 80 feet was examined. However, the 80-foot study corridor on existing Counts Massie Road was widened to 200 feet beginning at a point east of the ballpark.

4.1 Traffic

One of the primary purposes for an additional interchange is to mitigate the impact of the forecasted growth in traffic and the resulting congestion particularly along Highway 100 and at the interchanges of Highway 365 and I-40 and Highway 100 and I-430.

Alternatives 2 and 3 would allow traffic seeking to use the Interstate system the option of using the new interchange for interstate access in lieu of one of the two existing interchanges thereby reducing traffic volumes and congestion at those two interchanges. However, the No-Action alternative would preclude this option, requiring traffic to continue to use the existing interchanges, and eventually require substantial modifications to the two existing interchanges to avoid forced or breakdown traffic flow conditions. While both Alternatives 2 and 3 would allow a new Interstate connection, they would also provide a new travel route for large trucks. Alternative 2 would allow trucks to access the commercial industrial area of Maumelle along Murphy Drive, especially for I-40 westbound trucks coming from the downtown North Little Rock direction. Alternative 3 would allow the trucks to access the commercial/industrial area of North Little Rock along and near Counts Massie Road. Either alternative would reduce the truck volumes on Highway 100, which would improve the level of service.

As discussed earlier in Section 2.4, one measure of a facility's operational condition is the Level of Service, or LOS that is a qualitative measure and describes operational

conditions in terms of such factors as speed, freedom to maneuver, traffic interruptions, comfort, convenience, and delay. Six LOS's are defined with letter designations from "A" to "F," with a LOS "A" representing the best and a LOS "F" representing the worst. **Table 11** displays the LOS's for various locations on Highway 100, I-40, and I-430. The LOS's were determined for free-flow conditions that do not account for interruptions from upstream or downstream segments and the impacts from traffic signals, ramp entrance merges, ramp exit diverges, and weaving issues to a continuous traffic stream. However, based on existing morning and evening peak hour site observations and planning level analysis, it was determined that many of the freeway segments for the No-Action Alternative that seem to indicate acceptable operations under free-flow analysis conditions were actually operating at unacceptable LOS E / F experiencing severe congestion and stop and go traffic flow conditions. The orange highlighted cells show sections of the mainline operating at acceptable LOS under free-flow conditions but breaking down in operations under forced flow conditions due to a multitude of factors as elaborated in Section 2.4 of this document.

The primary purpose of **Table 11** is to identify and compare the impacts associated with the 2030 No-Action Alternative to the 2030 Alternatives 2 and 3 as if I-40 were six-lanes. The green highlighted cells indicate the change in the level of service when comparing the 2030 No-Action Alternative (with I-40 six lanes) to the 2030 Build Alternatives 2 and 3.

TABLE 11: FREEWAY MAINLANE AND RAMP LOS ANALYSIS FOR THE "NO-ACTION" AND "BUILD" ALTERNATIVES BASED ON HIGHWAY CAPACITY MANUAL FREE-FLOW CONDITION ANALYSIS											
	Description	NO ACTION ANALYSIS						2030 BUILD ANALYSIS (SEE NOTES)			
								ALTERNATIVE 2		ALTERNATIVE 3	
		2010 NO ACTION (I-40 Four-Lanes) [1]		*2030 NO ACTION (I-40 Four-Lanes)* [3]		*2030 NO ACTION (I-40 Six-Lanes)* [4]		*I-40 Six Lanes & Carnahan/Murphy Four-lanes* [7]		*I-40 Six Lanes & Counts Massie Four-lanes* [8]	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-40 / Hwy 365 Interchange	EB flow west of interchange	D	C	E	C	D	B	D	B	D	B
	EB flow east of interchange	D	C	E	C	D	C	D	B	D	C
	WB flow east of interchange	D	D	D	E	C	D	C	D	C	D
	WB flow west of interchange	D	D	D	E	D	D	D	D	D	D
I-430 / Hwy 100 Interchange	SB flow north of interchange	B	B	C	C	B	B	B	B	B	B
	SB flow south of interchange	C	C	D	C	D	C	D	C	D	C
	NB flow south of interchange	C	C	C	D	C	D	C	D	C	D
	NB flow north of interchange	B	B	C	C	B	B	B	B	B	B
Proposed Interchange	EB flow west of interchange							D	B	D	C
	EB flow east of interchange							C	B	C	B
	WB flow east of interchange							C	C	C	C
	WB flow west of interchange							C	D	C	D
I-40 / I-430 / North Belt Interchange	EB flow west of interchange	D	C	E	C	C	B	C	B	C	B
	EB flow east of interchange	E	D	E	D	C	C	C	C	C	C
	WB flow east of interchange	E	E	E	E	C	C	C	C	C	C
	WB flow west of interchange	D	D	D	E	C	C	C	C	C	C
	NB flow south of interchange	C	D	D	E	B	B	B	B	B	B
	SB flow south of interchange	C	C	E	E	B	B	B	B	B	B
Highway 100 (Maumelle Boulevard)	EB flow west of the I-430 Interchange	F	C	F	D	F	D	F	D	F	D
	EB flow east of the I-430 Interchange	A	A	B	B	B	B	B	B	A	A
	WB flow west of the I-430 Interchange	B	E	C	F	C	F	B	E	B	E
	WB flow east of the I-430 Interchange	B	B	B	B	B	B	B	A	B	A

LEGEND:

LOS based on Free-Flow condition analysis only. Field observations indicate Breakdown/Forced-Flow conditions with the actual operations being at LOS E / F.

LOS change betweeen the 2030 NO ACTION and BUILD Options

TABLE 11 NOTES:

1. 2010 No Action Option analysis includes existing system with four lanes along I-40 and no auxiliary lanes between interchange or ramp widening.

2. 2030 No Action Option analysis includes the existing system with four lanes along I-40 and the proposed "Future North Belt Freeway" with no auxiliary lanes between interchanges or ramp widening.

3. 2030 No Action analysis includes the existing system with six lanes along I-40 and the proposed "Future North Belt Freeway" with auxiliary lanes on I-40 between I-430 and the proposed interchange, auxiliary lanes on I-430 between I-40 and Highway 100, and two-lane ramps between I-430 and I-40.

4. 2030 BUILD Alternative 2 analysis includes the proposed system with six lanes along I-40 and the proposed "Future North Belt Freeway" with auxiliary lanes on I-40 between I-430 and the proposed interchange, auxiliary lanes on I-430 between I-40 and Highway 100, two-lane ramps between I-430 and I-40, and four-lane connection to Carnahan Road / Murphy Drive.

5. 2030 BUILD Alternative 3 analysis includes the proposed system with six lanes along I-40 and the proposed "Future North Belt Freeway" with auxiliary lanes on I-40 between I-430 and the proposed interchange, auxiliary lanes on I-430 between I-40 and Highway 100, two-lane ramps between I-430 and I-40, and four-lane connection to Counts Massie Road.
6. Operational analysis was conducted using Highway Capacity Software (HCS+) based on HCM methodology for free flow conditions. Actual LOS may vary based on site conditions and interruptions from upstream and downstream traffic flows.
7. Project design hour traffic volumes were determined using a 10% K-Factor

The following observations were noted during the examination of the traffic volumes and determination of the levels of service:

- Build Alternatives 2 and 3 have positive LOS impacts on Highway 100 at the I-430 interchange.
- Build Alternatives 2 and 3 will lessen truck traffic along Highway 100 by providing a more direct route to the commercial and industrial areas from I-40.
- Alternative 2 and Alternative 3 options lessen future traffic demand along Highway 100 and I-40/I-430 interchange by redistributing traffic to the new interchange.
- Build Alternatives 2 and 3 do not present any manifest adverse operational impacts on mainline I-40, with both alternatives offering virtually similar LOS results. Exact operational effects of the proposed interchange alternatives along I-40 are hard to identify based on the free flow analysis methodology, especially given the modest change in traffic volume. Exact operational effects will be identified following the selection of a specific build alternative using the micro-simulation modeling tool CORSIM.

- The projected mainline LOS for I-40 near the proposed interchange ranges within acceptable levels (LOS B - LOS D) for both Alternatives 2 and 3.
- On I-40 east of the I-430 interchange, both Build Alternatives 2 and 3 slightly degrade the eastbound morning peak LOS from B to C.

Additional traffic impacts occur due to the merging and diverging maneuvers required by traffic entering or exiting I-40 at the new interchange location. Analysis of the ramp merge section from the proposed interchange to eastbound I-40 and ramp diverge section from westbound I-40 to the proposed interchange is shown in **Table 12**. An assessment of these movements was performed using the 2000 Highway Capacity Manual and software procedures. Results indicate that the LOS for both the merging and diverging maneuvers are stable at all times; however, the eastbound merging in the morning is approaching unstable with the level of convenience and comfort expected to be poor.

Another potential impact is the weaving along I-40 between the traffic from the proposed interchange and I-430 / North Belt Freeway. Weaving movements will occur along four lanes of I-40 between the traffic entering I-40 eastbound at the proposed interchange and the traffic exiting I-40 to I-430 / North Belt Freeway. The proposed length of the eastbound weaving section between the proposed interchange and I-430 / North Belt Freeway is approximately 0.85 miles (4,490 ft). The proposed length of the westbound weaving section between I-430 / North Belt Freeway and the proposed interchange is approximately 0.89 miles (4,700 ft). The 2000 edition of the Highway Capacity Manual recommends that the maximum length of the weaving section for which analysis should be conducted as 2,500 ft. For weaving sections exceeding 2,500 ft in length, merge and diverge analysis at the entrance and exit ramp sections as shown in **Table 12** should suffice. However, the new 2010 pre-release version of the Highway Capacity Manual eliminates the maximum distance criteria for conducting a weaving analysis and requires a weaving analysis to be conducted for all weaving sections irrespective of the lengths of the weaving segments. A detailed weaving analysis of the eastbound and westbound sections along I-40 will be performed. The AHTD is working to identify the

reconfiguration design for this interchange. A detailed analysis of the weave sections will be conducted using the micro-simulation modeling tool CORSIM. A 2010 HCM analysis of the reconfiguration design will be completed once AHTD has completed its final interchange layout.

TABLE 12: RAMP MERGE AND DIVERGE LOS ANALYSIS FOR THE PROPOSED INTERCHANGE "BUILD" ALTERNATIVES BASED ON HIGHWAY CAPACITY MANUAL FREE-FLOW CONDITION ANALYSIS					
	Description	**2030 BUILD ANALYSIS (SEE NOTES)**			
		ALTERNATIVE 2		**ALTERNATIVE 3**	
		I-40 Six Lanes & Carnahan/Murphy Four-lanes [1]		*I-40 Six Lanes & Counts Massie Four-lanes [2]*	
		AM	**PM**	**AM**	**PM**
I-40 / Proposed Interchange	EB merge from Proposed Interchange to I-430	D	C	D	C
	WB diverge from I-430 to Proposed Interchange	B	C	B	B

NOTES:

1. 2030 BUILD Alternative 2 analysis includes the proposed system with six lanes along I-40 and the proposed "Future North Belt Freeway" with auxiliary lanes on I-40 between I-430 and the proposed interchange, auxiliary lanes on I-430 between I-40 and Highway 100, two-lane ramps between I-430 and I-40, and four-lane connection to Carnahan Road / Murphy Drive.

2. 2030 BUILD Alternative 3 analysis includes the proposed system with six lanes along I-40 and the proposed "Future North Belt Freeway" with auxiliary lanes on I-40 between I-430 and the proposed interchange, auxiliary lanes on I-430 between I-40 and Highway 100, two-lane ramps between I-430 and I-40, and four-lane connection to Counts Massie Road.

3. Operational analysis was conducted using Highway Capacity Software (HCS+) based on HCM methodology for free flow conditions. Actual LOS may vary based on site conditions and interruptions from upstream and downstream traffic flows.

4. Project design hour traffic volumes were determined using a 10% K-Factor

The FHWA and AHTD have established a process for considering proposals to add new interchanges to the Interstate System. A part of that process requires a detailed analysis of traffic flow of the proposed interchange and its interaction with the traffic flow of the interstate. That engineering and operation analysis will occur later in the development of this project after the preliminary design of the proposed interchange and the I-40/I-430/North Belt Freeway interchange are established. The outcome of the analysis may indicate that the proposed design is acceptable or that changes to the interchange designs are necessary.

4.2 Land Use

The eastern ends of Alternatives 2 and 3 are located within the city limits of Maumelle, pass through the relatively undeveloped area of White Oak Bayou and its associated floodplain, and are zoned as Planned Residential District. Proceeding west, both alignments enter the city of North Little Rock in an area with a few scattered residences near the eastern end of Counts Massie Road.

At the point where the alignments of Alternatives 2 and 3 separate, Alternative 2 continues north through an undeveloped area, re-entering the City of Maumelle. Alternative 2 passes near a new residential addition under construction, then shifts northwest and passes through the extensive floodplains associated with White Oak Bayou. Alternative 2 then connects with Carnahan Drive and continues toward Highway 100, adjacent to the existing Maumelle Middle School as well as the Oak Grove/Maumelle High School, currently under construction. Land abutting Carnahan Drive is zoned commercial and industrial by the City of Maumelle.

At the point where the alignment of Alternatives 2 and 3 separate, Alternative 3 continues west and then south, inside the city of North Little Rock. Alternative 3 continues south on Counts Massie Road to Highway 100. Most of the land abutting Counts Massie Road is zoned commercial and industrial by North Little Rock. Alternative 3 also passes by two existing multi-family residential developments with a third under construction, as well as the Maumelle Diamond Center Baseball Complex.

Alternative 2 has the potential of stimulating commercial and industrial growth along its western section by providing a more convenient route for truck and employee traffic to the Interstate and would route traffic near the residential developments along Country Club Drive. Alternative 3 has the potential of stimulating commercial and industrial growth along its western and southern sections, expanding the existing commercial developments.

The No-Action Alternative will have no affect on area land use.

4.3 Natural Environment

Soils in the project study area are mapped in the Leadvale-Guthrie-Linker association (USDA 1975). The soils are poorly drained to well drained, level to gently sloping, with deep and moderately deep, loamy soils in valleys and on tops of low mountains. These soils can present challenges to urban use due to soil wetness, low bearing capacity, slow percolation rates, and shallow depth to bedrock.

The project study area is within the White Oak Bayou watershed. The watershed consists of mixed hardwood and pine forests in hilly terrain in the more effectively drained upland areas. Mature non-wetland forest flats can also be found throughout the watershed. However, more poorly drained flats often contain forested wetland communities that, depending on duration and depth of water inundation, may exhibit sparse ground cover or a healthy herbaceous and woody understory community. White Oak Bayou is a main feature of the watershed and associated scrub/shrub wetlands can be found adjacent to it where beaver activity has occurred.

The well drained areas within the project corridor contain intermixed forest with common overstory species of loblolly pine (*Pinus taeda*), sweet gum (*Liquidambar styraciflua*), short leaf pine, (*Pinus echinatus*), mockernut hickory (*Carya tomentosa*), and various oak species, including cherry-bark oak (*Quercus falcata),* white oak (*Quercus alba*), and

northern red oak (*Quercus rubra*). Common understory tree species include eastern red cedar (*Juniciperus virginiana*), cedar elm (*Ulmus crassifolia*), and flowering dogwood (*Cornus florida).*

4.4 Wetlands and Waters of the United States

As noted previously, the project study area is within the White Oak Bayou watershed. Much of the area along the southern and western portion of Alternative 3 has been developed, and these developed areas are interspersed with vacant lots that have been cleared of trees. The eastern portion of Alternative 3 shares a mutual alignment with Alternative 2 where the Alternatives extend west from I-40. In this area, there are large tracts of forest, as well as a few existing residences and buildings.

The area where Alternative 2 splits and turns north from Alternative 3 is forested with some interspersed residential development for approximately 0.25 miles. From here, Alternative 2 enters additional upland forest, and passes near a large residential development under construction. Approximately 0.5 miles north of the split from Alternative 3, Alternative 2 turns west and continues through mature upland forest for approximately 0.4 miles until it reaches another area cleared for construction. At the far western edge of this construction area is a 50-foot upland buffer, occurring on the eastern side of a large wetland associated with White Oak Bayou. The western side of this wetland is upland forest to the end of Alternative 2, which then connects to Carnahan Drive.

Several waters of the United States were identified within the project study area. While the actual amount of stream bank impacts will depend upon the final design, Alternatives 2 and 3 have the potential to impact a maximum of 2,188 feet and 2,972 feet of stream bank, respectively.

Eleven (11) wetlands were identified in the project area and are illustrated in **Figure 8**.

City of Maumelle
2008 Digital Orthophotography

Alternative 2

Alternatives 2 and 3, Common Segment

Alternative 3

3 Wetland 3, as Identified by Wetlands Consultants, Inc.

N

0 1,500 3,000 4,500 6,000 Feet

Maumelle Interchange

BENHAM an SAIC company

The Benham Companies, LLC

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Little Rock, AR 72211
(501) 228-4420
www.benham.com

Figure Title	**Potentially Impacted Wetlands**
Document Title	I-40 Interchange Maumelle Environmental Assessment
Client	City of Maumelle
Location	Pulaski County, Arkansas

Date	5/2/2011
Scale	As Shown
Designed By	DA
Approved By	DA
Drawn By	TS

Project Number
4070816000
Figure Number
8

S:\GIS\Projects\4070816000_Maumelle\Maps\WetlandsConsultants_fig8.mxd

Of these eleven (11) wetlands, eight (8) wetlands may be impacted by either Alternative 2 or 3 and these are presented in **Table 13**. One (1) of these was a small herbaceous wetland that was part of a storm water basin.

Five (5) of the wetlands are classified as forested wetland depressions. The channel of White Oak Bayou is a forested riverine wetland, and the last wetland is a mix of forested and scrub-shrub wetland habitat, located within the Maumelle Mitigation Area adjacent to the White Oak Bayou channel. The relative potential impacts of each Alternative upon wetlands are summarized in **Table 13**.

Table 13: Summary of Potential Wetland Impacts

Wetland Number	Alternative 2 Impacts	Alternative 3 Impacts	Type of Wetland
#2		0.03 acres	Herbaceous
#3		0.32 acres	Forested
#4	0.11 acres	1.10 acres	Forested
#6	0.49 acres	0.49 acres	Forested
#7	0.41 acres	0.41 acres	Riverine Forested
#8	0.40 acres		Forested
#9	0.35 acres		Forested
#11*	4.72 acres		Forested / Scrub-Shrub
Total Impacts	**6.48 acres**	**2.35 acres**	

* Wetland #11 is located within the Maumelle Mitigation Area.

In summary, construction in streams and adjacent wetlands is unavoidable for both Alternatives 2 and 3. Impacts will be minimized during the design of each alternative and the functional integrity of the remaining wetlands will be maintained. Wetland mitigation has been achieved for the crossing of White Oak Bayou just west of I-40 for Alternatives 2 and 3 when the Section 404 permit was obtained for this crossing as part of another project. However, Alternative 2 will require additional wetland mitigation and

permitting for its White Oak Bayou crossing just southeast of the roadway connection to Carnahan Drive.

The No-Action Alternative will have no impact on wetlands.

The wetland findings are pursuant to Executive Order 11990 and DOT Order 5660.1A on the Protection of Wetlands. All practicable measures to minimize impacts to wetlands and streams will be implemented during design and construction of the selected alternative.

4.5 Floodplains

Both Alternatives 2 and 3 will cross areas designated as 100-year floodplains, potentially impacting 10 acres and 6 acres, respectively. Both Alternatives 2 and 3 cross White Oak Bayou at a location between the eastern terminus of Counts Massie Road and I-40. Maumelle has obtained a Section 404 Permit for construction of a roadway crossing at this point. However, an additional Section 404 Permit would be required for construction of Alternative 2, in order to cross White Oak Bayou at a second location, southeast of the eastern end of Carnahan Drive.

Design measures will be implemented to avoid and/or minimize impact to floodplains. In the areas where Alternatives 2 and 3 cross the 100-year floodplain, the roadway and bridges will be designed to prevent overtopping by a 100-year flood event. In other areas, the roadway will be designed to prevent overtopping by the 25-year flood. Therefore, risk of traffic interruption or blockage of the roadway by water is minimal.

Bridges and/or drainage structures will be sized sufficiently to minimize impacts on natural and beneficial floodplain values. These values include, but are not limited to, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality, maintenance, and groundwater recharge.

The design measures to minimize floodplain impacts include (1) avoiding longitudinal encroachments, (2) sufficient bridging and/or drainage structures to minimize adverse effects from backwater, (3) sufficient bridging and/or drainage structures to minimize increase in water velocity, (4) minimizing channel alternation, (5) adequate and timely erosion control to minimize erosion and sedimentation, and (6) utilizing standard specifications for controlling work in and around streams to minimize adverse water quality impact.

Final design will be reviewed to confirm that the design adequately minimizes potential risk to life and property. The project will not support incompatible use or development of the floodplain. Adjacent properties should not be impacted nor have a greater flood risk than existed before construction of the project. None of the stream crossings will constitute a significant floodplain encroachment or significant risk to property or life.

The No-Action Alternative will have no impact on floodplains.

4.6 Endangered and Threatened Species

A review of the Arkansas Natural Heritage Commission's (ANHC) Natural Diversity Database indicates the federal endangered species that may inhabit or be found within Pulaski County include the Red-Cockaded Woodpecker (*Picoides borealis*), Interior Least Tern (*Sterna antillarum*), and Running Buffalo Clover (*Trlfolium stoloniferum*). However, based upon correspondence from the United States Fish and Wildlife Service dated November 4, 2009, no threatened or endangered species are known to occur in the study area at this time.

4.7 Wild and Scenic Rivers

No components of the Wild and Scenic Rivers System or streams listed on the Nationwide Rivers Inventory are located within the project study area.

4.8 Prime Farmland

Both Alternatives 2 and 3 are primarily located within the Cities of Maumelle and North Little Rock. Due to the level of development in these areas, and the flooded nature of much of the undeveloped areas, prime farmland impacts are unlikely with either Alternative 2 or 3. A Form CPA-106 Farmland Conversion Impact Rating for Corridor Projects was completed by the Natural Resource Conservation Service and confirmed that no impacts to prime farmland are anticipated.

The No-Action Alternative will also have no impact on prime farmland.

4.9 Water Quality

The project study area is located within the Arkansas River Valley Ecoregion. The water quality turbidity standards for streams and lakes in this Ecoregion are 10 and 25 Nephelometric Turbidity Units (NTUs), respectively.

Sediments from construction may result in localized, short-term adverse water quality impacts, and temporary exceedances of state water quality standards for turbidity may occur. Other potential sources of water quality impacts include petroleum products used with construction equipment, highway pollutants from operation of the constructed facility, and toxic or hazardous material spills from the traveling public.

In order to minimize the potential for water quality impacts during construction, the City of Maumelle and the AHTD will comply with all requirements of the Clean Water Act, as amended, for the construction of this project. This includes Section 401 - Water Quality Certification, Section 402 - National Pollutant Discharge Elimination System permitting (NPDES), and Section 404 - Permitting for Dredged or Fill Material. The NPDES permit for storm water discharges from construction sites will require the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP will include all specifications and best management practices (BMPs) for control of erosion and sedimentation. The SWPPP will be prepared when the roadway design work has been completed in order to integrate the BMPs with the project design.

As there is no construction associated with the No-Action Alternative, it will have no impact on water quality.

4.10 Public/Private Water Supplies

A review of United States Geological Survey well information, Federal Reporting Database System public water supply system information, and Arkansas database well information indicates no public water supply systems and no water wells are located within the project study area.

4.11 Historic Properties

The consultant team has conducted a records check and literature review of recorded buildings, structures, objects, sites (prehistoric and historic archeological sites), and districts in the project study area. All buildings, structures, objects, and districts listed or determined eligible for listing in the National Register of Historic Places (NRHP) on file with the Arkansas State Historic Preservation Officer (SHPO) were recorded on quadrangles for inclusion in the Project Study Area. For the purposes of the historic records review, the Project Study Area was as indicated in **Figure 1**, with a ±1-mile buffer.

The review included the examination of information found in the libraries and Arkansas Archeological Survey (AAS) offices in Fayetteville, the State Historic Preservation Officer (SHPO) offices in Little Rock, and the examination of county courthouse cemetery records in the project study area. Local amateurs and other professionals interested in or with knowledge about the study area were also contacted. Plats prepared by the General Land Office (GLO) for T2N R13W, T2N R12W, T3N R13W, and T3N R12W were reviewed. The team also identified high probability areas for historic properties based on slope, soil, drainage, distance to water, distance to known sites, and amount of disturbance.

Historic property data have been collected for the Project Study Area, which included the following USGS quadrangles: Cato, Ark. 7.5' 1987; Mayflower, Ark. 7.5' 1987; North Little Rock, Ark. 7.5' 1986; and Pinnacle Mountain, Ark. 7.5' 1986.

Over 325 properties are listed in the NRHP in Pulaski County, Arkansas, with only two (2) NRHP properties located near the project study area, i.e., Maumelle Ordinance Works Bunker #4 (aka PU8364) at 4 Willastein Drive, and Pyeatte - Mason Cemetery at the SW corner of Waterside and Lily Streets.

In addition to the NRHP properties, many archeological resources have been previously recorded on the project quadrangles and in the project townships located within the Project Study Area, as indicated in **Table 14**.

Table 14: Summary of Historic Properties within Project Study Area

Quadrangle	Archeological Sites	Buildings, Structures, Objects	NRHP Properties	Total Properties
Cato, Ark. 7.5' 1987	7	2	0	9
Mayflower, Ark. 7.5' 1987	2	0	0	2
North Little Rock, Ark. 7.5' 1986	47	5	0	52
Pinnacle Mountain, Ark. 7.5' 1986	43	3	2	48
Total	99	10	2	111

The previously recorded archeological sites fall into three categories Historic, Prehistoric, and Multi-Component as shown in **Table 15**.

Table 15: Total Archeological Sites within Project Study Area				
Quadrangle	**Historic**	**Prehistoric**	**Multi-Component**	**Total**
Cato, Ark. 7.5' 1987	0	7	0	7
Mayflower, Ark. 7.5' 1987	1	1	0	2
North Little Rock, Ark. 7.5' 1986	8	34	5	47
Pinnacle Mountain, Ark. 7.5' 1986	10	28	5	43

Based upon the historic property review of the Project Study Area, no buildings, structures, objects, or NRHP properties are located near either Alternative 2 or 3. However, five (5) archeological sites may be affected by Alternative 2 and three (3) archeological sites may be affected by Alternative 3. Other archeological sites recorded to be near Alternatives 2 and 3 could be indirectly affected. **Table 16** summarizes the potential historic property impacts of Alternatives 2 and 3.

Table 16: Summary of Potential Historic Properties Effects		
Historic Property Type	**# of Potentially-Affected Properties, Alternative 2**	**# of Potentially-Affected Properties, Alternative 3**
Archeological Sites	5	3
Buildings, Structures, Objects	0	0
National Register Properties	0	0
Alternative 2 includes 3PU0557, 3PU0208, 3PU0563, 3PU0564, 3PU0565 Alternative 3 includes 3PU0563, 3PU0564, 3PU0565		

The No-Action Alternative will have no impact on historic properties.

When a preferred alternative is selected for this project, a full Phase I historic properties survey, to include buildings, structures, objects, sites (prehistoric and historic archeological), and districts, will be conducted of the Area of Potential Effects (APE), in accordance with 36 C.F.R. § 800 et seq., with documentation in accordance with 36 C.F.R. § 800.11(d).

4.12 Tribal Coordination

Consultation on this project was initiated with appropriate Native American Tribes by FHWA correspondence dated July 29, 2008. One response was from the Osage Nation, requesting a copy of the completed Phase I cultural survey conducted for the project. See **Appendix B** for tribal coordination materials.

4.13 Hazardous Materials

Potential sources of hazardous materials may be associated with gas stations, underground and aboveground storage tanks (USTs and ASTs), automotive repair businesses, dry cleaning businesses, industrial activities, car recyclers, landfills (permitted or un-permitted), illegal dumps, and asbestos-containing materials (ACMs).

A preliminary investigation of the project study area consisted of a review of available federal and state environmental databases and site visits to confirm the database information and to note additional field observations. No land use history or title searches were conducted.

Table 17 lists the ASTs and USTs located within the project study area, based upon database review.

Table 17: Recorded ASTs and USTs

Alternative	Facility Name	Facility Address	Storage Type	Material Stored
Alternative 2	Target Distribution Center	600 Carnahan Drive	UST	Unknown
Alternative 3	National Home Center	7420 Counts Massie Road	UST	Diesel
			UST	Gasoline
Alternative 3	Richardson Plumbing Company	7601 Counts Massie Road	AST	Gasoline

Although none of these storage units were recorded as leaking, there is the potential for vicinity soils to be impacted from historic fuel storage.

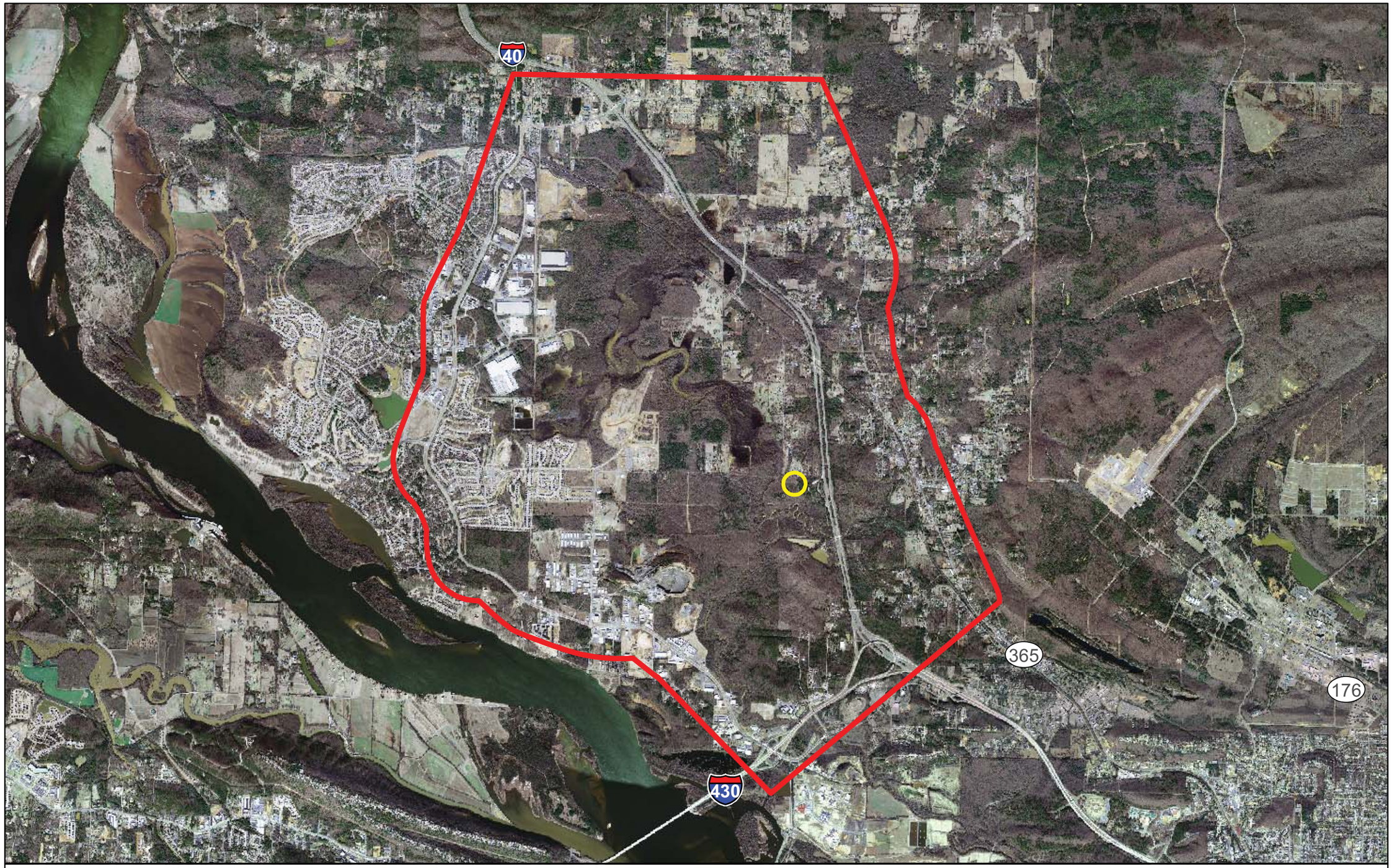
Field reconnaissance of the project study area indicated that extensive illegal dumping has taken place in the area just west of I-40, along the eastern end of Alternatives 2 and 3. See **Figure 9**. Types of discarded materials noted included bulky household waste such as mattresses and appliances.

If hazardous materials, unknown illegal dumps, or USTs are accidentally uncovered or identified by City of Maumelle or AHTD personnel or its contracting company(s), AHTD will determine the type, size, and extent of the contamination according to its response protocol. AHTD, in cooperation with the Arkansas Department of Environmental Quality (ADEQ), will determine the type of contaminant, remediation method, and disposal methods to be used for the particular category of contamination.

A certified asbestos inspector will conduct an asbestos survey of any building slated for acquisition and demolition. If the survey confirms the presences of ACM, plans will be developed to accomplish the safe removal of these materials prior to demolition.

All asbestos abatement work and associated notifications will be conducted in conformance with ADEQ, EPA, and Occupational Safety and Health Administration (OSHA) asbestos abatement regulations.

The No-Action Alternative will have no impact on hazardous materials.



Possible Illegal Dumpsite

Study Area

N

Maumelle Interchange

0 4,000 8,000 12,000 16,000 Feet

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From Science to Solutions

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Figure Title	**Area of Observed Illegal Dumping**
Document Title	I-40 Interchange Maumelle Environmental Assessment
Client	City of Maumelle
Location	Pulaski County, Arkansas

Date	5/24/2010
Scale	As Shown
Designed By	DA
Approved By	TS
Drawn By	TS

Project Number
4070816000
Figure Number
9

4.14 Noise Impacts

A traffic noise assessment was completed in accordance with AHTD's "Highway Traffic Noise Analysis Policy of Reasonableness and Feasibility for Type I – Noise Abatement Measures" and FHWA's noise regulations (23 CFR 772). Traffic noise studies consist of five (5) primary components: 1) identification of noise-sensitive receivers; 2) determination of existing ambient peak noise levels; 3) prediction of future peak noise levels; 4) identification of traffic noise impacts; and 5) evaluation of mitigation measures for sensitive receivers where traffic noise impacts occur. For the purpose of a noise analysis study, noise levels are measured and calculated in terms of dBA $_{Leq(h)}$. L_{eq} is defined as the steady state sound level that, in a stated period of time, contains the same acoustic energy as the time-varying sound level during the same period. $_{Leq(h)}$ is the hourly value of L_{eq} and is based on the more commonly known decibel (dB) and the "A-weighted" decibel unit (dBA).

Potential noise impacts are commonly distinguished as either short-term or long-term impacts. Short-term impacts are typically associated with the noise generated during construction activities, while long-term impacts are generated by future traffic volumes. Long-term noise impacts were determined in accordance with AHTD's Noise Policy, which states that noise impacts occur when:

- Noise levels approach by one (1) decibel or exceed the FHWA Noise Abatement Criteria (see **Table 18**), and/or
- Projected future noise levels greater than or equal to a 10 dBA $_{Leq(h)}$ increase over existing noise levels.

Table 18: Federal Highway Administration Noise Abatement Criteria (NAC)		
Activity Category	**Noise Level (Leq)**	**Description of Activity Category**
A	57 (Exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of these qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, open spaces, or historic districts that are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, and parks which are not included in Category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals
C	72 (Exterior)	Developed lands, properties or activities not included in Categories A or B above
D	--	Undeveloped lands
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Receiver locations to evaluate existing and future noise levels were identified to represent potential noise sensitive locations. Existing noise levels were estimated for these receivers in developed areas based on 2010 traffic counts, speed, and standard cross section of the existing road using FHWA's Traffic Noise Model 2.5 (TNM) software. Portions of the alignments for both alternatives are located over existing narrow rural roads or across open fields; therefore, the existing noise levels were measured in five locations in the field to verify the accuracy of the TNM results. After all TNM estimates were completed and measurements taken, no receivers were found to exceed or approach FHWA's NAC levels. Sound levels for representative receivers at various locations along both Alternatives are shown in **Table 19**.

Table 19: Existing Noise Levels, Representative Receivers		
Modeled Receiver	**Description**	**Existing Noise Level (dBA)**
C-06	Wholesale Electric Supply (Counts Massie Road)	53.1
C-35	Jump Zone (Counts Massie Road)	51.2
CCA-01	Residence: Country Club of Arkansas Subdivision	41.8
SCHOOL	Maumelle Middle School	43.1
C-38	U.S. Post Office	55.6

Future noise levels were predicted by TNM software using 2030 projected traffic volumes, proposed design speed, and the proposed cross section of the road. The number of impacted receivers for each alternative is shown in **Table 20**.

Table 20: Future Noise Levels, Impacted Receivers		
Alternative	**Category B Receivers**	**Category C Receivers**
No-Action	0	0
Alternative 2	38	7
Alternative 3	7	34

Alternative 3 is projected to result in noise impacts to six (6) rural residential locations, a ballpark, and an industrial area containing many NAC Category C receivers. The NAC Category B receivers are few and scattered, making noise mitigation cost prohibitive. The NAC Category C receivers are mainly commercial buildings, and noise mitigation is not possible due to numerous driveways and intersecting roads, which would render any noise abatement measures ineffective. In addition, construction of a noise wall or berm would block sight from the road to the business, which is undesirable to the property and business owners. Due to these factors, no mitigation was considered for Alternative 3.

Alternative 2 is projected to result in noise impacts to three (3) rural residences, 33 dwelling units in the Country Club of Arkansas Subdivision (currently under construction), a school, a cemetery, and several businesses. Due to the NAC Category B receivers being few and scattered, noise mitigation would be cost prohibitive. Mitigation for the commercial area was not considered, due to the access and sight issues discussed previously. Therefore, noise mitigation was considered only for the Country Club of Arkansas Subdivision. The receivers for this housing development met the criteria for a significant, 10 dBA $L_{eq(h)}$ or greater, impact based on the AHTD noise policy. These impacts, along with the high concentration of residences to be built in the addition and the lack of roadway intersections and access points, signify a location where noise mitigation may be feasible.

Completion of AHTD's Noise Abatement Measure Worksheet revealed that noise mitigation measures in the form of a free-standing noise barrier was determined feasible and reasonable for those impacted residences in the Phase XXIII, Country Club of Arkansas Subdivision if Alternative 2 is built. Based on preliminary calculations, a noise barrier 2,386 feet in length with an average height of 12 feet will reduce noise levels for 1 dwelling unit by at least 10 dBA, and 19 dwelling units by at least 5 dBA. Based upon a preliminary cost value of $25 per square foot of sound wall, a total cost of $712,178, or $37,483 per benefitted dwelling unit was calculated. In combination with all other factors presented in AHTD's Noise Policy, it was determined that a detailed noise barrier analysis is warranted upon completion of the final design for the preferred alternative.

Construction Noise and Future Land Planning

Construction Noise was found to be of a short term and temporary nature with minimum impact on land use and activities within the project area and no special mitigation measures are required.

To aid in noise compatible land use planning, the average distances from the centerline of the median or roadway to the 66 dBA sound level and the 71 dBA sound level are

presented in **Table 21** for Alternatives 2 and 3. Residential land use is discouraged within the 66 dBA impact zones, and the distances presented in **Table 21** should be used as minimum offset distances. Commercial development within the 71 dBA impact zone should be determined at the discretion of the planning officials and the offset distances are provided for information only. These offset distances should be considered as general guidelines and not as specific rules since the noise levels vary over the course of the alignment due to changing roadway grades, topographical features, and various other noise impacting contributors.

Table 21: Offset Distances to the 66 dBA and 71 dBA Sound Levels

Facility Segment	Approximate Distance to 66 dBA (feet)	Approximate Distance to 71 dBA (feet)
Alternative 2, 4-Lane Divided	130	60
Alternative 2, 4-Lane Undivided	140	60
Alternative 3, 4-Lane Divided	120	60
Alternative 3, 4-Lane Undivided	130	50

In compliance with Federal guidelines, a copy of the full noise analysis will be provided to the Central Arkansas Planning and Development District for potential use in current and future land use planning.

4.15 Air Quality

Air quality analyses have been conducted for carbon monoxide on similar projects, using Mobile 5.0a Model (Mobile Source Emission Factor Model) and CALINE 3 dispersion model. In these analyses, carbon monoxide levels for the design year were estimated using traffic volumes, weather conditions, vehicle mix, and vehicle operating speeds.

These computer analyses indicated that carbon monoxide concentration of less than one part per million (ppm) will be generated in the mixing cell for a project of this type.

Combination of this estimated concentration with an estimated ambient level of 1.0 ppm would result in a carbon monoxide concentration of less than 2.0 ppm, which is well below the national standards of 8.0 ppm for carbon monoxide.

Because the projected traffic for the proposed I-40 interchange is similar to that used in these previous analyses, the conclusion can be drawn that the proposed project is not anticipated to have any carbon monoxide impacts. In fact, the previous modeling results are very conservative, as newer vehicles operate at lower emissions rates than those assumed with previous emission modeling.

The proposed project is located in an area that is designated as attainment for all pollutants related to transportation. Therefore, the conformity procedures of the Clean Air Act, as amended, do not apply.

4.16 Social/Economic

Alternative 2 can be described in three sections. The westernmost section, Carnahan Drive, is a developed commercial/industrial area, the middle section is largely undeveloped due to extensive wetland and floodplain areas, and the eastern section is undeveloped, but has potential for development if the interchange and connecting roadway are built. In the western section, Carnahan Drive passes between the existing Maumelle Middle School and the new Oak Grove/Maumelle High School, currently under construction across from the Middle School. Because the new high school will serve not only students from Maumelle but also from the community of Oak Grove, located east of I-40 along Highway 365, Alternative 2 would provide substantial benefits for student, parent, and school bus traffic should a future connection between I-40 and Highway 365 be completed. However, these two schools currently exist on a dead end roadway and the construction of Alternative 2 will bring more traffic to this section.

The middle section of Alternative 2 passes near the large, relatively new Country Club of Arkansas residential neighborhood. This area is fast growing, contains large houses, and is generally considered an upper middle class neighborhood. The Master Street

Plan for the City of Maumelle illustrates that Country Club Parkway would extend to connect to Alternative 2. On the Plan, the Parkway is classified as a minor collector and Alternative 2 is classified as a principal arterial.

The extension of the Parkway to connect to Alternative 2 would increase traffic on the Parkway and into the neighborhood, but how much of an increase is uncertain. It would seem certain that most commuters who live within the Country Club of Arkansas neighborhood would use the new interchange, providing that they perceived I-40 to be a better travel route than Highway 100. The Parkway itself is a two-lane roadway with bike lanes on each side and raised median. A small number of houses front the street but their access to parking and garages is from the rear of the properties. In more recent expansions of the neighborhood, homes do not face the Parkway. Traffic calming measures like speed bumps and the existing traffic circle and other traffic circles can be added to prevent excessive speeds. If truck traffic became a problem, trucks could be prohibited entirely or appropriate restrictions implemented coupled with law enforcement. The potential negative social impacts would be increased traffic and its associated noise along Country Club Parkway, while the positive impacts would be increased access to the Interstate and reduced travel times.

Since there is very little existing development in the eastern section of Alternative 2, adverse social impacts are not anticipated in this area.

Alternative 3 can be described in three sections. The western section is primarily existing Counts Massie Road beginning at Highway 100 and ending at Paul Eells Drive. This section is mostly commercial and light industrial with a mix of large and small business buildings. The middle section is between Paul Eells Drive and the Maumelle Diamond Baseball Complex. It is mostly residential with three large apartment complexes combined with the recreational characteristics of the baseball complex. The eastern section is almost totally undeveloped, but has potential for development.

Alternative 3 could also increase the traffic along Country Club Parkway because an existing local street along the western edge of the baseball complex connects Counts Massie Road and the Parkway. Many commuters current travel the Parkway, the local connecting street, and Counts Massie Road to reach Highway 100 to avoid some of the congestion on Highway 100. It is unlikely that large trucks would this route because of the existing small traffic circle at the local connecting street intersection with the Parkway. As mentioned before, if truck traffic became a problem, traffic calming measures, truck restrictions and law enforcement can be implemented.

Two residences exist on this alternative near the baseball complex and the impact to them would be adverse due to noise and proximity of the roadway. The impacts would feel substantial since these residences are near the dead end portion of existing Counts Massie Road.

The No-Action Alternative will have no social impacts.

Economic Impacts

Due to the differing western termini of Alternatives 2 and 3, these alternatives will likely have different degrees of economic impacts; however, the impacts would be beneficial due to expanded commercial development within their respective commercial districts. It is anticipated that Alternative 2 will better serve the commuting public residing along Highway 100 and Country Club Drive, as well as traffic related to the large commercial establishments located along the northern part of Highway 100, and traffic destined to the middle and high schools. Alternative 3 will better serve the traffic associated with the commercial and industrial establishments along Counts Massie Road and Paul Ells Boulevard, two large existing apartment complexes, and a third apartment complex under construction. For both alternatives, the area surrounding the interchange could be highly attractive for development of roadside service type businesses.

The No-Action Alternative will have no direct, immediate economic impacts in the sense that funds will not be expended to construct new or improve existing transportation

infrastructure. However, negative economic impacts will accrue and may not be recognized. Traffic congestion will increase, causing increased travel time that in turn consumes more fuel. Some areas will be judged less desirable for development due to poor access or public opinion. The lack of continued development can be seen as an indicator that an area is declining, possibly resulting in diminished property values.

4.17 Relocations

Alternative 2

Beginning at the proposed I-40 interchange, the corridor passes through undeveloped land until its junction with existing Carnahan Drive where the new high school is under construction. From this point to the intersection of Murphy Drive, the corridor is in a commercial/light industrial area. To identify potential impacts, a 200-foot wide corridor was examined in the undeveloped area as the proposed roadway is four-lane divided and an 80-foot corridor was examined along existing Carnahan Drive as the roadway narrows to a four-lane undivided roadway centered on existing Carnahan Drive.

The proposed corridor alignment avoids the relocation of any residence or business by passing to the south of a cluster of residential properties near the end of Counts Massie Road and to the east of the Country Club of Arkansas neighborhood.

Alternative 3

Beginning at the proposed I-40 interchange, the corridor passes through mostly undeveloped land along the same corridor as Alternative 2 until its junction with existing Counts Massie Road east of Maumelle's Diamond Center Baseball Complex. From this point, the corridor follows existing Counts Massie Road until its intersection with Highway 100. To identify potential impacts, a 200-foot wide corridor was examined in the undeveloped area, where the proposed roadway will be four-lane divided, and an 80-foot corridor was examined along existing Counts Massie Road as the roadway narrows to a four-lane undivided roadway generally centered on Counts Massie Road.

Alternative 3 would not require the relocation of any residences or businesses if an 80-foot right-of-way is continued east past the ballpark and the two nearby homes. Some businesses may need to establish new additional parking on other vacant land adjacent to their buildings to replace parking areas that may have to be acquired.

The No-Action Alternative will have no impact on relocations.

4.18 Title VI and Environmental Justice

The proposed project complies with Title VI and Executive Order 12898. The public involvement process did not exclude any individuals due to income, race, color, religion, national origin, sex, age, or disability. By using the 2000 U.S. Census Data, the Health and Human Services Poverty Guidelines, (Federal Register, February, 2000), making field observations, and conducting a public involvement meeting, the determination was made that the proposed project will not have any disproportionate or adverse impacts on minorities, low-income, elderly, or disabled populations.

4.19 Trail/Bikeway Coordination

Available planning documents from the Cities of Maumelle and North Little Rock, as well as Pulaski County, have been reviewed to ensure that the proposed project is consistent with all community pedestrian trail and bike path plans. The City of North Little Rock's bicycle plan (contained in the April 24, 2007 Master Street Plan) indicates a proposed bike route within the project study area, extending north from Highway 100 along a proposed southward extension of Marche Road.

The City of Maumelle is designing a walk trail/bike path that will extend along Highway 100 from Arnold Palmer Drive southward to the Crystal Hill Drive intersection. From that point, the trail will continue eastward along Crystal Hill Road connecting to Highway 100 just west of I-430. The trail crosses over I-430 on a dedicated pedestrian/bicycle bridge and continues eastward to the intersection of North Shore Drive. From this intersection, a bicyclist could either continue east along Highway 100 on a shared

roadway or south along shared roadway to the Arkansas River Trail, a planned 24-mile trail along both sides of the Arkansas River.

Proposed Alternatives 2 or 3 do not coincide with any of the trail alignments, therefore, their preliminary design does not include trail or bike path features. A positive benefit for bicyclists will be the diversion of traffic away from the I-430/Highway 100 interchange by either of the proposed Alternatives, which will provide a safer route for bicyclist and pedestrians.

4.20 Public Lands

Alternative 2 will not impact any lands that function primarily for purposes protected by Section 4(f) of the 1966 Department of Transportation Act, or facilities funded by Section 6(f) funds from the Land and Water Conservation Fund.

While Alternative 3 passes adjacent to the publicly owned City of Maumelle Diamond Center Baseball Complex, located on the north side of Alternative 3 at 9510 Counts Massie Road, no right-of-way will be acquired on the north side of existing Counts Massie Road. Therefore, no impacts to 4(f) or 6(f) resources are anticipated with Alternative 3.

The No-Action Alternative will have no impact on public lands.

4.21 Secondary/Cumulative Impacts

The anticipated secondary or cumulative impacts are social and economic in nature. Alternative 2 will have a beneficial impact on community school traffic, and may therefore stimulate activities that are more widespread and general community growth because of more convenient access to the public schools on Carnahan Drive. Alternative 3 is anticipated to accelerate commercial and industrial development in those currently undeveloped areas along Counts Massie Road including the interchange area.

Potential adverse impacts include some level of increased traffic along County Club Parkway once the local citizens realize that there is a “back door” entrance into the Country Club of Arkansas neighborhood. While the local roadway characteristics will preclude truck traffic, additional commuter traffic is expected.

The Transportation Improvement Plan for the local area does not contain any other major federally funded transportation projects. In addition, there are no other known large improvement projects pending for this area. The AHTD intends to widen I-40 to six through lanes between North Little Rock and Conway in the long term, as well as construct the North Belt Freeway as the north leg of the I-40/I-430 interchange. Neither of these improvements is scheduled.

The City of Maumelle is conducting a study of the White Oak Bayou area with the purpose of developing a wetland management plan to protect and enhance the wetland area. This study is currently underway.

4.22 Construction Costs

Cost estimates have been prepared for both Alternatives, based upon preliminary engineering design. The estimates, which have been developed for comparison purposes only, include the costs associated with construction, right-of-way, and utility relocation, but do not include engineering design, wetland mitigation, or permits. The estimates are based on the AHTD “Estimated Costs per Mile (July 2010 version)” data.

The total costs estimated for Alternatives 2 and 3 are $58.7 and $40.9 million, respectively. The individual costs estimated for each component of the Alternatives, i.e., the I-40 interchange, associated auxiliary lanes on I-40, and four-lane roadways, are in **Table 22**.

Table 22: Comparison of Construction Cost Estimates, Alternatives 2 and 3				
Alternative	**New I-40 Interchange (million)**	**I-40 Auxiliary Lanes (million)**	**Four-Lane Roadway (million)**	**Total (million)**
Alternative 2	$11.4	$3.4	$43.9	$58.7
Alternative 3	$11.4	$3.4	$26.1	$40.9

5.0 COMMENTS AND PUBLIC INVOLVEMENT

An "open forum" public involvement meeting was held at the Jess Odom Community Center in Maumelle from 4 p.m. to 7 p.m. on Tuesday, March 3, 2009. Media news releases, legal advertisements in area newspapers, flyers, and mailed public notices informed the public of the meetings.

The following information was made available for review and comment:

- Graphics of the three (3) build Alternatives
- Traffic information, including daily and peak hour traffic volumes within the study area
- A constraints map of the proposed study area, showing wetlands, floodplains, hazardous material sites, and the three (3) build Alternatives

The meeting roster was signed by 75 people, with 1 oral comment and 28 written comments received from the public.

Of the 29 comments received, 25 responders agreed that a new I-40 interchange is needed. Support expressed for each of the Alternatives was relatively equal, with Alternatives 1, 2, and 3 receiving 7, 10, and 7 expressions of support, respectively.

Copies of materials from the public involvement meetings are included as **Appendix C**.

6.0 CURSORY EVALUATION OF CONNECTION BETWEEN I-40 AND HIGHWAY 365

Some transportation projects propose specific improvements that could be expanded in the future to provide additional transportation links to other roadways or facilities. In these situations it is both prudent and good public policy to look beyond the current project to determine if it can be expanded or extended at some point in the future without causing significant impacts.

In the future, the roadway connecting Highway 100 in Maumelle to I-40 could be extended eastward about 0.75 miles beyond I-40 to connect to Highway 365. This section summarizes the results of a brief review of the feasibility of such a future connection between the new I-40 interchange and Highway 365. The connection would be located within the unincorporated community of Oak Grove.

Wetlands: A review of NWI maps indicates no mapped wetlands in the area.

Floodplains: Construction would require a crossing of Newton Creek which would require a Section 404 Permit.

Archeological: Two (2) historical archeological sites are recorded in the area. Upon selection of an alignment for the new connecting facility, a full Phase I historic properties survey, to include buildings, structures, objects, sites (prehistoric and historic archeological), and districts, would be conducted of the Area of Potential Effects, in accordance with 36 C.F.R. § 800 et seq., with documentation in accordance with 36 C.F.R. § 800.11(d).

Hazardous Materials: Database review indicates that diesel and gas were historically stored in above ground storage tanks at 10805 McArthur, i.e., near a future possible connecting point.

Social: A connection would greatly facilitate school traffic, as children living in the Oak Grove community attend the Maumelle middle school and will attend the new Oak Grove/Maumelle High School, high school in Maumelle when its construction is completed.

The connection would also allow direct access into the retail areas of North Little Rock and Maumelle for residents of the Oak Grove area.

Relocations: Evaluation of potential relocations is not possible without a preliminary alignment of the new connecting facility.

Transportation: Overall, a future connection would provide a key link between the Highway 365 area and I-40 allowing traffic to access both I-40 and I-430 much more directly. This would in turn reduce indirection and delay. The future connection would also provide a missing link in the local transportation network. However, one of the transportation challenges of a connection between I-40 and Highway 365 will be crossing the Union Pacific Railroad (UPRR). It is likely that the UPRR would propose a bridge over passing the railroad as a vital safety measure to avoid train/vehicle collisions. This would also require over passing Highway 365 because of it proximity to the railroad tracks. This option would be expensive and the roadway connection would be to Oak Grove Road north of Highway 365. Another option would be an at-grade crossing of the railroad tracks. This option would require extensive roadway and railway signalization and protective devices to minimize the possibility of a train/vehicle collision. This option would be less expensive and align directly into the existing Oak Grove Road/Highway 365 intersection. From an engineering viewpoint, both options are practical and have been used in many locations.

7.0 COMMITMENTS

These standard commitments associated with relocation procedures, hazardous materials abatement, historic properties, and control of water quality impacts are included:

- Maumelle and AHTD will comply with all requirements of the Clean Water Act, as amended, for the construction of this project. This includes Section 401 - Water Quality Certification, Section 402 - National Pollutant Discharge Elimination System permitting (NPDES), and Section 404 - Permitting for Dredged or Fill Material. The NPDES permit for storm water discharges from construction sites will require the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP will include all specifications and best management practices (BMPs) for control of erosion and sedimentation.
- Design measures will be incorporated to avoid and/or minimize impact to floodplains.
- During construction, if hazardous materials or USTs are identified or accidentally uncovered by Maumelle personnel, AHTD personnel, or contacting company(s), AHTD will determine the type, size, and extent of the contamination according to the AHTD's response protocol. AHTD in consultation with ADEQ will decide the type of containment, remediation, and disposal methods to be employed for that particular type of contamination.
- When a preferred alternative is selected, a full Phase I historic properties survey, to include buildings, structures, objects, sites (prehistoric and historic archeological), and districts, will be conducted of the Area of Potential Effects (APE), in accordance with 36 C.F.R. § 800 et seq., with documentation in accordance with 36 C.F.R. § 800.11(d).
- The design measures to minimize floodplain impacts include (1) avoiding longitudinal floodplain encroachments, (2) sufficient bridging and/or drainage structures to minimize adverse effects from backwater, (3) sufficient bridging and/or drainage structures to minimize increases in velocity, (4) minimizing channel alterations, (5) adequate and timely erosion control to minimize erosion

and sedimentation and (6) using AHTD's Standard Specifications for controlling work in and around streams to minimize adverse water quality impacts. The final project design will be reviewed to confirm that the design is adequate and that potential risk to life and property are minimized.

- The project may require the acquisition and demolition of standing structures. An asbestos survey will be conducted on each building prior to the development of demolition plans. If the survey detects the presence of any asbestos-containing materials, plans will be developed to accomplish the safe removal of these materials prior to demolition. All asbestos abatement work will be conducted in conformance with ADEQ, EPA, and OSHA asbestos abatement regulations.

8.0 SUMMARY

A No-Action Alternative and three (3) build Alternatives were identified for evaluation.

Based on preliminary engineering and environmental data collection and review, Alternative 1 was eliminated as a viable alternative for further evaluation because it only marginally met the purpose and need, had the greatest potential impacts on wetlands and floodplains, was not a component of the Maumelle Street Plan, was not as beneficial to traffic, and had a higher construction cost due to the necessity of both a railroad overpass and an at-grade railroad crossing.

Therefore, detailed environmental evaluation focused on the No-Action Alternative and Alternatives 2 and 3. **Table 23** summarizes the potential impacts associated with the No-Action Alternative and Alternatives 2 and 3.

A preferred alternative has not been designated for this project. After approval of the EA for public dissemination, a Location Public Hearing will be held. After a review of comments received from citizens, public officials, and public agencies, a preferred alternative will be determined and announced publicly.

Table 23: Comparison of Potential Impacts, Alternatives 2 and 3 and No-Action										
Alternative	**Wetlands (acres)**	**Flood Plains (acres)**	**Section 404 Permit**	**Historic Properties**	**Hazardous Materials**	**Noise Receptors**	**Noise Mitigation**	**Social Impacts**	**Potential Relocations**	**Total Cost ($M)**
2	6.48	10	2 required, 1 of which is already issued	5	1 UST	NAC B: 38 NAC C: 7	Barrier 12' high, 2386' long, $712k	Supports school traffic	None	$58.7
3	2.35	6	1 required, which is already issued	3	2 USTs 1 AST	NAC B: 7 NAC C: 34	None indicated.	Supports Maumelle Diamond Baseball Complex traffic	None	$40.9
No-Action	None	None	1 already issued, no additional required	None	None	None	None	None	None	None

APPENDIX A

M A U M E L L E

OFFICE OF THE MAYOR

May 27, 2009

Mr. Dan Flowers
Director
Arkansas State Highway and
Transportation Department
10324 Interstate 30
Little Rock AR 72203-2261

RE: AHTD Job 061190
I-40 Interchange (Maumelle)
Pulaski County

Dear Mr. Flowers:

The City of Maumelle has employed the services of The Benham Companies (Benham) for the study and design of a new interchange on Interstate 40. Benham has advanced their operational and environmental studies of three proposed alignment options to the point that one option can be eliminated from additional study. I am writing to provide that information to you.

The three options under consideration are:

- Option 1 – extension of Carnahan Drive from the vicinity of the new high school northeasterly to the vicinity of Marche Road overpass of I-40
- Option 2 – extension of Carnahan Drive from the vicinity of the new high school southeasterly to the vicinity of the former rest area
- Option 3 – extension of Counts Massie Road easterly to the vicinity of the former rest area

The City of Maumelle has worked closely with your staff during the project development, including identification of these alternatives. After performing detailed record searches, mapping, and identification of environmental constraints, the City held a public informational meeting on March 3, 2009. Approximately 75 people attended the meeting, and comments were submitted.

After considering these comments and the currently known environmental impacts, the City of Maumelle is requesting concurrence to drop Option 1 from further study based on the following factors:

- Purpose and need – The Federal legislation providing funds for this project describe the project as providing access from an interchange on I-40 into the City of Maumelle. This access would respond to three primary needs: additional access, improved public safety, and increased mobility. While all three options

550 EDGEWOOD DRIVE / SUITE 590 / MAUMELLE, ARKANSAS 72113
(501) 851-2500 FAX (501) 851-6738

do address these needs, Option 1 does not address the needs as well as Options 2 and 3 because it does not improve public safety or increase mobility for the numerous new residential and commercial developments occurring to the southwest of the White Oak Bayou along Country Club Drive and Counts Massie Road. These are the areas for new extensive growth in both the Cities of Maumelle and North Little Rock. Option 2 meets the purpose and need of the project in the best fashion and Option 3 meets the purpose and need but not as well as Option 2. Option 1 meets the purpose and need in a limited fashion but primarily for the school complexes and the industrial area.

- Wetlands/Flood Plains – Crossing of White Oak Bayou is necessary to reach I-40, and it is likely that regulatory agencies will not view an alternative with extensive impacts favorably when compared to other alternatives with lesser impacts. Option 1 would cause the greatest impacts to both wetlands and flood plains. The wetland impacts associated with Option 1 are nearly double those for Option 2 and six times those for Option 3. The flood plain impacts associated with Option 1 are nearly five times those for Option 2 and eight times those for Option 3.

- Schools – The feasibility of a future link between the new interchange and State Highway 365 was considered for all options. Such a link would provide the students and families of the Oak Grove School system access to Maumelle schools on Carnahan Drive. However, the Option 1 link to State Highway 365 would require extensive improvements, would tend to separate the Marche community, and would introduce the potential for secondary development.

- Public Involvement – The views of the public meeting attendees were overwhelming to construct a connector to I-40, but nearly evenly split between the three options. A slight preference was expressed for Option 2.

- Master Street Plan – Option 1 is not part of Maumelle's Master Street Plan, and Option 1 is the City of Maumelle's least preferred of the 3 options.

- Traffic – A traffic analysis of I-40 concluded that the levels of service provided by an additional interchange were about the same whether the interchange was located at Marche Road area (Option 1) or the former rest area (Options 2 and 3). However, the traffic volumes estimated to use the interchange along a new access road were lowest for Option 1.

- Historic/Archeological – Existing records indicate some sites in the vicinity, but these sites can be easily avoided.

- Railroads – Option 1 requires an overpass of the Union Pacific Railroad and the potential need for an additional at-grade railroad crossing near the bridge structure. Options 2 and 3 do not involve a railroad overpass or alterations to existing at-grade crossings.

On May 6, 2009, the representatives of the City and Benham met with representatives of the AHTD and the FHWA and presented information comparing the 3 options. At that time, the elimination of Option 1 seemed prudent to all parties. Therefore, I am requesting that the Department seek FHWA's concurrence to discontinue further study of this option. I understand that the Department will coordinate this request with the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service.

Should you need any additional information, please do not hesitate to contact me.

Sincerely,

Honorable Michael Watson, Mayor

Enclosures
Summary of Estimated Construction Costs
Summary of Public Involvement Meeting Responses
Anticipated Wetland / Flood Plain Impacts
Level of Service Matrix
Graphic of All Options

U.S. Department
of Transportation
Federal Highway Administration

Arkansas Division

**700 West Capital Ave.
Suite 3130
Little Rock AR 72201**

September 9, 2009

IN REPLY REFER TO
AHTD Job Number 061190
I-40 Interchange (Maumelle)
Pulaski County
HDA-AR
2500

Mr. Dan Flowers, Director
Arkansas State Highway and
Transportation Department
Little Rock, Arkansas 72203-2261

Dear Mr. Flowers:

As requested in Mr. Scott Bennett's letter of June 22, 2009, we concur with the City of Maumelle's request to eliminate Option 1 from further consideration as a viable alternative in the Environmental Assessment being conducted to support the above referenced project.

A meeting was held with representatives of the U.S. Fish & Wildlife Service and the U.S. Army Corps of Engineers on June 23, 2009 to discuss the elimination of Option 1 from further study.

At that meeting, it was determined that mapping used to display wetlands impacts was probably incorrect and we requested the consultant to review and revise the mapping if necessary. On August 28, 2009 the consultant supplied the revised mapping and wetlands impacts information. This information was critical in our concurrence of the elimination of Option 1 from further study.

If you have any questions of need further information, please contact me at 501-324-6430.

Sincerely,

Randal J. Looney
Environmental Specialist

cc: Mr. Lynn Malbrough

APPENDIX B

US Department
of Transportation
Federal Highway
Administration

700 West Capital Ave.
Suite 3130
Little Rock AR 72201

July 29, 2008

Refer To:
AHTD Job Number 061190
I-40 Interchange (Maumelle)
Pulaski County
HDA-AR

Dr. Andrea A. Hunter
Tribal Historic Preservation Officer
Osage Nation
627 Grandview
Pawhuska, OK 74056

Dear Dr. Hunter:

This letter is written in order to initiate consultation between the Federal Highway Administration (FHWA), Arkansas Division Office and the Osage Nation regarding a Federal-aid highway project that may potentially affect ancestral lands or properties that may be of religious or cultural significance to the Osage Nation.

The Arkansas Highway and Transportation Department (AHTD), in cooperation with the FHWA and the City of Maumelle, is proposing a study and design of a new interchange to provide access to Interstate 40 (I-40) in the Maumelle vicinity. The City of Maumelle has long recognized the need for an access to Interstate 40 and has studied various proposals for several years. The new road will provide access from the densely settled areas of the mid-section of Maumelle eastward to connect to Interstate 40 somewhere between the existing Marche Road overpass east of the Highway 365 interchange and Newton Creek west of the existing I-430 interchange. A map of the study area is enclosed.

In an effort to determine potential impacts of the project and to identify archeological sites within the project area, a records review and subsequent cultural resource survey will be completed. In the event that potentially significant archeological sites are affected, further consultation will be conducted with the Tribe. If no impacts to potentially significant sites are identified, then it is proposed that project activities be allowed to continue.

Please review this information and notify us of any constraints or concerns that you may have regarding this undertaking. We would greatly appreciate your input regarding not only this project but also sites of properties in the immediate area that might be of cultural or religious significance to the Osage Nation.

If you have any questions or need additional information, please contact me at (501) 324-6430. Should we not hear from you within a period of thirty (30) days, we will proceed with project planning.

Sincerely,

Randal Looney
Environmental Specialist

U.S Department
of Transportation
Federal Highway Administration

700 West Capital Ave.
Suite 3130
Little Rock AR 72201

July 29, 2008

Refer To:
AHTD Job Number 061190
I-40 Interchange (Maumelle)
Pulaski County
HDA-AR

Mr. Robert Cast
Tribal Historic Preservation Officer
Caddo Nation of Oklahoma
P.O. Box 487
Binger, Oklahoma 73009

Dear Mr. Cast:

This letter is written in order to initiate consultation between the Federal Highway Administration (FHWA), Arkansas Division Office and the Caddo Nation of Oklahoma regarding a Federal-aid highway project that may potentially affect ancestral lands or properties that may be of religious or cultural significance to the Caddo Nation of Oklahoma.

The Arkansas Highway and Transportation Department (AHTD), in cooperation with the FHWA and the City of Maumelle, is proposing a study and design of a new interchange to provide access to Interstate 40 (I-40) in the Maumelle vicinity. The City of Maumelle has long recognized the need for an access to Interstate 40 and has studied various proposals for several years. The new road will provide access from the densely settled areas of the mid-section of Maumelle eastward to connect to Interstate 40 somewhere between the existing Marche Road overpass east of the Highway 365 interchange and Newton Creek west of the existing I-430 interchange. A map of the study area is enclosed.

In an effort to determine potential impacts of the project and to identify archeological sites within the project area, a records review and subsequent cultural resource survey will be completed. In the event that potentially significant archeological sites are affected, further consultation will be conducted with the Tribe. If no impacts to potentially significant sites are identified, then it is proposed that project activities be allowed to continue.

Please review this information and notify us of any constraints or concerns that you may have regarding this undertaking. We would greatly appreciate your input regarding not only this project but also sites of properties in the immediate area that might be of cultural or religious significance to the Caddo Nation of Oklahoma.

If you have any questions or need additional information, please contact me at (501) 324-6430. Should we not hear from you within a period of thirty (30) days, we will proceed with project planning.

Sincerely,

Randal Looney
Environmental Specialist

U.S. Department
of Transportation
Federal Highway Administration

700 West Capital Ave.
Suite 3130
Little Rock AR 72201

July 29, 2008

Refer To:
AHTD Job Number 061190
I-40 Interchange (Maumelle)
Pulaski County
HDA-AR

Mr. John Berrey
Tribal Chairman
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, Oklahoma 74360

Dear Mr. Berry:

This letter is written in order to initiate consultation between the Federal Highway Administration (FHWA), Arkansas Division Office and the Quapaw Tribe of Oklahoma regarding a Federal-aid highway project that may potentially affect ancestral lands or properties that may be of religious or cultural significance to the Quapaw Tribe of Oklahoma.

The Arkansas Highway and Transportation Department (AHTD), in cooperation with the FHWA and the City of Maumelle, is proposing a study and design of a new interchange to provide access to Interstate 40 (I-40) in the Maumelle vicinity. The City of Maumelle has long recognized the need for an access to Interstate 40 and has studied various proposals for several years. The new road will provide access from the densely settled areas of the mid-section of Maumelle eastward to connect to Interstate 40 somewhere between the existing Marche Road overpass east of the Highway 365 interchange and Newton Creek west of the existing I-430 interchange. A map of the study area is enclosed.

In an effort to determine potential impacts of the project and to identify archeological sites within the project area, a records review and subsequent cultural resource survey will be completed. In the event that potentially significant archeological sites are affected, further consultation will be conducted with the Tribe. If no impacts to potentially significant sites are identified, then it is proposed that project activities be allowed to continue.

Please review this information and notify us of any constraints or concerns that you may have regarding this undertaking. We would greatly appreciate your input regarding not only this project but also sites of properties in the immediate area that might be of cultural or religious significance to the Quapaw Tribe of Oklahoma.

If you have any questions or need additional information, please contact me at (501) 324-6430. Should we not hear from you within a period of thirty (30) days, we will proceed with project planning.

Sincerely,

Randal Looney
Environmental Specialist

cc: Ms. Carrie V. Wilson

TRIBAL HISTORIC PRESERVATION OFFICE

Date: August 5, 2008 **File:** 0708-488AR-8

RE: **USDOT/FHWA; AHTD #061190; I-40 Interchange, Pulaski County, Arkansas**

Randal Looney
USDOT/FHWA
700 West Capital Ave. #3130
Little Rock, AR 72201

Dear Mr. Looney,

The Osage Nation Historic Preservation Office received your letter on July 31, 2008, notifying the Nation of the proposed project listed as **USDOT/FHWA; AHTD #061190; I-40 Interchange, Pulaski County, Arkansas.**

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in S101 (d)(6)(A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Osage Nation has a vital interest in protecting its historic and ancestral cultural resources. **The Osage Nation requests a copy of the completed Phase I cultural survey that will be conducted for the project listed as USDOT/FHWA; AHTD #061190; I-40 Interchange, Pulaski County, Arkansas.** The Osage Nation looks forward to receiving and reviewing the cultural resource survey report for the proposed project listed as USDOT/FHWA; AHTD #061190; I-40 Interchange, Pulaski County, Arkansas.

Should you have any questions or need any additional information please feel free to contact me at the number and/or email address listed below. Thank you for consulting with the Osage Nation on this matter.

Andrea A. Hunter

Dr. Andrea A. Hunter
Tribal Historic Preservation Officer

Email: ahunter@osagetribe.org

627 Grandview, Pawhuska, OK 74056, (918) 287-5328, Fax (918) 287-5376

APPENDIX C

PUBLIC INVOLVEMENT SYNOPSIS

Job No 061190
I-40 Interchange (Maumelle)(F)
Pulaski County
March 3, 2009

An "open forum" public involvement meeting for the proposed I-40 Interchange was held at the Jess Odom Community Center from 4 PM to 7 PM on Tuesday, March 3, 2009. Media news releases, flyers, and notices mailed to the project mailing lists were utilized to inform the public of the meetings. Special efforts to involve minorities in the meeting included advertising with local minority radio stations, churches, and direct flyer handouts.

The following information was available for inspection and comment (Small-scale versions are attached):

- An overall "Constraints" map of the proposed study area, showing wetlands, floodplains, Hazardous Waste, and the proposed alternative interchange locations with optional future alignments. The map was scaled at 1" = 2250'.

- Three (3) separate Plan drawings of optional future alignments connecting the proposed interchange to Highway 100. The drawings were scaled at 1" = 400'.

- Five (5) separate Traffic displays showing daily and peak hour traffic volumes within the study area, include Highway 100, Highway 365, I-40, I-430, and the proposed interchange and optional future alignments.

Handouts for the public included a comment sheet and a small-scale version of the "Constraints" map. A copy of the handout is attached.

Table 1 below describes the results of the public participation at the meeting.

TABLE 1

Public Participation	Totals
Attendance at meeting	75
Comments Received at meeting	12
Oral statements	1
Additional comments received after meeting	16
TOTAL COMMENTS RECEIVED	**29**

City and Consultant staff reviewed all comments received and evaluated their comments. The summary of comments listed below reflects the personal perception or opinion of the person or organization making the statement. The sequencing of the comments is random and is not intended to reflect importance or numerical values. Some of the comments were combined and/or paraphrased to simplify the synopsis process.

An analysis of the responses received as a result of the public survey is shown in Table 2.

TABLE 2	
Alternative Preferred	**Totals**
Option 1	7
Option 2	10
Option 3	7
2 or more selected	3
None of the Options presented	2
Total Comments Received	**29**

Of the 29 comments received, 25 responders agreed that a new interchange on I-40, with a possible future connector to Hwy 100, is needed. Four responders, however, disagreed that a new interchange was needed. They stated that all viable alternative traffic relief methods should be studied instead.

The following is a listing of comments concerning specific issues associated with Option 1:

- Should keep any access away from the Counts Massie area and Country Club Blvd.
- This option splits Maumelle more evenly and is the shortest route to I-40.
- Concern of other options impacting Country Club Blvd.

The following is a listing of comments concerning specific issues associated with Option 2:

- Better dispersal of traffic to a broader area.
- Will better relieve traffic congestion.
- Better option because it does not involve Counts Massie or North Little Rock jurisdiction.
- Less “backtracking” required.
- More direct access for school children from Oak Grove, while utilizing the existing closed rest stop and providing more direct and quicker access to the [Maumelle] “Town Center”.

The following is a listing of comments concerning specific issues associated with Option 3:

- This option would free a lot of traffic congestion in the morning near Wal-Mart. Other options “dump” traffic near to commenter’s residence.
- Better access to/from commercial development along or near Counts Massie.
- Uses existing rights-of-way more than other options.

The following is a listing of general comments concerning the proposed project:

- Most comment forms indicated the need now, no matter the option chosen, citing traffic congestion and emergency ingress/egress as major issues.
- Several comments suggested looking into alternative solutions, i.e. widening Maumelle Blvd, adjusting signal timing, and widening I-40.
- Protection of the environment, specifically wetlands, was mentioned on several of the comment forms.

Page 3 of 3

The following attachments are included with this report:

- Small-scale versions of Constraints map, three (3) Option displays, five (5) Traffic displays
- Public Handout - blank comment form (constraints map was include with the form)

Approved:

Craig Leone, PE (Initial)
Project Manager

Michael Watson (Initial)
Maumelle Mayor

****** END OF REPORT ******

AREA IMPACTS*		
	Wetlands	Floodplains
Option 1	5.50 ac	45 ac
Option 2	0.06 ac	10 ac
Option 3	0.02 ac	6 ac

*Limited to direct roadway/bridge construction impacts; numbers are approximate and based on preliminary evaluations

New School Site

Carnahan Dr

OPTION 1

Marche Rd

MacArthur Dr

40

OPTION 2

100

Odom Blvd

Park

OPTION 3

OPTIONS 2 and 3

Counts Massie Rd

Maumelle Blvd

100

365

430

City of Maumelle

BENHAM

Study Area

Sites with Documented Fuel Storage or Releases

Floodplains

Maumelle Mitigation Areas

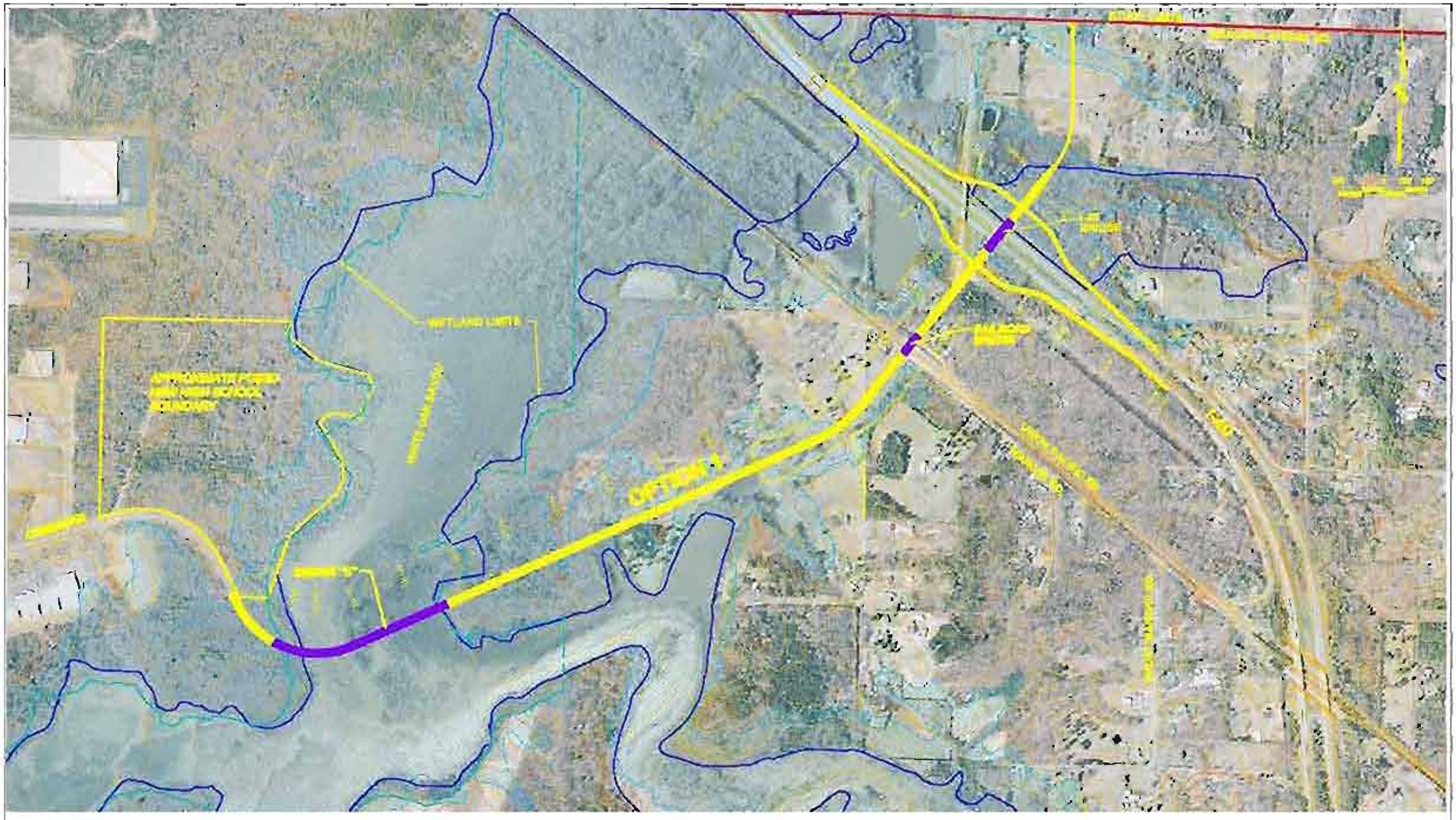
Wetlands

City of Maumelle
2008 Digital Orthophotography

N

I-40 Interchange (Maumelle) (F), AHTD Job No. 061190
Environmental Constraints Map

0 2,250 4,500 6,750 9,000 Feet

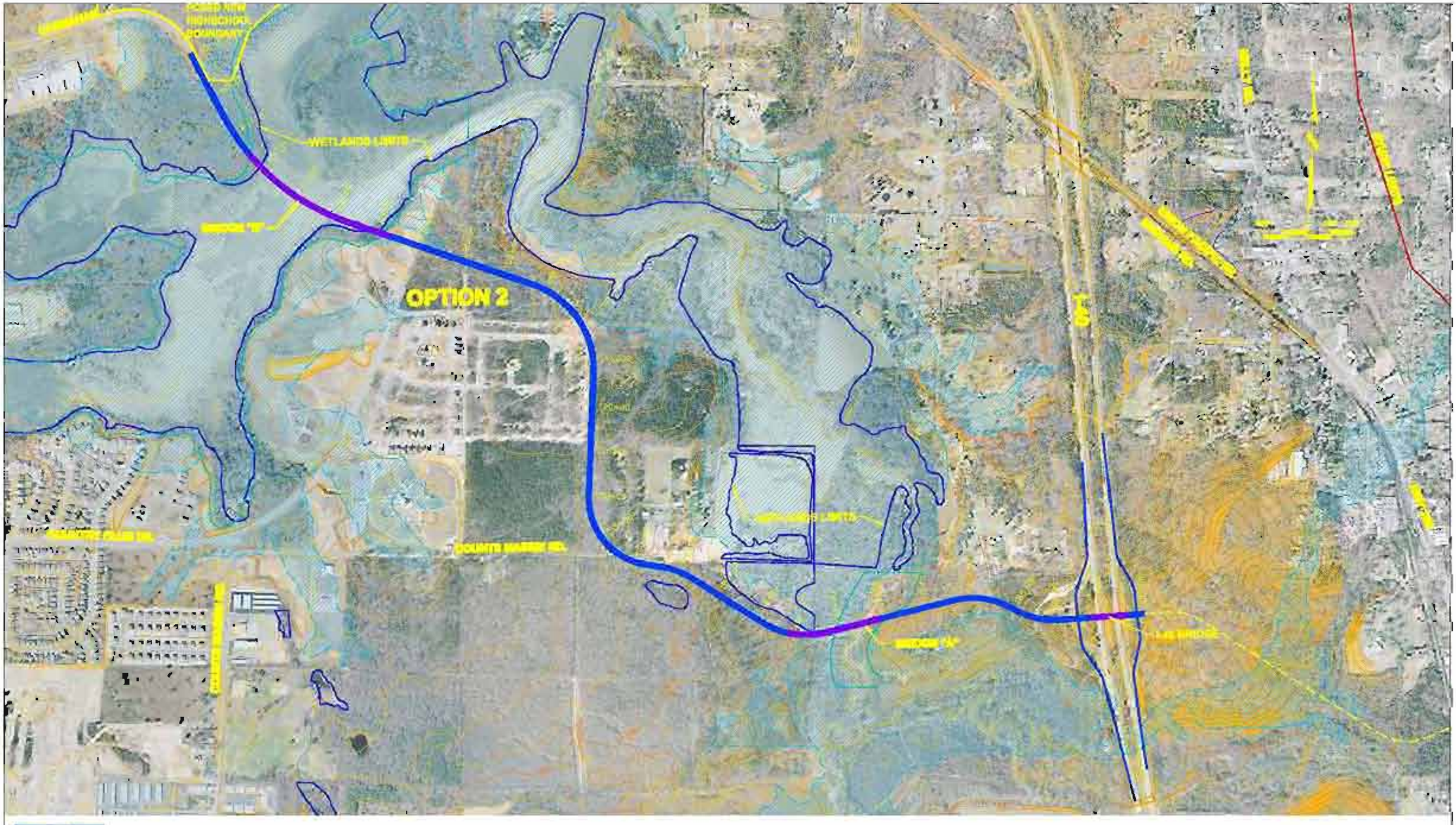


I-40 INTERCHANGE (MAUMELLE) (F), AHTD JOB NO. 061190
OPTION 1
1/20/2006

City of Maumelle

LEGEND
FLOOD PLAIN LIMITS
WETLAND LIMITS
PROPOSED BRIDGE
MITIGATED WETLANDS LIMITS

BENHAM



City of Maumelle

LEGEND

FLOOD PLAINS LIMITS

WETLAND LIMITS

PROPOSED BRIDGE

MITIGATED WETLAND LIMITS

I-40 INTERCHANGE (MAUMELLE) (F), AHTD JOB NO. 061190
OPTION 2

2/23/2009

BENHAM

LEGEND

FLOOD PLAIN LIMITS
WETLAND LIMITS
PROPOSED BRIDGE
MITIGATED WETLAND LIMITS

I-40 INTERCHANGE (MAUMELLE) (F), AHTD JOB NO. 061160
OPTION 3

2/23/2009

NOT TO SCALE

SEE INSET 1

SEE INSET 2

SEE INSET 3

PACIFIC RR.

40

365

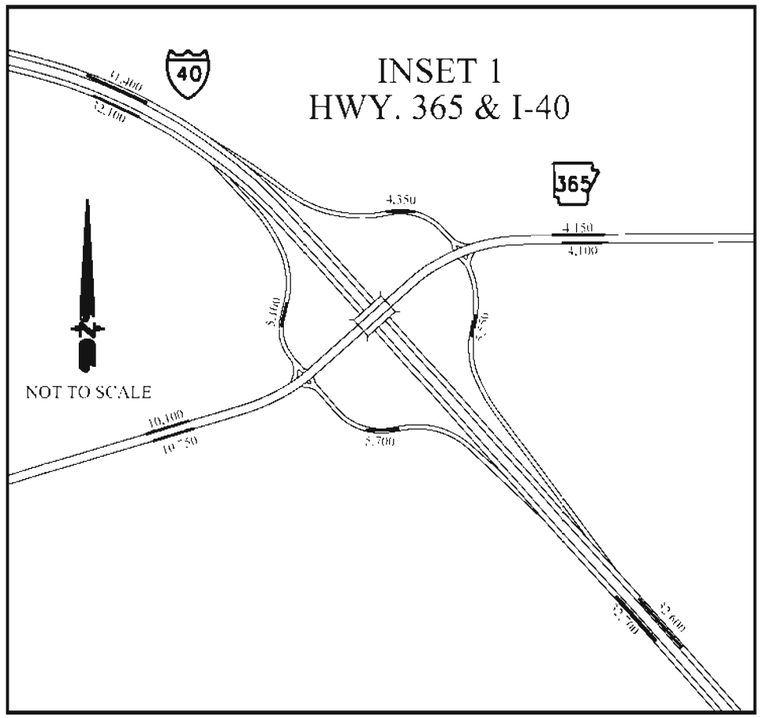
100

430

N

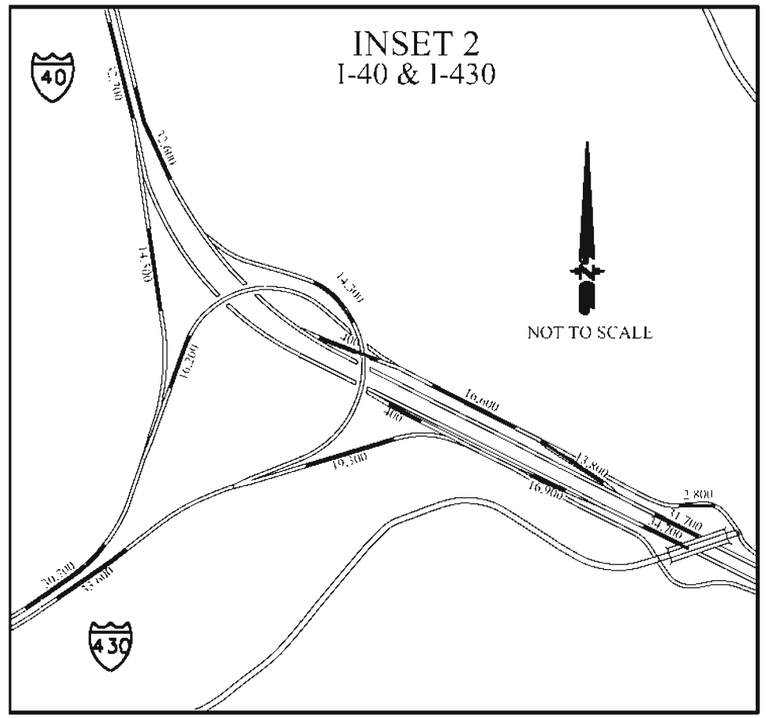
INSET 1
HWY. 365 & I-40

NOT TO SCALE



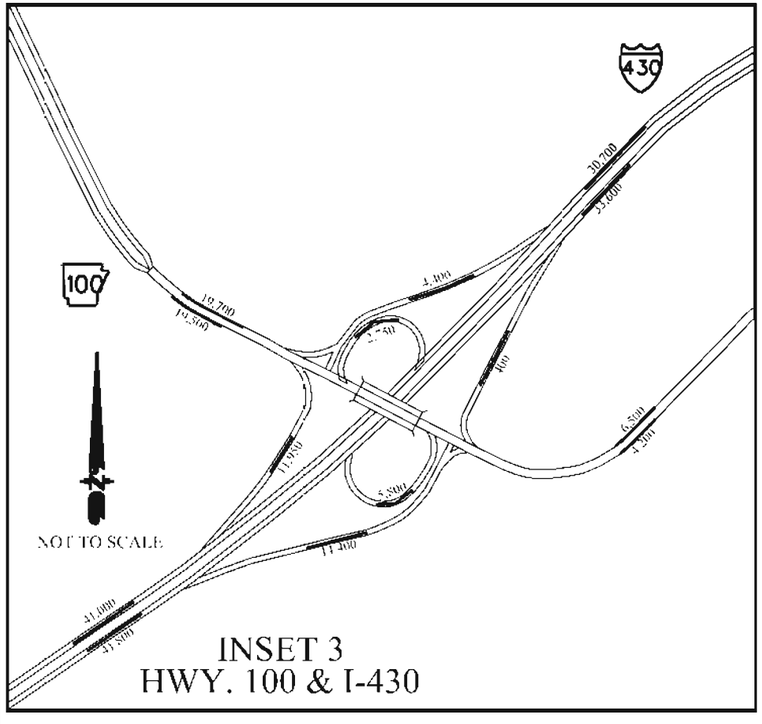
INSET 2
I-40 & I-430

NOT TO SCALE



INSET 3
HWY. 100 & I-430

NOT TO SCALE



LEGEND

55,000 2010 Average Daily Traffic (ADT)

SOURCE: METROPLAN, AHTD

EXHIBIT 1

EXISTING CONDITIONS

2010 "NO BUILD" VOLUMES

NOT TO SCALE

SEE INSET 1

SEE INSET 2

SEE INSET 3

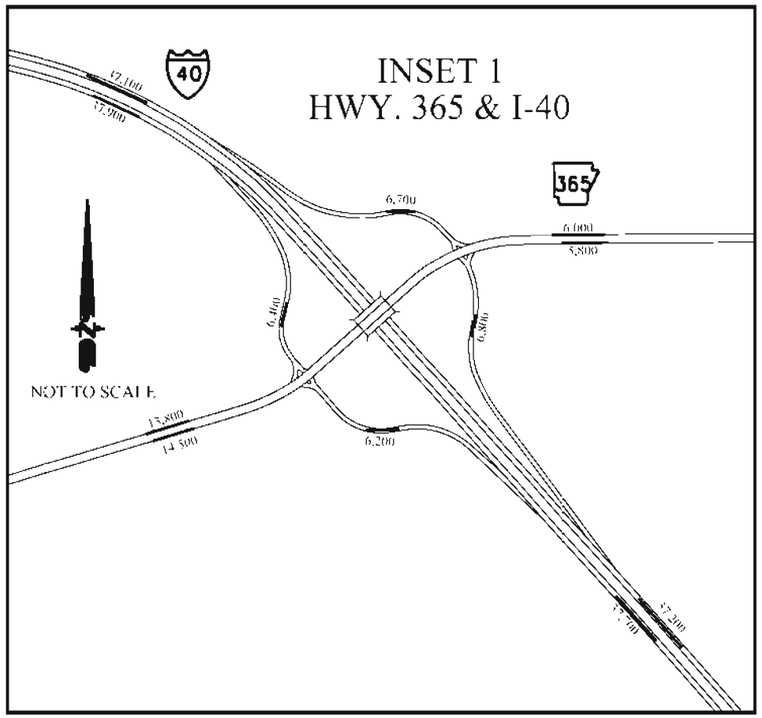
PACIFIC RR.

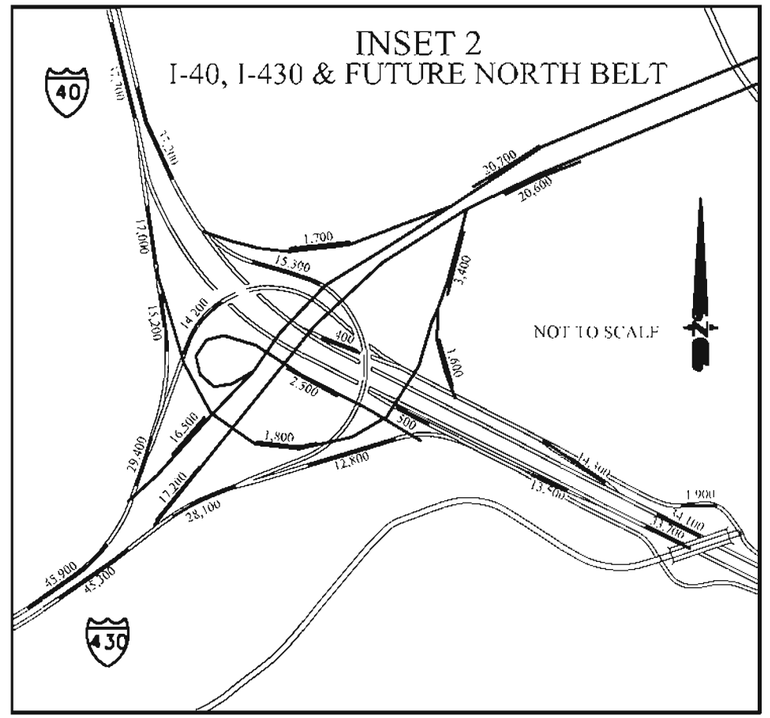
40

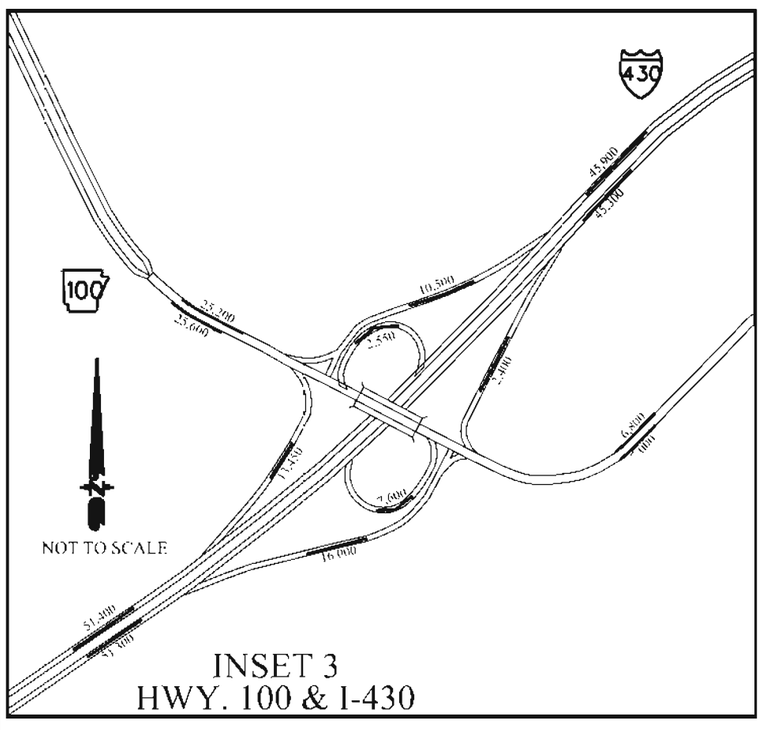
365

100

430







LEGEND

55,000 2030 Average Daily Traffic (ADT)

SOURCE: METROPLAN, AHTD

EXHIBIT 2

EXISTING CONDITIONS

2030 "NO BUILD" VOLUMES

NOT TO SCALE

SEE INSET 1

SEE INSET 4

SEE INSET 2

SEE INSET 3

PACIFIC RR

365

40

100

430

INSET 1
HWY. 365 & I-40

NOT TO SCALE

INSET 2
I-40, I-430 & FUTURE NORTH BELT

NOT TO SCALE

INSET 3
HWY. 100 & I-430

NOT TO SCALE

INSET 4
I-40 & OPTION 1

PROPOSED OPTION 1 CONNECTOR

NOT TO SCALE

LEGEND
55,000 2030 Average Daily Traffic (ADT)
SOURCE: METROPLAN, AHTD

EXHIBIT 3
PROPOSED OPTION 1
2030 "BUILD" VOLUMES

NOT TO SCALE

SEE INSET 1

SEE INSET 2

SEE INSET 3

SEE INSET 4

PACIFIC RR.

365

40

100

430

INSET 1
HWY. 365 & I-40

NOT TO SCALE

INSET 2
I-40, I-430 & FUTURE NORTH BELT

NOT TO SCALE

INSET 3
HWY. 100 & I-430

NOT TO SCALE

INSET 4
I-40 & OPTION 2

PROP. OPTION 2 CONNECTOR

TO HWY. 365

NOT TO SCALE

LEGEND
55,000 2030 Average Daily Traffic (ADT)
SOURCE: METROPLAN, AHTD

EXHIBIT 4
PROPOSED OPTION 2
2030 "BUILD" VOLUMES

NOT TO SCALE

SEE INSET 1

SEE INSET 2

SEE INSET 3

SEE INSET 4

PACIFIC RR.

365

40

100

435

INSET 1
HWY. 365 & I-40

NOT TO SCALE

INSET 2
I-40, I-430 & FUTURE NORTH BELT

NOT TO SCALE

INSET 3
HWY. 100 & I-430

NOT TO SCALE

INSET 4
I-40 & OPTION 3

PROP OPTION 3 CONNECTOR

TO HWY 365

NOT TO SCALE

LEGEND
55,000 2030 Average Daily Traffic (ADT)
SOURCE: METROPLAN, AHTD

EXHIBIT 5
PROPOSED OPTION 3
2030 "BUILD" VOLUMES

CITY OF MAUMELLE, ARKANSAS
IN ASSOCIATION WITH THE
CITY OF NORTH LITTLE ROCK AND PULASKI COUNTY

CITIZEN COMMENT FORM

PROJECT:
AHTD JOB NUMBER 061190
I-40 INTERCHANGE (MAUMELLE)
PULASKI COUNTY

LOCATION:
JESS ODOM COMMUNITY CENTER
1100 EDGEWOOD DRIVE
MAUMELLE, AR
4:00 – 7:00 P.M.
TUESDAY, MARCH 3, 2009

PROJECT DESCRIPTION: This project includes the study and design of a new interchange, to be located on I-40 between Morgan and I-430, which will provide a third access to/from the City of Maumelle to help relieve traffic congestion on Maumelle Boulevard and the surrounding interchanges of Morgan, I-40/I-430, and I-430/Highway 100 currently serving the City of Maumelle. The study portion of the project includes an evaluation of potential future connection roads to Highway 100; however, the design of any future connection is not part of this project.

Make your comments on this form and leave it with City personnel at the meeting or mail or deliver it within 15 days to: Attn: Maumelle Interchange, Maumelle City Hall, 550 Edgewood Drive, Suite 590, Maumelle, AR 72113.

Yes ☐ No ☐ Do you feel there is a need for a new Interchange on I-40, between Morgan and I-430 with a possible future connector road to Highway 100 in Maumelle? Comment (optional)_____

_____

_____

_____

☐ ☐ Do you know of any historical sites, family cemeteries, or archaeological sites in the project area? Please note and discuss with staff. _____

_____

_____

☐ ☐ Do you know of any environmental constraints, such as endangered species, hazardous waste sites, existing or former landfills, or parks and public lands in the vicinity of the project? Please note and discuss with staff. _____

_____

_____

☐ ☐ Do you feel that the proposed Interchange will have any impacts

(☐ Beneficial or ☐ Adverse) on your property and/or community (economic, environmental, social, etc.)? Please explain. _____

_____

_____

(Continued on back)

Yes No

☐ ☐ Does your home or property offer any limitations to the project, such as septic systems, that the City needs to consider in its design?_____

_____

_____

☐ ☐ Do you have a suggestion that would make this proposed project better serve the needs of the community? _____

_____

_____

_____

_____

Which of the following best describes your preferred alternative?

☐ DO NOTHING ☐ OPTION 1 ☐ OPTION 2

☐ OPTION 3 ☐ NO PREFERENCE ☐ OTHER (please describe)

It is often necessary for the City to contact property owners along potential routes/locations. If you are a property owner along or adjacent to the route/location under consideration, please provide information below. Thank you. (*Please Print*)

Name :_____

Address: _____ Phone: (_____) _____--_____

_____

_____

E-mail:_____

Please make additional comments here (attach additional pages as necessary):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____