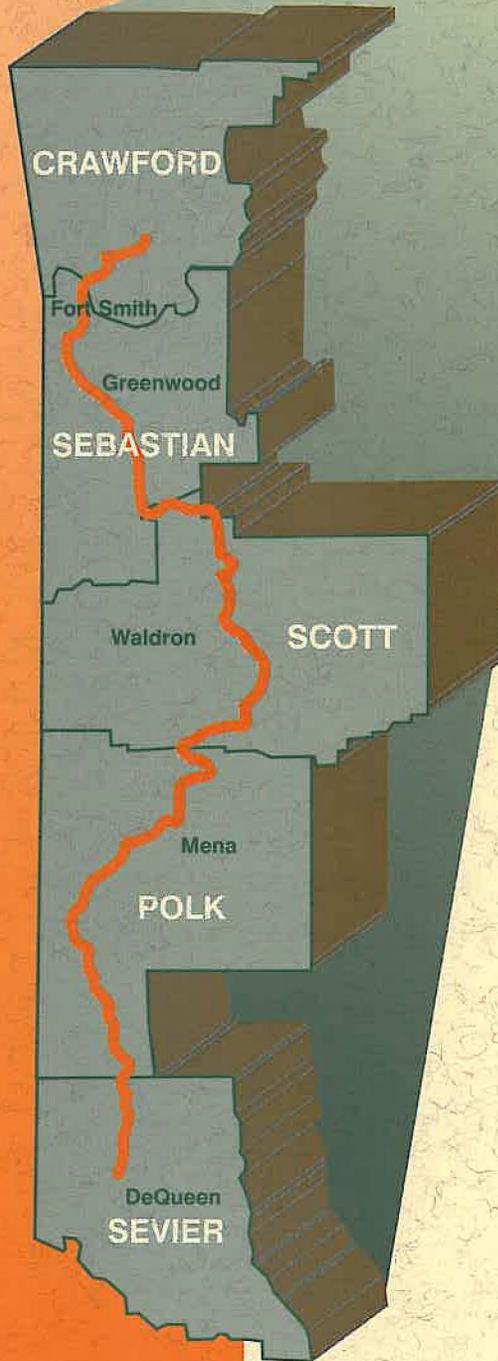


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# Final Environmental Impact Statement

**U.S. 71  
RELOCATION  
DEQUEEN TO  
INTERSTATE 40**



## U.S. 71 RELOCATION DeQueen, Arkansas to Interstate 40, Arkansas

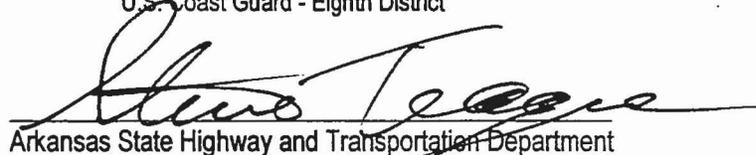
### Final Environmental Impact Statement / Section 4(f) Evaluation

Submitted Pursuant to: 42 U.S.C. 4332(2)(c)  
49 U.S.C. 303  
23 U.S.C. 138

by the  
*U.S. Department of Transportation - Federal Highway Administration*  
and the  
*Arkansas State Highway and Transportation Department*

Cooperating Agencies:  
U.S. Environmental Protection Agency  
U.S. Forest Service - Ouachita National Forest  
U.S. Army Corps of Engineers - Little Rock District  
U.S. Coast Guard - Eighth District

6/20/97  
Date of Approval

  
Arkansas State Highway and Transportation Department

8/7/97  
Date of Approval

  
Federal Highway Administration

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This project is a proposal to construct a four-lane fully controlled access highway, designed to interstate standards, on new location between DeQueen, Arkansas and Interstate 40 near Alma, Arkansas. The Selected Alignment of the proposed highway would be 196 kilometers (122 miles) in length through the Arkansas counties of Sevier, Polk, Scott, Sebastian and Crawford. Several alternatives were considered including the No-Action alternative.



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# SUMMARY

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## INTRODUCTION

The Arkansas State Highway and Transportation Department (AHTD), in cooperation with the Federal Highway Administration (FHWA), is proposing to construct a four-lane fully controlled access highway on new location, designed to interstate standards. The proposed highway is approximately 200 kilometers (125 miles) in length and generally parallels the existing U.S. 71 highway. The project is known as the U.S. 71 Relocation, extending from U.S. 70 in DeQueen, Arkansas to Interstate 40, near Alma, Arkansas. The project passes through the Arkansas counties of Sevier, Polk, Scott, Sebastian and Crawford. Major communities along the route include DeQueen, Mena, Waldron, Greenwood, Fort Smith, Van Buren, and Alma.

The relocation of U.S. 71 in Arkansas is part of a congressionally designated High Priority Corridor (HPC) running from Shreveport, Louisiana to Kansas City, Missouri (Exhibit S-1). Several corridors were identified as nationally important by the U.S. Congress in 1991. These corridors are intended to complement the existing Interstate system, integrate regions of the country, improve safety and efficiency of travel and commerce, and promote economic development.

The study of alternatives and the environmental consequences of the proposed action was initiated by AHTD and FHWA in 1995. This study followed the process outlined in Exhibit S-2, which is fully documented in the remaining sections of this environmental impact statement.

## ALTERNATIVES CONSIDERED AND THE SELECTED ALIGNMENT

The development of alternatives for the U.S. 71 Relocation followed a multi-step approach in order to screen possible highway locations against increasingly more detailed environmental information. This information was gathered for a 4,300 square kilometer (1,600 square mile) study area paralleling the existing route and up to 35 kilometers (22 miles) in width. The compilation and mapping of sensitive environmental resources resulted in a constraint map used for the development of broad, 3 kilometer (2 mile) wide *corridors*. These corridors were analyzed and screened against the sensitive resources, and scrutinized by the public, local officials and resource agencies. This process provided sufficient information to identify a preferred corridor which was advanced to detailed study. A corridor along the existing U.S. 71 route was also considered. The implementation of a corridor along the existing route would have involved

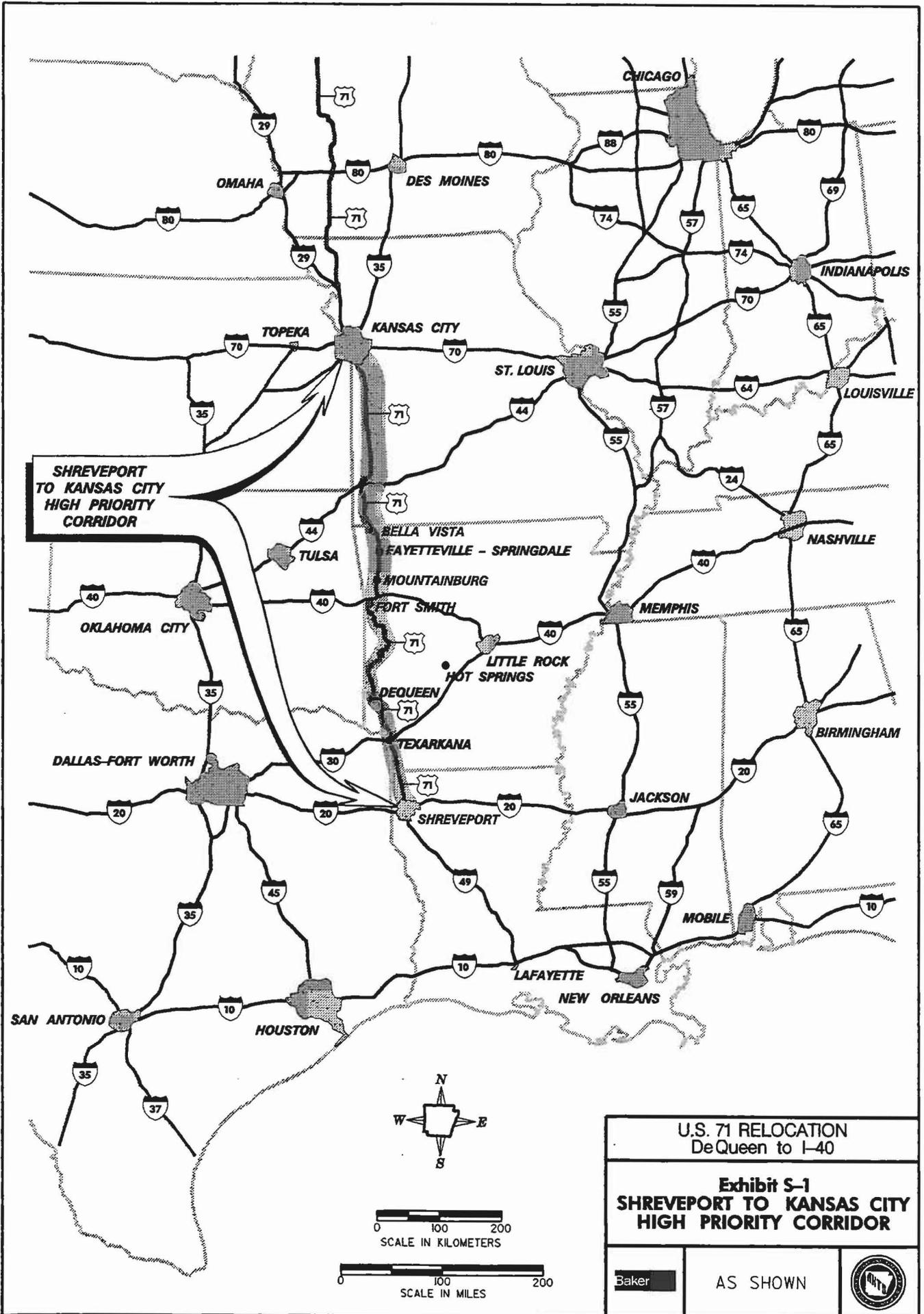
several hundred residential and business relocations and unsatisfactory design aspects and was eliminated on this basis.

Partially concurrent with the corridor study was the planning level Major Investment Study (MIS) within the Fort Smith / Van Buren urbanized area. This effort considered several construction and non-construction strategies for implementing the HPC through the urban area. A diverse group of local professionals worked with the study team on the MIS and ultimately concluded that a new location alternative best met the overall project purpose and need as well as numerous local objectives. This conclusion was also adopted by the Bi-State Policy Committee as part of its planning policy for the Fort Smith / Van Buren urbanized area. The Bi-State Policy Committee is the Metropolitan Planning Organization for the Fort Smith / Van Buren urbanized area.

By updating and refining the environmental data contained in the corridor study resource inventory, detailed *alignments* were developed within the preferred corridor that would first avoid, then minimize impact to sensitive resources, including residential areas. Three alignments were ultimately developed with an average width of 150 meters (500 feet).

An integrated, comprehensive public involvement program was conducted for this project. This program included the public, local officials and appropriate resource agencies. The alignment development phase was particularly rigorous in its consideration of comments from these involved parties. As a result of this program, sufficient information and public opinion was available to identify a Preferred Alignment in the Draft Environmental Impact Statement (DEIS) prepared for the proposed highway. The three alignments, including the Selected Alignment are shown in Exhibit S-3. For short distances, one, two or all of the lines may run together. At several points, one, two or all of the lines may intersect. These points have been identified by letters A through O and thereby divide the alignments into 14 *segments*. At these lettered points, there is an ability to "switch" from one line to another.

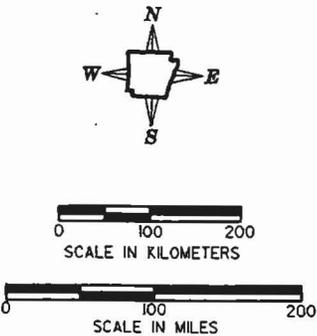
A No-Action alternative was retained throughout the study as a basis for comparing the relative benefits and impacts of the alternatives. Under this alternative, the only projects undertaken would be currently planned safety and capacity improvement projects. Safety projects generally involve shoulder widening and curve realignment where necessary. The four-lane widening project currently under construction from S.H. 10 to Witcherville would be completed for this alternative.



**SHREVEPORT  
TO KANSAS CITY  
HIGH PRIORITY  
CORRIDOR**

**U.S. 71 RELOCATION  
DeQueen to I-40**

**Exhibit S-1  
SHREVEPORT TO KANSAS CITY  
HIGH PRIORITY CORRIDOR**



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**SCOPING PROCESS**

- Public Meetings
- Local Officials Meetings
- Agency Meeting and Coordination

**NEEDS ANALYSIS**

- Traffic Forecast
- Safety
- Socioeconomic Demands
- Legislation
- Public Meetings

**MAJOR INVESTMENT STUDY**

- Within Fort Smith/Van Buren Urban Area
- MIS Working Group
- Public Meetings

**CORRIDOR FEASIBILITY STUDY**

- Using Critical Environmental Constraints
- 3 Kilometer - wide (2 mile - wide) Corridors
- Environmental Comparison
- Public, Local Official and Agency Involvement
- Public Meetings

**ALIGNMENT STUDY**

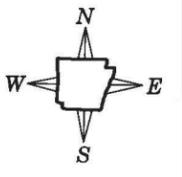
- Within Preferred Corridor
- Preliminary Engineering
- 150 meter (500 feet) Average Width
- Avoid/Minimize Environmental Impacts
- Public, Local Official and Agency Involvement
- Public Meetings

**ENVIRONMENTAL DOCUMENTATION**

- Draft EIS
- Public Hearings
- Final EIS
- Record of Decision

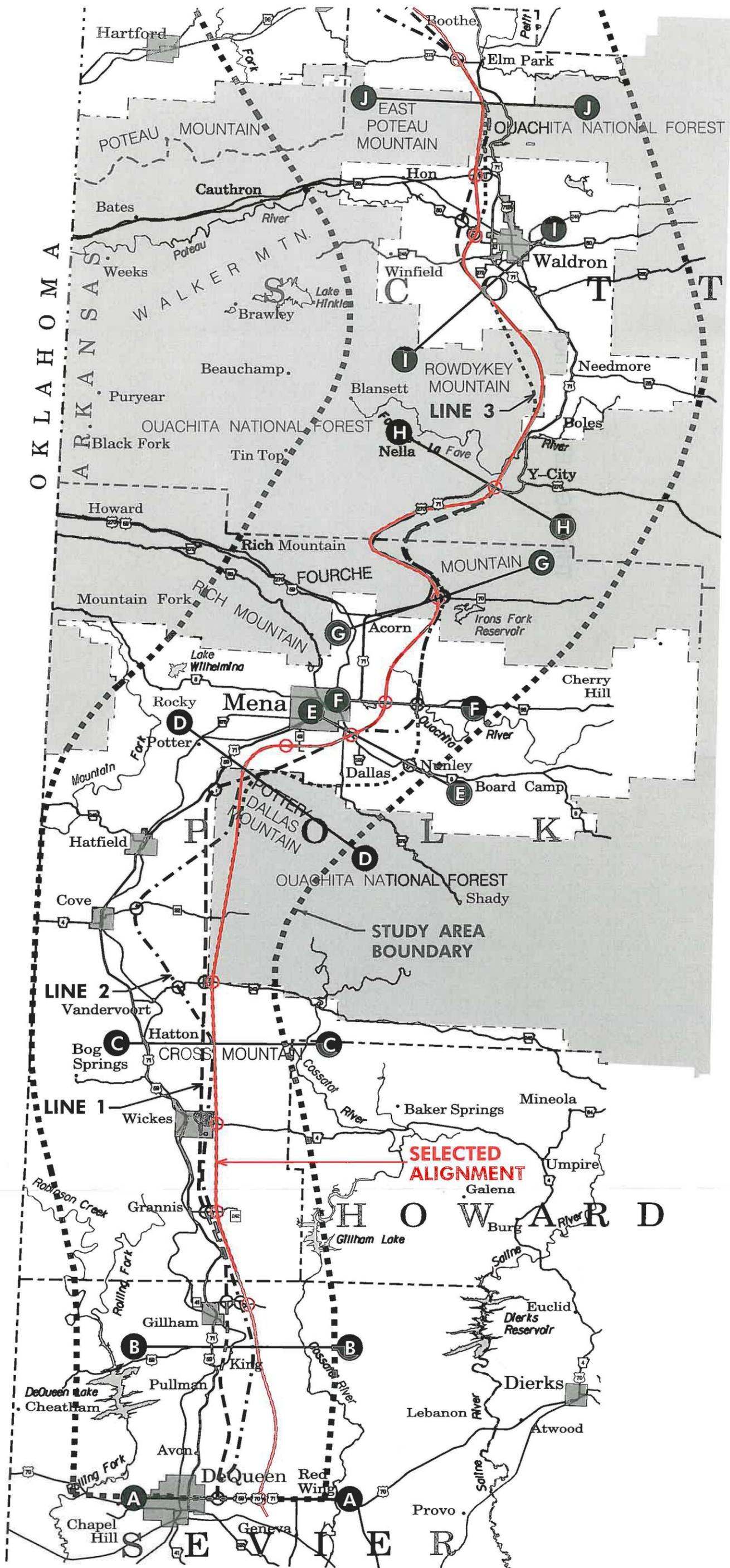
U.S. 71 RELOCATION DeQueen to I-40		
<b>Exhibit S-2 STUDY PROCESS SUMMARY</b>		
Baker	NOT TO SCALE	





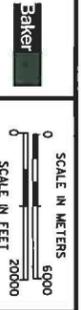
LEGEND

- LINE 1 - - - - - PROPOSED INTERCHANGE
- LINE 2 - - - - - PROPOSED INTERCHANGE
- LINE 3 - - - - - PROPOSED INTERCHANGE
- SELECTED ALIGNMENT - - - - - PROPOSED INTERCHANGE



U.S. 71 RELOCATION  
DeQueen to I-40

Exhibit S-3  
ALIGNMENT LOCATIONS  
AND THE  
SELECTED ALIGNMENT



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In addition, the following two reaches of existing U.S. 71 would also be widened to four lanes under the No-Action alternative:

- 12.5 kilometers (7.7 miles) from Witcherville to Mansfield
- 9.5 kilometers (5.9 miles) from Mena to Acom.

Should the proposed highway be constructed, these two reaches of U.S. 71 may not be widened. However, safety improvements would be implemented regardless of the decision to construct the proposed highway. Depending on the timing of construction of the proposed highway, it may be necessary to widen these and possibly other segments of existing U.S. 71 to serve local capacity demands.

Public hearings were held in early December 1996 throughout the study area. Nearly two hundred comment letters were received on the DEIS and are discussed in Section 8. State and federal resource agencies also commented on the DEIS. These comments were considered in the identification of the Selected Alignment. Responses to comments are provided in Section 8.

#### **SUMMARY OF BENEFICIAL AND ADVERSE IMPACTS**

Construction of the proposed highway would result in the following beneficial impacts:

- Complete a critical link in the Interstate system

- Provide for local, regional and national economic growth
- Provide a transportation facility that is consistent with local land use plans and development goals
- Produce travel time savings of up to 50 minutes for a trip between DeQueen and Interstate 40
- Provide the highest level of service possible on the High Priority Corridor and improve the level of service along 91% of the existing route to acceptable levels
- Provide sufficient capacity for the growing population of the study area
- Improve traffic safety
- Improve the connectivity of existing rail, bus, air and water transportation modes
- Improve the efficiency and capacity of the local street network in a number of communities
- Improve access to military installations, medical facilities, retail establishments, and recreational attractions in the region
- Improve efficiency of transportation for the trucking industry and businesses dependent on trucking
- Provide a trade corridor in support of the North American Free Trade Agreement.

Adverse impacts to the social, economic, natural, and cultural environment would result from construction of any of the alignments evaluated in detail in this document. A summary of these adverse impacts is presented in Table S-1. The shaded information in Table S-1 represents the Selected Alignment. The Selected Alignment is a composite of segments from each of the three alignments, where the selected segment has distinct advantages in that particular area.

The basis for identification of the Selected Alignment in each segment is summarized in Table S-2 and discussed in detail in Section 2. The location of the Selected Alignment differs from the DEIS Preferred Alignment in segment C-D only. The Selected Alignment in this segment results in a reduction in every impact category, when compared to the Preferred Alignment. The Selected Alignment reduces home relocations (from 86 to 81), floodplains (from 286.4 to 252.1 ac), farmlands (from 2101.2 to 2070.1 ac), noise impacts (from 234 to 211), water quality index (from 39.0 to 38.8), stream crossings (from 90 to 86), and potential cultural resources (60 to 58). The Selected Alignment is also shorter (from 125.3 to 122.3 miles) and has a lower estimated construction cost (from \$1.083 billion to \$1.075 billion).

The Selected Alignment meets the project purpose and need, provides excellent access to most

communities, minimizes impacts overall and has a moderate estimated construction cost. The Selected Alignment best balances the benefits expected from the project with the overall impacts.

#### **OTHER MAJOR FEDERAL ACTIONS IN THE AREA**

The proposed highway passes through the Fort Chaffee Military Reservation. Fort Chaffee was identified in the September 1995 Defense Base Realignment and Closure Commission's recommendations (BRAC 95). As part of the BRAC 95 recommendations, 2,400 hectares (6,000 acres) of land have been released for development by the surrounding communities. The lead federal agency for this action is the U.S. Army Corps of Engineers who are currently preparing an environmental impact statement for this action. The Fort Chaffee Redevelopment Authority (FCRA), the local authority established to oversee the realignment of the Fort property to local use, issued a resolution agreeing with the location of the Selected Alignment through the released land.

FHWA is preparing an Environmental Impact Statement for the relocation of U.S. 71 from Texarkana to DeQueen, Arkansas. This project is part of the congressionally designated High Priority Corridor running from Shreveport, Louisiana to Kansas City, Missouri.

**Table S-1  
IMPACT SUMMARY**

Segment	Alignment	Length (km) (mi)		Cost (in 000s)	Relocations					Noise Impacts	Natural Resources								Cultural Resources							
					Houses	Mobile Homes	Chicken Houses	Businesses	Community Facilities		Wetlands (ha) (ac)	Floodplains (ha) (ac)	Water Quality Index Avg. Score	Farmlands		High Probability Areas Crossed		Recorded Archeology Sites	Potential Cultural Resources	Number of Stream Crossings	Historic Sites	Historic Structures				
														Prime (ha) (ac)	Statewide Impt. (ha) (ac)	(km)	(mi)									
A-B:	Line 1	11.5	(7.1)	\$ 49,924	-	-	-	1	-	33	-	-	-	38.6	36.4	(89.9)	3.1	(7.6)	0.7	(0.4)	-	2	-	-	-	
	Line 2	11.9	(7.4)	\$ 53,523	-	-	4	1	-	34	-	-	3.5	(8.6)	40.8	15.0	(37.1)	2.2	(5.5)	1.7	(1.1)	-	1	3	-	-
	Line 3	11.7	(7.3)	\$ 52,907	-	-	-	-	-	6	-	-	0.8	(2.0)	41.6	15.7	(38.8)	6.3	(15.6)	0.6	(0.4)	-	1	3	-	-
B-C:	Line 1	23.1	(14.4)	\$ 121,793	26	-	4	-	-	27	3.1	(7.6)	6.1	(15.2)	38.1	8.0	(19.7)	51.2	(126.4)	2.0	(1.3)	1	3	10	-	-
	Line 2	23.3	(14.5)	\$ 119,924	13	-	4	-	-	15	3.3	(8.1)	8.6	(21.2)	39.4	6.2	(15.3)	43.0	(106.2)	2.4	(1.5)	-	2	11	-	-
	Line 3	23.2	(14.4)	\$ 120,924	9	-	4	1	-	8	1.3	(3.2)	7.1	(17.5)	38.7	11.3	(27.8)	42.3	(104.4)	3.6	(2.3)	1	2	14	-	1
C-D:	Line 1	22.4	(13.9)	\$ 111,153	14	1	-	-	-	101	0.2	(0.6)	5.4	(13.2)	37.4	19.2	(47.5)	3.0	(7.4)	2.5	(1.6)	-	1	9	-	-
	Line 2	25.7	(16.0)	\$ 111,525	7	-	-	-	-	42	-	-	12.2	(30.1)	36.7	25.3	(62.4)	9.0	(22.3)	4.3	(2.7)	-	4	14	-	-
	Line 3	20.5	(12.7)	\$ 96,729	2	-	-	-	-	18	-	-	1.6	(3.9)	35.5	16.6	(41.0)	3.5	(8.8)	2.2	(1.3)	-	2	8	-	-
	Selected	20.8	(13.0)	\$ 99,597	2	-	-	-	-	19	-	-	1.7	(4.2)	35.5	16.6	(41.0)	5.1	(12.6)	2.2	(1.3)	-	2	10	-	-
D-E:	Line 1	7.8	(4.9)	\$ 52,932	10	-	1	-	1	90	3.4	(8.4)	1.8	(4.3)	38.8	18.7	(46.2)	12.0	(29.7)	5.1	(3.1)	-	3	3	-	-
	Line 2	8.9	(5.5)	\$ 61,675	10	2	3	1	1	6	3.6	(8.9)	0.8	(2.0)	38.3	20.5	(50.6)	22.7	(56.1)	5.3	(3.3)	-	3	2	-	-
	Line 3	12.2	(7.6)	\$ 65,029	9	-	-	-	-	6	1.2	(2.9)	7.8	(19.3)	38.0	38.6	(95.4)	7.4	(18.2)	4.3	(2.7)	1	7	3	-	-
E-F:	Line 1	3.7	(2.3)	\$ 21,513	8	3	-	4	-	14	0.8	(1.9)	1.4	(3.5)	41.0	8.1	(20.1)	8.9	(22.1)	3.7	(2.3)	-	-	2	-	-
	Line 2	6.2	(3.9)	\$ 34,063	6	1	-	2	-	22	0.9	(2.2)	8.4	(20.8)	40.5	19.9	(49.2)	2.4	(6.0)	3.2	(2.0)	-	-	2	-	-
	Line 3	4.7	(2.9)	\$ 26,770	4	-	-	-	-	7	1.5	(3.7)	9.9	(24.4)	39.0	26.1	(64.5)	-	-	3.1	(2.0)	-	-	2	-	-
F-G:	Line 1	9.3	(5.8)	\$ 42,935	2	-	2	-	-	3	2.9	(7.3)	11.9	(29.4)	37.0	41.0	(101.3)	20.6	(50.8)	7.6	(4.7)	1	4	7	-	-
	Line 2	8.4	(5.2)	\$ 35,575	-	-	4	-	-	2	1.2	(2.9)	10.2	(25.2)	38.8	36.9	(91.2)	7.9	(19.5)	7.4	(4.6)	-	2	4	-	-
	Line 3	8.2	(5.1)	\$ 35,080	1	-	2	-	-	2	1.2	(2.9)	10.3	(25.4)	38.8	34.3	(84.8)	8.9	(22.1)	7.1	(4.4)	2	2	4	-	-
G-H:	Line 1	13.3	(8.3)	\$ 86,284	-	-	-	-	-	1	-	-	-	-	40.6	8.2	(20.2)	8.3	(20.4)	2.0	(1.2)	2	1	6	-	-
	Line 2	13.6	(8.5)	\$ 90,846	-	-	-	-	-	1	-	-	1.3	(3.3)	40.6	9.0	(22.1)	10.6	(26.1)	1.8	(1.1)	3	1	8	-	-
	Line 3	17.5	(10.9)	\$ 68,699	-	-	-	-	-	1	-	-	-	-	38.1	11.7	(28.9)	20.4	(50.4)	7.0	(4.3)	-	5	14	-	-
H-I:	Line 1	17.1	(10.6)	\$ 113,099	3	1	3	-	-	14	2.7	(6.6)	-	-	41.8	28.8	(71.1)	24.5	(60.7)	5.3	(3.3)	-	2	7	-	-
	Line 2	17.1	(10.6)	\$ 113,163	4	1	3	-	-	14	2.7	(6.6)	-	-	41.8	28.9	(71.3)	24.4	(60.3)	5.3	(3.3)	-	2	7	-	-
	Line 3	16.4	(10.2)	\$ 114,426	1	-	-	-	-	12	1.6	(4.0)	-	-	40.5	29.1	(71.9)	23.1	(57.0)	5.0	(3.1)	1	2	8	-	-
I-J:	Line 1	15.1	(9.4)	\$ 76,623	7	-	2	-	-	1	1.4	(3.4)	-	-	39.8	56.2	(139.0)	30.2	(74.5)	7.5	(4.7)	1	4	4	-	-
	Line 2	14.9	(9.3)	\$ 76,597	11	-	3	-	-	9	2.6	(6.5)	-	-	38.9	46.3	(114.3)	30.6	(75.6)	7.2	(4.5)	-	1	2	-	-
	Line 3	14.9	(9.3)	\$ 78,448	9	2	1	-	-	4	3.8	(9.4)	-	-	39.7	47.2	(116.7)	35.1	(86.7)	7.5	(4.6)	-	1	5	-	-
J-K:	Line 1	19.9	(12.4)	\$ 116,968	13	5	5	-	-	14	2.5	(6.2)	4.5	(11.1)	40.7	51.4	(127.1)	76.0	(187.9)	5.4	(3.4)	-	6	11	-	-
	Line 2	20.2	(12.5)	\$ 123,361	13	2	-	-	-	12	3.3	(8.2)	2.3	(5.7)	39.9	48.5	(119.7)	86.0	(212.5)	6.1	(3.8)	-	4	9	-	-
	Line 3	20.0	(12.4)	\$ 115,152	11	3	3	-	-	10	1.6	(4.0)	3.8	(9.4)	38.6	53.7	(132.8)	74.5	(184.3)	6.8	(4.2)	-	6	7	-	-
K-L:	Line 1	14.2	(8.8)	\$ 73,923	10	5	-	1	-	38	0.8	(1.9)	3.8	(9.4)	40.5	48.7	(120.4)	39.3	(97.0)	5.2	(3.2)	-	16	5	1	-
	Line 2	13.9	(8.7)	\$ 67,343	18	7	2	-	1	82	-	-	4.9	(12.0)	40.4	48.2	(119.0)	34.0	(84.0)	7.8	(4.8)	-	13	5	1	-
	Line 3	14.6	(9.1)	\$ 72,458	13	1	-	-	-	27	0.4	(1.1)	4.9	(12.2)	38.6	38.2	(94.3)	49.1	(121.4)	6.3	(3.9)	-	16	2	1	-
L-M:	Line 1	9.1	(5.7)	\$ 50,199	8	-	4	-	-	10	0.9	(2.1)	8.7	(21.6)	37.8	43.4	(107.2)	17.9	(44.2)	5.3	(3.3)	-	11	5	-	-
	Line 2	9.7	(6.0)	\$ 53,531	12	2	4	-	-	11	2.8	(6.9)	8.3	(20.6)	37.8	43.8	(108.2)	25.4	(62.9)	5.3	(3.3)	-	10	5	-	-
	Line 3	8.7	(5.4)	\$ 49,967	9	1	-	-	-	31	0.1	(0.3)	7.5	(18.4)	39.5	43.4	(107.3)	24.8	(61.3)	3.8	(2.4)	2	8	7	-	-
M-N:	Line 1	9.6	(6.0)	\$ 91,241	-	-	-	-	-	66	2.3	(5.6)	7.9	(19.6)	40.8	36.4	(89.9)	10.6	(26.2)	7.3	(4.6)	3	7	7	-	-
	Line 2	9.8	(6.1)	\$ 91,250	-	-	-	-	-	66	3.6	(8.8)	10.3	(25.5)	40.8	46.0	(113.8)	3.0	(7.5)	7.3	(4.6)	1	3	6	-	-
	Line 3	10.0	(6.2)	\$ 93,325	-	-	-	-	-	2	3.6	(8.8)	13.9	(34.3)	41.2	46.5	(114.8)	1.9	(4.7)	7.3	(4.5)	1	3	6	-	-
N-O:	Line 1	15.7	(9.8)	\$ 87,950	8	1	-	1	-	14	6.6	(16.2)	58.3	(144.1)	44.4	94.5	(233.4)	26.7	(65.9)	10.6	(6.6)	3	2	11	-	-
	Line 2	15.3	(9.5)	\$ 82,013	11	-	-	-	-	127	5.4	(13.3)	44.6	(110.3)	44.2	77.7	(191.9)	45.4	(112.1)	11.5	(7.1)	3	3	8	-	-
	Line 3	15.9	(9.9)	\$ 87,901	4	2	-	-	-	18	0.6	(1.5)	53.9	(133.2)	43.3	100.7	(248.8)	29.8	(73.6)	14.6	(9.1)	3	2	5	-	-
TOTAL:	No-Action	215.1	(133.6)	\$ 20,600	90	-	-	30	-	345	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Line 1	191.8	(119.4)	\$ 1,096,537	109	16	21	7	1	426	27.6	(67.8)	109.8	(271.4)	39.7	499.0	(1,233.0)	332.3	(820.8)	70.2	(43.7)	11	62	87	1	-
	Line 2	198.9	(123.7)	\$ 1,114,389	105	15	27	4	2	443	29.4	(72.4)	115.4	(285.3)	39.6	472.2	(1,166.1)	346.6	(856.6)	76.6	(47.7)	7	49	86	1	-
	Line 3	198.5	(123.4)	\$ 1,077,815	72	9	10	1	-	152	16.9	(41.8)	121.5	(300.0)	38.9	513.1	(1,267.8)	327.1	(808.5)	79.2	(49.2)	11	57	88	1	1
	DEIS Preferred	201.4	125.3	\$ 1,083,094	86	12	22	6	1	234	21.0	51.9	115.8	286.4	39.0	490.7	(1,212.2)	359.6	(889.0)	84.9	52.9	6	60	90	1	1
Selected	196.5	(122.3)	\$ 1,074,906	81	12	22	6	1	211	21.0	(51.9)	105.3	(252.1)	38.8	482.0	(1,190.8)	355.7	(879.3)	82.8	(51.5)	6	58	86	1	1	

Source: Michael Baker Jr., Inc.

NOTES: Impacts for the No-Action alternative have been estimated when possible and could be different than what is shown.

Yellow highlighting indicates the Selected Alignment in each segment.

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**Table S-2  
IDENTIFICATION OF THE SELECTED ALIGNMENT**

SEGMENT	SELECTED ALIGNMENT	BASIS FOR SELECTED ALIGNMENT
A-B	Line 3	Line 3 takes the fewest houses and is publicly preferred.
B-C	Line 3	Line 3 takes the fewest houses and is publicly preferred.
C-D	Line 3 / Line 2 combination	Line 3 (modified to connect to Line 2 south of point D) takes the fewest homes; impacts the fewest streams, floodplains, farmlands, and wetlands; has the fewest noise impacts, the shortest length and lowest construction costs. This line does not provide direct access to Cove but best serves the general public due to its shorter length and corresponding shorter travel time.
D-E	Line 2	Line 2 provides the best access for a moderate cost, has slightly more displacements than the other lines but the fewest floodplain impacts. Line 2 is the only line that can provide access to south Mena in this reach and therefore the only line that can serve to alleviate traffic congestion in Mena by diverting existing U.S. 71 traffic to the proposed highway.
E-F	Line 1	Line 1 provides the greatest potential of the three lines around Mena to reduce traffic congestion, provide access to the city and to promote development in accordance with Mena's Future Land Use plan. In spite of its increased residential relocations (2 additional homes and two additional mobile homes over Line 2), this line has been maintained as the Selected Alignment in order to best serve its intended purpose.
F-G	Line 1	Based on segment E-F preference, Line 1 is preferred in this segment.
G-H	Line 3	Line 3 replaces the existing route through the gap, is publicly preferred, is preferred by the Forest Service, is preferred by the City of Mena and has the least potential to affect the Irons Fork watershed, minimizes impact to the Ouachita National Recreation Trail, and has the lowest estimated construction cost.
H-I	Line 1	Of the two lines that avoid all red-cockaded woodpecker active and recruitment areas (Lines 1 and 2), Line 1 takes fewer houses and has a similar cost to Line 2.
I-J	Line 2	Line 2 is preferred overall in Waldron by the public and local officials, has the best potential to integrate new businesses and commercial operations into the existing economic structure of the city.
J-K	Line 3	Line 3 impacts the fewest wetlands, takes the fewest houses and impacts no producing gas wells.
K-L	Line 3	Line 3 has the least impact on residential areas in this densely populated reach of the project. Line 3 is the furthest from the Devil's Backbone Ridge Civil War site which is impacted by Line 2. It also avoids the Excelsior Community Center which is impacted by Line 2.
L-M	Line 1	Line 1 takes the fewest houses in this reach which was voiced repeatedly by the public during early alignment development.
M-N	Line 2	Line 2 across the Arkansas River and Springhill Park minimizes impacts overall to park facilities and the military water obstacle training area east of the park.
N-O	Line 3	Line 3 takes the fewest houses, is publicly preferred in Kibler, is the location established in the June 3, 1996 City Council resolution and impacts the least wetland areas.

Source: Michael Baker Jr., Inc.

**OTHER FEDERAL ACTIONS AND PERMITS REQUIRED**

The following actions must occur in order to implement this project:

1. The issuance of a Section 404 permit by the U.S. Army Corps of Engineers for the placement of dredged and fill material in waters of the United States and the related Section 401 Water Quality Certification which was issued by the Arkansas Department of Pollution Control and Ecology on November 13, 1996. The application for the Section 404 permit was included in the DEIS. The Joint Public Notice is provided in this document for information. The permit will be issued by the Corps roughly concurrent with the project's Record of Decision.
2. The issuance of a navigation permit (which complies with several federal laws) by the U.S. Coast Guard for crossing the Arkansas River and a related Section 401 Water Quality Certification issued by the Arkansas Department of Pollution Control and Ecology. The U.S. Coast Guard intends to adopt this environmental document in order to issue a permit for the bridge crossing of the Arkansas River
3. An easement from the U.S. Forest Service, Ouachita National Forest for crossing federal lands within the Ouachita National Forest
4. A land transfer relative to the Base Realignment and Closure of Fort Chaffee
5. An easement from the U.S. Army Corps of Engineers for the bridge crossing Springhill Park
6. A consent to easement for crossing property for which the U.S. Army Corps of Engineers has acquired a flowage easement
7. An easement from the U.S. Army, Fort Chaffee (or the Arkansas National Guard, depending on the timing of right-of-way acquisition) for the bridge crossing a portion of Fort Chaffee land just north of the Arkansas River.
8. A National Pollutant Discharge Elimination System (NPDES) Permit as required by Section 402 of the Clean Water Act, issued by the Arkansas Department of Pollution Control and Ecology.

**SUMMARY OF AGREEMENTS REACHED AND FUTURE COORDINATION WITH OTHER AGENCIES**

Throughout this project, the FHWA and AHTD consulted and coordinated with several state and federal agencies regarding important issues. Many issues have been resolved throughout the course of the preparation of the Draft and Final EISs. The treatment of other issues cannot be completed until the project moves into the next phase of design, when additional information becomes available. These issues have been resolved by agreeing to

the manner in which they will be treated, or handled at a later date. The following list summarizes the agreements that have been reached.

- A programmatic agreement for completion of the Section 106 process with respect to the project's effect on cultural resources has been signed by the FHWA, AHTD, Arkansas Historic Preservation Program and the Advisory Council on Historic Preservation and is provided in Appendix J.
- AHTD will coordinate with the Forest Service during final design regarding access to Forest Service lands and replacement of wildlife ponds. (July 17, 1996 letter from Michael Baker Jr., Inc. to USFS)
- Mitigation measures have been agreed to for impacts to Springhill Park, owned and managed by the U.S. Army Corps of Engineers (Section 5.2 and July 30, 1996 letter from the Corps to Michael Baker Jr., Inc.)
- Mitigation measures have been agreed to for the impacts to the Ouachita National Recreation Trail owned and managed by the U.S. Forest Service (Section 5.3 and September 3, 1996 letter from USFS to Michael Baker Jr., Inc.)
- Mitigation ratios and concepts for the filling of wetlands have been agreed to with the Corps of Engineers for issuance of the Section 404 permit. (Section 4.10 and AHTD/COE meeting minutes dated September 10, 1996)
- An agreement has been reached with the U.S. Forest Service to compensate for government lands converted from Habitat Management Area 22 of the Ouachita National Forest to highway use. (Section 4.12 and AHTD letter to the Forest Service dated May 16, 1997)
- AHTD and the Fish and Wildlife Service have agreed that further coordination and consultation under the Endangered Species Act may be necessary for the American Burying Beetle (Section 4.12.1 and DOI/USFWS letter dated December 23, 1996).
- AHTD and the USFS have agreed: 1) that a Biological Evaluation will be completed once the right-of-way limits within the Forest are known; 2) that the USFS will be compensated for any USFS land remnants that result from the highway; 3) that, during the design phase of the project, consideration will be given to culvert designs that allow for fish passage and measures to dissipate and stabilize runoff flow velocities; 4) that the USFS will review the erosion and sedimentation control plan which will be prepared in accordance with the current Standard Specification for Highway Construction (June 18, 1997 letter from USFS to Michael Baker Jr., Inc.)

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## Section 1: PURPOSE AND NEED

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### 1.1 PROJECT HISTORY

In 1988, the Arkansas State Highway and Transportation Department led a multi-state feasibility study for an Interstate-designed corridor paralleling U.S. 71. This corridor would connect Shreveport, Louisiana to Kansas City, Missouri and later was designated a High Priority Corridor (HPC). This study was prepared in response to Section 166 of the Federal Highway Act of 1987. The purpose of the study was to determine the economic feasibility of a fully controlled access highway designed to Interstate standards. The study found several positive benefits that would be realized from construction of such a facility. The HPC would connect major employment centers of the region, thirteen major commercial areas, thirteen Department of Defense installations and

would improve highway capacity and highway safety in the region.

From an economic development perspective, the Interstate corridor would foster further growth of the tourism and recreation industries of the region and would be a major consideration in attracting new commercial and industrial activities to the region. The travel time savings that would be realized for the entire High Priority Corridor would be three hours, from eleven hours on the existing route to eight hours on the proposed highway.

Following the 1988 multi-state study, each state assumed responsibility for the development of the HPC within its borders. Within the state of Arkansas, the project is in various stages of completion as shown in Table 1-1 and Exhibit 1-1.

<b>Table 1-1 STATUS OF SHREVEPORT TO KANSAS CITY HPC PROJECTS WITHIN ARKANSAS</b>	
<b>High Priority Corridor Project</b>	<b>Status of Project</b>
Pineville, Missouri to Bella Vista	Location and Environmental Studies
Bella Vista to Fayetteville	Open to Traffic
Fayetteville to Interstate 40: Fayetteville to Mountainburg Mountainburg to Interstate 40	Under Construction Open to Traffic
<i>Interstate 40 to DeQueen (this project)</i>	<i>Location and Environmental Studies</i>
DeQueen to Texarkana	Location and Environmental Studies
Texarkana to Louisiana State Line	Design Engineering / Under Construction

Source: Michael Baker Jr., Inc., AHTD

In addition to the development of the HPC in the State of Arkansas, AHTD is involved in numerous highway improvement projects along existing U.S. 71. Some of these projects involve safety improvements, such as horizontal curve realignment and increased shoulder widths. AHTD is currently widening U.S. 71 to four lanes between Jenny Lind and Witcherville, a distance of approximately 7 kilometers (4.2 miles). This improvement will serve local capacity demands and is not associated with the development of the U.S. 71 Relocation project.

In 1991, Congress enacted the Intermodal Surface Transportation Efficiency Act (ISTEA, 1991). This act had several key components, one of which was the establishment of the National Highway System (NHS). This system was further defined in the 1995 National Highway System Designation Act. The NHS is a system of Interstate and principal arterial roadways that would serve the travel, commercial, national defense, and economic development needs of the country. The roadways contained in the NHS are both existing and planned highways, as recommended by each state highway agency. This system of roadways consists of approximately 256,000 kilometers (159,000 miles) of roadways, of which 98% are existing.

Some of the NHS roadways planned for construction were further identified as High Priority

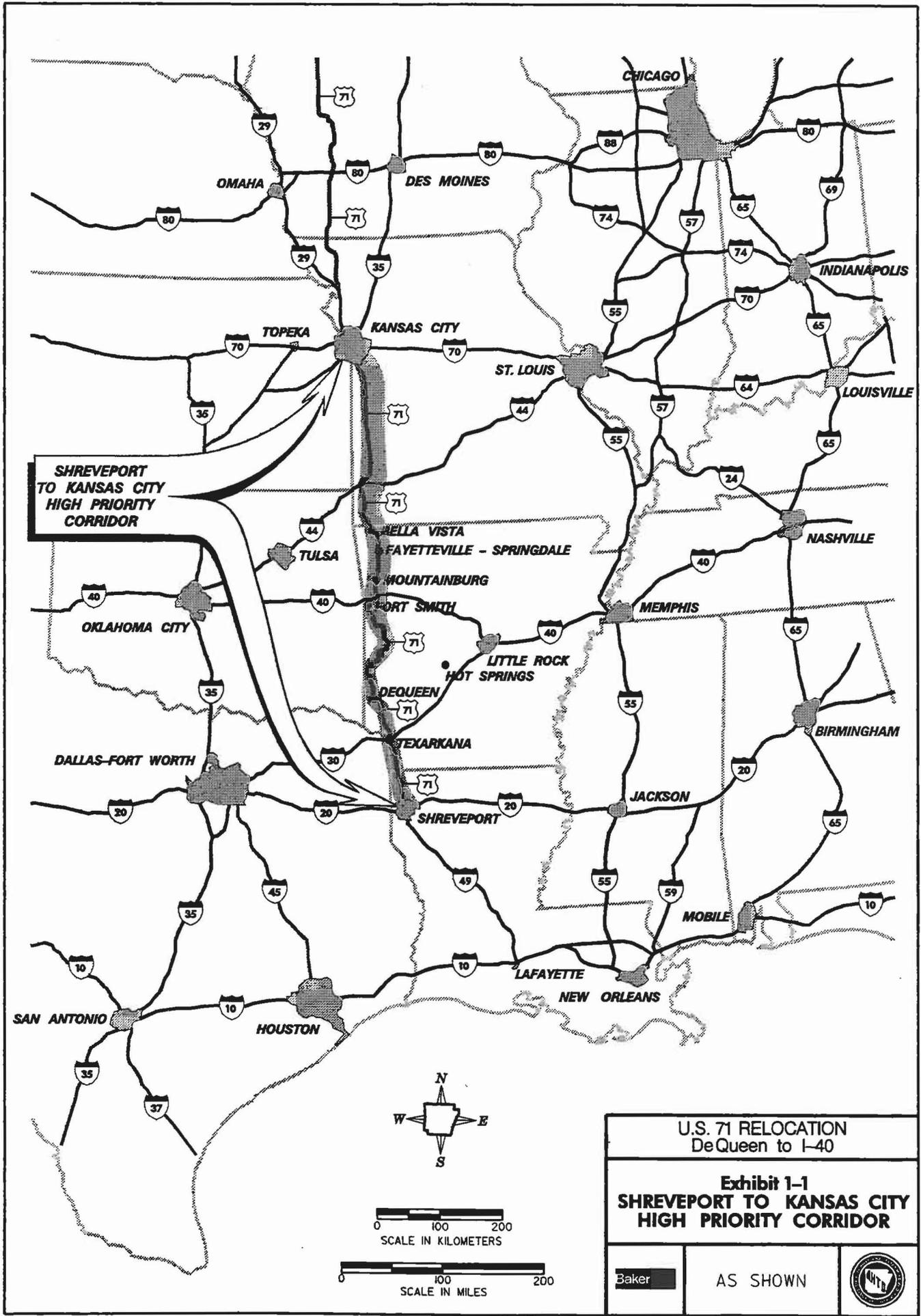
Corridors of national significance (NHS, 1995). Congress found that many regions of the nation are not adequately served by the existing Interstate Highway System or other comparable highways. These regions require additional highway development in order to serve their travel and economic development needs.

Twenty-one corridors were identified in ISTEA as High Priority. The Shreveport, Louisiana to Kansas City, Missouri HPC along existing U.S. 71 is over 800 kilometers (500 miles) in length and is one of the longest corridors identified. The U.S. 71 project from DeQueen, Arkansas to Interstate 40 falls within this Shreveport to Kansas City corridor. ISTEA also identifies segments of these corridors as High Priority Segments. The U.S. 71 Relocation project has also been identified as a High Priority Segment within Arkansas.

## 1.2 PROJECT DESCRIPTION

Upon initiation of the study of the HPC highway segment between DeQueen and I-40, a study area was defined. This study area encompasses over 4,300 square kilometers (1,600 square miles). The general shape of the study area follows that of existing U.S. 71 for approximately 215 kilometers (133.6 miles) and varies from 19 to 35 kilometers (12 to 22 miles) in width as shown in Exhibit 1-2.

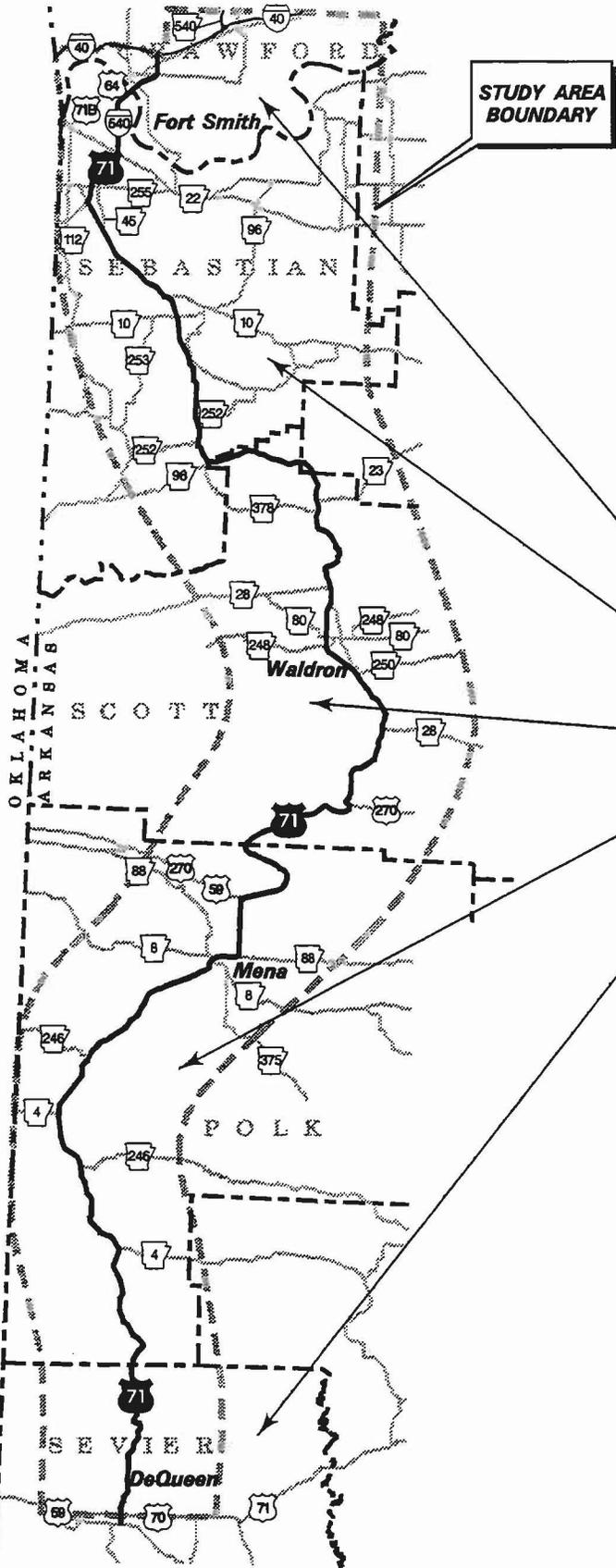
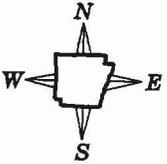
The project (generally along the existing U.S. 71 route) begins in Sevier county, at the crossing of



**SHREVEPORT  
TO KANSAS CITY  
HIGH PRIORITY  
CORRIDOR**

U.S. 71 RELOCATION DeQueen to I-40		
<b>Exhibit 1-1 SHREVEPORT TO KANSAS CITY HIGH PRIORITY CORRIDOR</b>		
Baker	AS SHOWN	

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U.S. 71 RELOCATION DeQueen to I-40	
<b>Exhibit 1-2 PROJECT LOCATION</b>	
Baker	NOT TO SCALE

U.S. 70 just east of DeQueen and travels north to the existing interchange of I-540 with I-40 in Crawford County. Distances through each of the five counties are approximately 17.6 kilometers (11.0 miles) through Sevier County, 77.0 kilometers (47.8 miles) through Polk County, 68.2 kilometers (42.4 miles) through Scott County, 46.9 kilometers (29.1 miles) through Sebastian County and 5.3 kilometers (3.3 miles) through Crawford County. The proposed highway would come close to, but not pass through, the many rural communities along existing U.S. 71. Throughout the route, the proposed highway will pass through primarily forested and farmed landscapes and cross the mountains of the Ouachita National Forest. Major rivers crossed by the project include the Ouachita, the Fourche LaFave, the Poteau, the Petit Jean, and the Arkansas Rivers.

Several state highways are crossed by the proposed highway for which interchanges have been proposed. Access to an Interstate-designed facility is limited to on and off ramps at interchange locations. In some cases, interchanges have been provided on county roads. Several interchanges are provided at existing U.S. 71 as the proposed highway travels north and crosses the existing route several times. Interchanges have also been proposed at U.S. 70 and U.S. 270. U.S. 64 in Crawford County would be crossed by the proposed highway with access provided to it

indirectly at the I-40 interchange. Most county roads would be bridged so that continuity of roads is maintained and local travel patterns are largely uninterrupted by the new facility. In some cases, smaller roads and streets may need to be relocated or carried along a frontage road for a short distance.

The proposed highway would be a four-lane Interstate-designed highway that closely parallels existing U.S. 71. The design standards used for Interstates specify divided travel lanes with a preferred median of 24 meters (80 feet) and a design speed of 110 kmh (70 mph). The design criteria used for the proposed highway are presented in Table 1-2.

<b>ITEM</b>	<b>VALUE</b>	
Design Speed	110 kmh (70 mph)	
Median Width	24 m (80 ft)	
	<b>Maximum</b>	<b>Preferred</b>
Profile Grade	5%	4%
Degree of Curve	3°	2°
Depth of Cut	90 m (300 ft)	60 m (200 ft)
Height of Fill	45 m (150 ft)	30 m (100 ft)

Source: Michael Baker Jr., Inc.; AHTD; American Association of State Highway and Transportation Officials

The number of lanes provided is dictated by providing a capacity that yields an acceptable level of service (LOS) to the public. An analysis described later in this section has determined that

the U.S. 71 Relocation would require two travel lanes in each direction. Some basic geometric features for the proposed highway are presented in Exhibit 1-3. The typical section for the four paved lanes, median and shoulders equals approximately 45 meters (150 feet). In restricted areas, the shoulder to shoulder width could be reduced to 26 meters (85 feet). The full right-of-way requirements will vary between 60 meters (200 feet) and 550 meters (1,800 feet) depending on the ruggedness of the terrain. These figures will also depend on the type of overburden and rock encountered throughout the project, which will determine the slope at which cuts can be made into a given material.

### 1.3 PROJECT PURPOSE

The purpose of the project is based on the ISTEA legislation described in the previous section. Fundamentally, Congress has legislated the purpose of several High Priority Corridors across the country. ISTEA states "the development of transportation corridors is the most efficient and effective way of integrating (inadequately served) regions and improving efficiency and safety of commerce and travel and further promoting economic development." State highway agencies have the authority to prepare long range plans and feasibility studies for these corridors. The High Priority designation allows the states administering

these projects to give priority to funding construction of highways within these corridors.

Other legislation that is related to this project, although indirectly, is the North American Free Trade Agreement (NAFTA), signed in 1993. Import and export operations that result from this agreement are expected to generate additional freight flow between Mexico, the United States and Canada along several trade corridors. By the year 2000, U.S. exports to Mexico are projected to increase 65 to 70% (USDOT, 1994.). Ultimately, north-south traffic demand is expected to increase, and will be accommodated in part by the proposed highway.

Coordination with the public and local elected officials in the study area identified several purposes for the project that are locally based. These include:

- Access to additional developable land in the Fort Smith area
- Attraction of new businesses to the Fort Smith area which would be located at the junction of two Interstate highways
- Attraction of new businesses to communities such as Waldron, Mena and others along existing U.S. 71
- Integration of western Arkansas by connecting Fort Smith to small and medium sized communities to its south

- Relieve congestion in downtown Mena
- Flexibility for future expansion of the facility and incorporation of other modes of travel.

#### 1.4 TRANSPORTATION NEED

With the legislative purpose as a framework, the transportation needs of the existing U.S. 71 highway were analyzed. This analysis was undertaken to identify other needs or deficiencies of the existing U.S. 71 facility that could be accommodated or resolved by the proposed highway. This analysis considered the transportation needs of existing U.S. 71 and the social and economic needs of the communities and counties through which it passes.

##### 1.4.1 Interstate System Linkage

The current Interstate system through the south central United States is missing a critical link (Exhibit 1-1). The Interstate Highway System was developed to connect geographic areas. Major cities are joined together, accommodating both commercial and recreational trips. Within the region shown, there are numerous Interstates available for east-west travel:

- I-10 between San Antonio, Texas and New Orleans, Louisiana
- I-20 between Dallas-Fort Worth, Texas and Jackson, Mississippi
- I-30 / I-40 between Dallas-Fort Worth, Texas and Memphis, Tennessee

- I-40 between Oklahoma City, Oklahoma and Memphis, Tennessee
- I-70 between Denver, Colorado and St. Louis, Missouri.

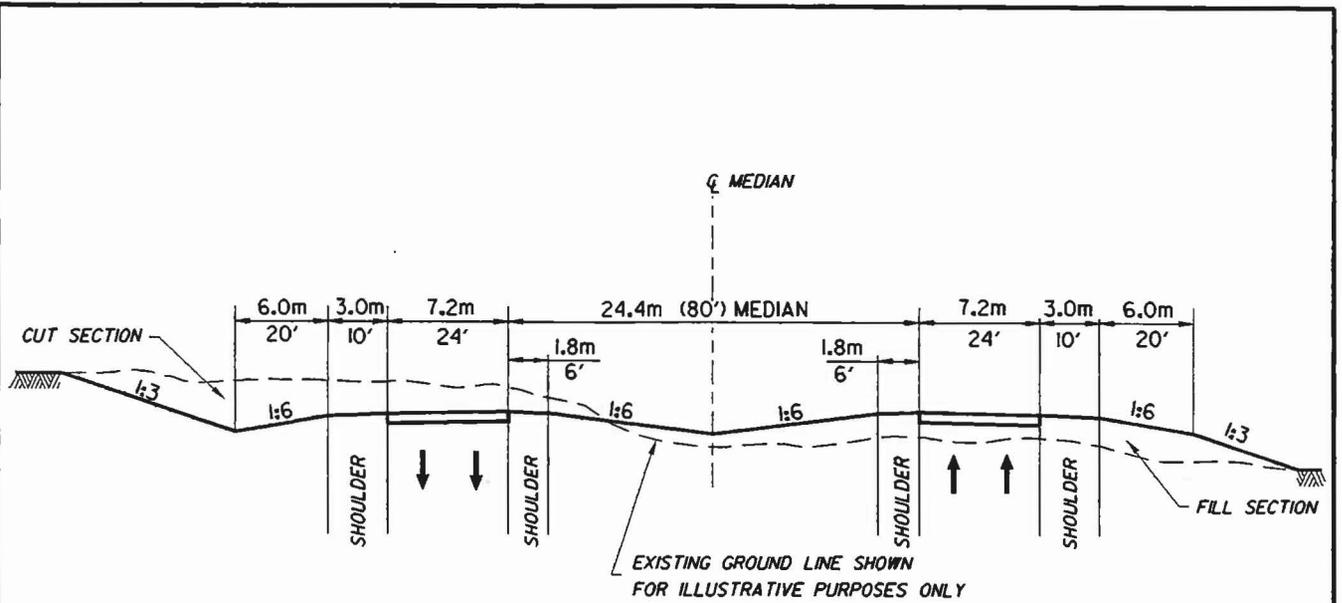
However, there are only two complete north-south Interstates in this area:

- I-35 between San Antonio, Texas and I-70 in Kansas
- I-55 from New Orleans, Louisiana to St. Louis, Missouri.

Between I-35 and I-55, I-49 runs from I-10 at Lafayette, Louisiana to Shreveport, Louisiana, but does not continue north. Completion of the High Priority Corridor from Shreveport to Kansas City would provide a facility nearly equidistant from I-35 and I-55, which on average are located 640 kilometers (400 miles) apart. Currently, I-49 travelers either remain on the Interstate Highway System by traveling to the east or west on I-20 to reach I-35 or I-55, or leave the Interstate Highway System and continue north on U.S. 71, an undivided, primarily two-lane rural highway.

##### 1.4.2 Transportation Demand

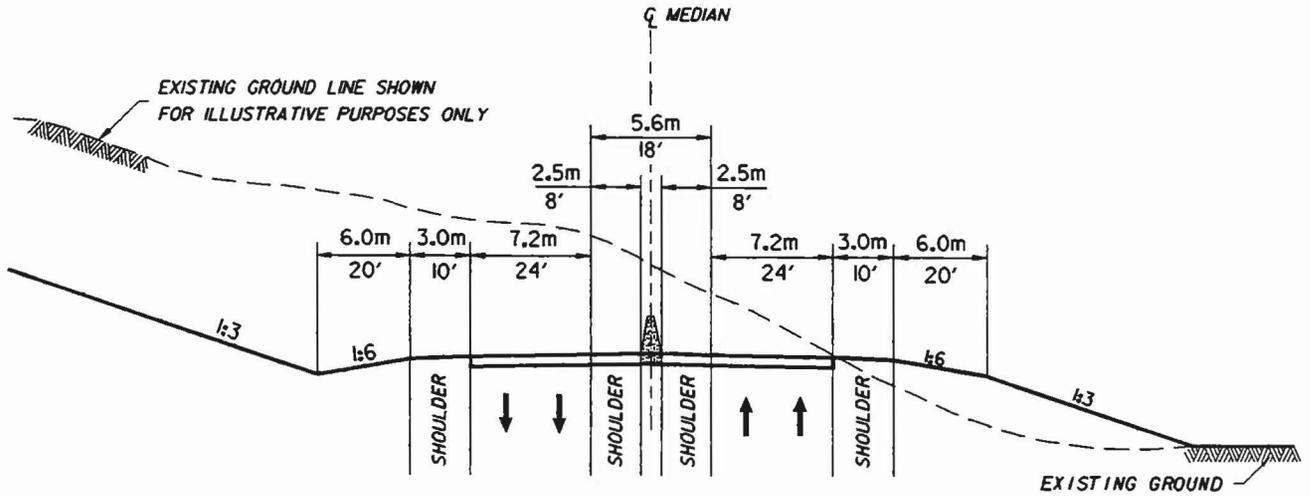
From July 1995 and throughout the preparation of this document, consultation with local officials and transportation planners was conducted. This coordination was necessary to ensure consistency of the project with the future local and regional transportation system.



2 SOUTHBOUND LANES  
(3.6 m or 12 ft. each)

2 NORTHBOUND LANES  
(3.6 m or 12 ft. each)

**TYPICAL SECTION**



**TYPICAL SECTION  
RESTRICTED AREAS**

U.S. 71 RELOCATION DeQueen to I-40		
<b>Exhibit 1-3 TYPICAL SECTIONS</b>		
Baker	NOT TO SCALE	

The Bi-State 2020 Long Range Transportation Plan for the Fort Smith/Van Buren urbanized area includes the proposed highway. The plan states that the project will provide a “safer and more efficient facility thus facilitating an expanded regional and national economic environment for all of western Arkansas and eastern Oklahoma.”

The proposed highway passes through the Fort Chaffee Military Reservation. Fort Chaffee was identified in the September 1995 Defense Base Realignment and Closure Commission's recommendations (BRAC 95). As part of the BRAC 95 recommendations, 2,400 hectares (6,000 acres) of land have been released for development by the surrounding communities. The Fort Chaffee Redevelopment Authority (FCRA) will act as the official body to redevelop the released property. Very early in the BRAC process of Fort Chaffee, the FCRA emphasized that development of the land would depend heavily on improved access to the property. A complete discussion of the coordination efforts with the FCRA and the land use consistency of the two projects is provided in Section 4.

Comprehensive plans are currently being prepared for the City of Mena and the City of Waldron. The local governments and planning commissions of these communities have been actively involved in this project. These efforts are also discussed in Section 4.

### 1.4.3 Existing Roadway System

The Arkansas State Highway and Transportation Department classifies existing U.S. 71 as a principal arterial linking Interstate and inter-county traffic between U.S. 70 and I-40. Since the roadway traverses many small towns, the traffic flow is sometimes characteristic of a major collector, which can conflict with its functional classification. Field views of U.S. 71 were conducted in June and July of 1995 to collect data for the following analyses. To facilitate the analyses, U.S. 71 was divided into smaller manageable sections (Table 1-3).

As illustrated by the data, the roadway characteristics of U.S. 71 vary as a traveler moves from one section to the next. The southern sections have more horizontal and vertical curves which result in less opportunity for passing than the northern sections. The higher percentage of “No Passing Zones” in the southern sections cause delay to the traveler who cannot easily pass slower moving vehicles. In the two-lane sections of U.S. 71, truck traffic represents 21% of the traffic volume overall and as high as 27% in one section. A separate travel lane for passing is provided at six areas for the northbound traffic and at four areas for the southbound traffic; however, each of these passing areas is less than 1.6 kilometers (1 mile) in length.

Table 1-3 EXISTING ROADWAY DATA							
FROM:	TO:	LENGTH km (mi)	% NO PASSING ZONE	TRUCK %	SPEED LIMIT (mph)	WARNING SIGNS	
						CURVES	INTER- SECTIONS
<b>U.S. 71:</b>							
U.S. 70 / U.S. 71 Intersection	DeQueen City Limit	1.9 (1.2)	100	19	35, 45	3	4
DeQueen City Limit	S.H. 4 in Wickes	29.8 (18.5)	85	19	55, 45, 35	51	12
S.H. 4 in Wickes	4-lane Section South of Mena	37.8 (23.5)	85	21	55, 45, 35, 30	31	14
4-lane Section in Mena		6.6 (4.1)	N/A	15	45, 40, 35	0	1
4-lane Section North of Mena	U.S. 270 in Acorn	6.4 (4.0)	10	15	55, 45	1	4
U.S. 270 in Acorn	U.S. 270 in Y-City	24.6 (15.3)	70	27	55	25	0
U.S. 270 in Y-City	Southern Point of Waldron Bypass	16.4 (10.2)	60	22	55, 45	20	4
Waldron Bypass		9.8 (6.1)	70	22	55, 40	0	1
Northern Point of Waldron Bypass	Huntington Avenue (S.H. 96)	28.3 (17.6)	65	21	55, 40, 35	50	15
Huntington Avenue (S.H. 96)	Coker Street (North of Witcherville)	11.7 (7.3)	65	21	55, 45, 40, 35	22	9
Coker Street	S.H. 10 Spur (West of Greenwood)	7.4 (4.6)	N/A	21	55	4	3
S.H. 10 Spur	U.S. 71 / I-540 Interchange	13.2 (8.2) NB 13.5 (8.4) SB	N/A	21	55, 45	6	8
<b>I-540:</b>							
U.S. 71 / I-540 Interchange	I-540 / I-40 Interchange	19.1 (11.9) NB 17.7 (11.0) SB	N/A	9	60	0	0
<b>I-40:</b>							
I-540 / I-40 Interchange	I-40 / S.H. 540 Interchange	7.4 (4.6) NB 7.7 (4.8) SB	N/A	27	70	2	0

Source: Michael Baker Jr., Inc., AHTD

Note: Speed limits have been provided in English units to agree with existing traffic signing.

The number of curve warning signs varies from section to section indicating changing horizontal geometry along U.S. 71 that requires driver attention. The number of intersection warning signs also varies along U.S. 71. This indicates that some sections of the highway have a greater number of unexpected intersections or a greater number of intersections with large turning volumes. These changing conditions have the potential to interrupt through traffic flow.

Most of the sections of U.S. 71 are two-lane highways, although U.S. 71 in Mena is a four-lane undivided highway with a continuous center lane for left turn movements. South of Fort Smith, U.S. 71 is a four-lane divided highway with at-grade intersections. From south of Fort Smith to I-40, U.S. 71 follows I-540 and I-40 to Alma.

Throughout its length, U.S. 71 does not provide the driver with consistent roadway conditions (Table 1-3). The through traffic is interrupted by various delays along the route. These drivers must remain attentive to changing conditions such as posted speeds, warning signs, varying amounts of pedestrian activity, turning vehicles at intersections and driveways, and the variability of the roadway as it changes from two-lane rolling highways with uncontrolled access to four-lane business districts with signalized intersections, to Interstate facilities with controlled access.

Inconsistencies of the roadway characteristics are inherent with roadways that serve as both the main street of rural towns and the connection between rural towns. These roadway characteristics are not deficiencies as such for local traffic. However, because U.S. 71 is classified as a principal arterial, a main purpose is to provide service to the through traffic. The inconsistencies in the roadway characteristics are deficiencies for the existing and future through traffic using this principal arterial.

#### **1.4.4 Accident and Safety Analysis**

Utilizing accident data for the years 1991, 1992, and 1993, accident rates per 1.6 million vehicle kilometers (accidents per million vehicle miles) were calculated using accepted methodology (ITE, 1992). These accident rates were compared to the statewide accident rates for various types of roadways contained in Arkansas Traffic Crash Data. Six of the 15 sections (20% of the length along the study route) had accident rates higher than the statewide accident rates as presented in Table 1-4. The sections that exceed the average state rate are shaded.

The breakdown by type of accident was calculated for each section. This data was compared to the statewide breakdown of accident types. The comparison for multi-vehicle accident types is shown in Table 1-5.

<b>Table 1-4 COMPARISON OF ACCIDENT RATES</b>			
FROM:	TO:	STATEWIDE RATE *	SECTION RATE
<b>U.S. 71:</b>			
U.S. 70 / U.S. 71 Intersection	DeQueen City Limit	1.45	2.86
DeQueen City Limit	S.H. 4 in Wickes	1.45	1.04
S.H. 4 in Wickes	4-lane Section South of Mena	1.45	1.27
4-lane Section in Mena		8.19	4.32
4-lane Section North of Mena	U.S. 270 in Acorn	1.45	1.10
U.S. 270 in Acorn	U.S. 270 in Y-City	1.45	1.70
U.S. 270 in Y-City	Southern Point of Waldron Bypass	1.45	1.29
Waldron Bypass		1.45	1.24
Northern Point of Waldron Bypass	Huntington Avenue (S.H. 96)	1.45	0.83
Huntington Avenue (S.H. 96)	Coker Street (North of Witcherville)	1.45	1.38
Coker Street	S.H. 10 Spur (West of Greenwood)	1.45	2.07
S.H. 10 Spur	I-540 / U.S. 71 Interchange	2.81	1.11
<b>I-540:</b>			
I-540 / U.S. 71 Interchange	S.H. 255 Interchange	0.95	2.33
S.H. 255	S.H. 22	0.95	1.27
S.H. 22	I-540 / I-40 Interchange	0.95	1.16

Source: Michael Baker Jr., Inc., AHTD

\* Rate = number of accidents per 1.6 million vehicle kilometers (1 million vehicle miles). Statewide accident rates vary according to the type of facility (i.e., two-lane, four-lane undivided, four-lane divided, and four-lane full access control).

Shaded areas depict sections with higher accident rates than statewide.

**Table 1-5  
COMPARISON OF ACCIDENT TYPES**

FROM:	TO:	REAR END	HEAD ON	SIDESWIPE SAME DIRECTION	SIDESWIPE OPPOSITE DIRECTION	RIGHT ANGLE	COLLISION WITH STATIONARY OBJECT
<b>Statewide</b>		35%	3%	11%	4%	43%	26%
<b>U.S. 71:</b>							
U.S. 70 / U.S. 71 Intersection	DeQueen City Limit	42%	5%	0%	3%	11%	24%
DeQueen City Limit	S.H. 4 in Wickes	26%	3%	8%	11%	11%	37%
S.H. 4 in Wickes	4-lane Section South of Mena	23%	5%	5%	4%	16%	44%
4-lane Section in Mena		17%	2%	13%	5%	45%	4%
4-lane Section North of Mena	U.S. 270 in Acorn	42%	4%	0%	8%	19%	23%
U.S. 270 in Acorn	U.S. 270 in Y-City	17%	3%	6%	3%	6%	64%
U.S. 270 in Y-City	Southern Point of Waldron Bypass	25%	8%	8%	3%	9%	44%
Waldron Bypass		16%	5%	9%	2%	26%	30%
Northern Point of Waldron Bypass	Huntington Avenue (S.H. 96)	15%	1%	6%	8%	12%	55%
Huntington Avenue (S.H. 96)	Coker Street (North of Witcherville)	25%	6%	4%	10%	13%	38%
Coker Street	S.H. 10 Spur (West of Greenwood)	11%	3%	4%	1%	54%	24%
S.H. 10 Spur	U.S. 71 / I-540 Interchange	27%	1%	10%	1%	32%	25%
<b>I-540:</b>							
U.S. 71 / I-540 Interchange	S.H. 255	63%	1%	7%	1%	3%	22%
S.H. 255	S.H. 22	45%	0%	3%	0%	8%	42%
S.H. 22	I-540 / I-40 Interchange	39%	0%	9%	1%	9%	40%

Source: Michael Baker Jr., Inc., AHTD

The section of U.S. 71 from U.S. 70 to the DeQueen city limit had accident rates higher than the statewide rate. The most frequent type of accident in this section was rear end collisions. Rear end collisions made up 42% of all multi-vehicle accidents compared to the statewide rate of 35% for this type of roadway. This section contains the four way stop controlled intersection of U.S. 70 and U.S. 71, as well as a concentrated number of businesses along U.S. 71. Two possible causes of rear end collisions along rural roadways are the drivers' lack of awareness of intersections and a large volume of turning vehicles where a turning lane has not been provided (Missouri, 1990). These two causes are characteristic of this section and of two-lane highway sections of the study route.

The section from U.S. 270 in Acorn to U.S. 270 in Y-City had an accident rate higher than the statewide rate. The isolated and winding geometry through the rugged terrain of the Ouachita National Forest may have contributed to the higher accident rate.

The section from Coker Street to S.H. 10 Spur is currently being widened to four lanes. The higher accident rate in this section could be attributed to the high traffic volumes that necessitated the widening project.

All of the sections of I-540 had higher accident rates than statewide, with the highest differential occurring in the section between the U.S. 71 interchange and the S.H. 255 interchange. The most common type of accident for all three sections of I-540 was rear end collisions. Rear end collisions occurred 49% of the time for the three sections of I-540. The number of rear end collisions is likely attributed in large part to the near-capacity volume of traffic on this section. As the traffic flow approaches capacity, the distance between vehicles decreases, thus reducing the available time that a driver has to perceive and avoid a potential conflict.

Construction of a controlled access highway would improve safety for all travelers currently using U.S. 71. The through trips and longer trips would benefit from using a controlled access highway with fewer access points than the existing U.S. 71 route. Studies have shown a correlation between accident rates and frequency of access points (Cirillo et al., 1968 and McGuirk, 1973). This conclusion supports the finding in the 1988 Feasibility Study that the "...proposed freeway facility, through full access control, would enhance motorists' safety" (AHTD, 1988). Local users of existing U.S. 71 may also experience reduced accident rates following construction of the proposed highway through trip diversion and reduction in traffic volumes.

#### 1.4.5 Traffic Forecasts and Capacity Analysis

The procedures outlined in the Transportation Research Board's Highway Capacity Manual, Special Report 209, Third Edition, 1994 (HCM) and its amendments, were followed in order to determine the levels of service for U.S. 71. The types of facilities analyzed for this study were two-lane highways, multilane highways, and Interstate-type highways.

Capacity analysis is a tool used to measure the quality of service provided by a roadway. The capacity analysis yields a level of service (LOS). Level of service is a way to qualitatively measure the operational characteristics of a roadway and is given the following letter designations: A, B, C, D, E, and F. Level of Service "A" (free flow) represents the highest quality of service, and "F" (complete congestion) is the worst. Level of service incorporates factors that are both measurable and immeasurable to describe the quality of service that a facility provides or will provide. Some of the measurable factors include speed, travel time, average annual daily traffic volumes (AADT) and the percent of trucks using the highway, operating costs, freedom to maneuver, and traffic interruptions. Examples of immeasurable factors would be driver comfort level, convenience, safety, and perception of quality. Complete definition of the LOS ratings are provided in Appendix A.

Traffic counts taken by AHTD in 1994 were the basis for the traffic forecast. Growth factors calculated from historical growth trends were applied to the 1994 AADTs to determine 1995 volumes and to predict design year 2020 volumes. The results of the traffic forecasts and the capacity analyses for U.S. 71 and the HPC are presented in Table 1-6. Currently, 62% of the total length of existing U.S. 71 operates at a level of service D or worse. These sections have been shaded to illustrate clearly which sections are operating below level of service C. AHTD designs for level of service B in rural areas and level of service C in urban areas, when possible.

By the year 2020 the levels of service on the existing U.S. 71 route will deteriorate to the point at which only 3% of the total length of highway will operate at level of service C or better. Construction of the HPC will improve the LOS on existing U.S. 71 to acceptable levels along 91% percent of the route.

The relatively large percentage of truck traffic along U.S. 71 is one cause of the unacceptable levels of service. Trucks have a greater effect on capacity due to their size and less maneuverable capabilities, particularly with respect to acceleration, deceleration, and maintenance of speed on grades. The effect of trucks on capacity is greater on two-lane roads because the presence of large slower-moving vehicles creates queues

**Table 1-6  
TRAFFIC FORECASTS AND LEVELS OF SERVICE**

U.S. 71 Existing Route					U.S. 71 Relocation - High Priority Corridor			
FROM:	TO:	1995 Existing AADT (LOS)	2020 No-Action AADT (LOS)	2020 Design Year AADT (LOS)	2005 Opening Year AADT (LOS)	2020 Design Year AADT (LOS)	FROM:	TO:
<b>U.S. 71</b>								
U.S. 70/71 Intersection	DeQueen City Limit	10,400 (E)	17,900 (F)	6,300 (D)	11,400 (B)	17,600 (B)	U.S. 70/71	Gillham
DeQueen City Limit	S.H. 4 in Wickes	5,400 (D)	9,400 (E)	3,300 (C)	7,900 (A)	12,100 (A)	Gillham	S.H. 4
S.H. 4 in Wickes	4-lane Section S. of Mena	5,600 (E)	9,900 (E)	4,500 (C)	7,400 (A)	11,400 (A)	S.H. 4	U.S. 71 South of Mena
4-lane Section in Mena		20,500 (C)	36,100 (E)	14,400 (B)	18,000 (A)	27,700 (C)	U.S. 71 South of Mena	S.H. 88
4-lane Section N. of Mena	U.S. 270 in Acorn	5,500 (C)	9,700 (D)	3,400 (B)	8,000 (A)	12,300 (A)	S.H. 88	U.S. 71 East of Acorn
U.S. 270 in Acorn	U.S. 270 in Y-City	2,600 (C)	4,500 (D)	700 (A)	6,400 (A)	9,800 (A)	U.S. 71 East of Acorn	U.S. 270 in Y-City
U.S. 270 in Y-City	S. Point of Waldron Bypass	5,400 (D)	9,000 (E)	3,200 (C)	7,700 (A)	11,800 (A)	U.S. 270 in Y-City	S.H. 80
Waldron Bypass		4,800 (D)	8,000 (E)	3,600 (C)	6,800 (A)	10,400 (A)	S.H. 80	S.H. 28
N. Point of Waldron Bypass	Huntington Ave. (S.H. 96)	6,300 (E)	10,500 (E)	3,200 (C)	8,600 (B)	13,300 (A)	S.H. 28	U.S. 71 / S.H. 96
Huntington Ave. (S.H. 96)	Coker Street (north of Witcherville)	7,400 (E)	13,500 (F)	4,100 (C)	10,000 (A)	15,400 (B)	U.S. 71 / S.H. 96	S.H. 96
Coker Street	S.H. 10 Spur west of Greenwood	9,200 (A)	16,700 (B)	5,800 (A)	11,000 (A)	16,900 (B)	S.H. 96	S.H. 10
S.H. 10 Spur	I-540 / U.S. 71 Interchange	24,800 (B)	45,100 (E)	28,500 (B)	14,700 (A)	22,600 (B)	S.H. 10	U.S. 71
<b>I-540</b>								
U.S. 71/I-540 Interchange	S.H. 255	32,000 (C)	65,100 (F)	42,900 (C)	18,400 (B)	28,200 (C)	U.S. 71	Custer Blvd.
S.H. 255	S.H. 22	44,200 (D)	89,900 (F)	64,200 (F)	18,400 (B)	28,200 (C)	Custer Blvd.	S.H. 22
S.H. 22	I-540 / I-40 Interchange	40,600 (C)	82,600 (F)	58,800 (E)	19,500 (B)	29,800 (C)	S.H. 22	S.H. 162 / C.R. 4
<b>I-40</b>								
I-540 / I-40 Interchange	I-40 / S.H. 540 Interchange	20,700 (B)	40,300 (D)	22,000 (B)	16,200 (B)	24,300 (C)	S.H. 162 / C.R. 4	I-40

Source: Michael Baker Jr., Inc.

Note: Shaded areas depict sections operating below level of service C.

and delays in no passing zones as well as passing zones if there is no opportunity to pass (TRB, 1989). Diversion of these vehicles to the HPC will increase the capacity of the existing route for local trips and other uses. By reducing the volumes on the existing route, accident statistics should also improve since roadways functioning at or above capacity tend to have higher accident rates.

By year 2020, I-540 will operate at LOS F over its entire length. In this urban portion of the route, diversion of traffic to the HPC will ease the present and predicted traffic congestion and LOS problems on I-540 until at least year 2014. Due to anticipated growth in the urban area, I-540 may still need some improvement by year 2020. Improvements that may be required could be accomplished at least partially within the existing right-of-way and with less impact than if the HPC were carried along I-540. Without the construction of the HPC, I-540 would need to be widened to six lanes between S.H. 255 and Kelley Highway by year 2001, and eight lanes by year 2013. From a systems operation standpoint, it is more desirable to separate the local traffic (I-540) from the HPC and other through traffic. This would not be the case if the HPC were carried along I-540 and would result in substantial weaving movements due to the closely spaced urban interchanges.

#### **1.4.6 Travel Time Savings**

Average travel time along the existing route from DeQueen to I-40 is 2 hours and 40 minutes. Travel time for the same trip on the proposed highway is expected to be 1 hour and 50 minutes for a savings of 50 minutes. Part of the time savings is attributable to the straighter route offered by the proposed highway which would reduce the mileage of the trip by about 16 kilometers (10 miles). The majority of the time savings results from the increased efficiency of the proposed highway.

#### **1.4.7 The Roadway Network and Social Services**

Providing safe, timely access to surrounding communities is a principal role of an adequate transportation facility. The ability of the local transportation system to provide safe, timely access to hospitals, schools, government offices, and retail stores as well as movement between communities can influence the quality of life for people living in rural areas. U.S. 71 currently functions as the main north-south link between communities and services within the study area.

The majority of medical services for the region are located in the Fort Smith/Van Buren area. The medical facilities that provide 24 hour emergency service and extended care are limited outside of Fort Smith/Van Buren to the cities of Waldron, Mena, and DeQueen. Specialty care services are limited in the study area to Fort Smith/Van Buren.

The smaller facilities in Waldron, Mena, and DeQueen are not equipped or staffed to handle the more complex medical procedures.

Through public involvement efforts and coordination with local officials it was found that patients routinely travel either to Hot Springs or Texarkana, outside of the study area, or to Sparks Regional Medical Center, the Holt-Krock Clinic, Cooper Clinic or St. Edward Mercy Medical Center in Fort Smith to receive specialized care. For the majority of the study area, traveling to these larger medical facilities could result in one way trips of up to 160 kilometers (100 miles).

Adequate fire and police services are important for the protection of citizens and property in all communities. Of the communities identified within the study area, 46% depend on adjacent or nearby communities for fire and police services. Law enforcement and fire personnel rely on existing U.S. 71 to protect local communities. The communities are dependent on a roadway system that is not expected to provide an adequate level of service over 97% of its length by year 2020.

Roadway characteristics, geometric constraints and the existing and forecasted levels of service for this route can affect emergency service response time within the study area. Future capacity predictions show that many of these same sections will be operating at a lower level of service,

resulting in a roadway that is at or near capacity creating reduced speeds and unstable traffic flows. Construction of the HPC would benefit the study area by reducing emergency response times between communities, or by removing traffic from the local roadway network.

#### **1.4.8 Transportation Patterns of Trucking Companies and Major Employers**

In order to assess the current transportation patterns within the study area, a survey of selected businesses was conducted in July and August, 1995. The survey included businesses with over 50 employees as well as trucking companies based within the study area.

##### ***Major Employer Survey Results***

Names of businesses with 50 or more employees were obtained from the Western Arkansas Planning and Development District and from several chambers of commerce. One hundred and twenty-one (121) businesses with more than 50 employees were surveyed within the study area. Sixty percent (60%) of the businesses surveyed currently use U.S. 71 for either the transportation of raw materials for manufacturing or the shipment and delivery of goods or services. U.S. 71 is the principal shipping/receiving route for 97% of the employers surveyed in Sevier, Polk, and Scott counties. Fifty-five percent (55%) of the businesses in Sebastian and Crawford counties use U.S. 71 on a regular basis.

Of the 60% of the businesses that use U.S. 71 for transportation of raw materials or finished goods, the majority are traveling to destinations greater than 32 kilometers (20 miles) from their place of origin and use sections of U.S. 71 that are currently operating at level of service D or E (Table 1-6). As stated above, roadway characteristics and geometric constraint concerns, as well as the predicted future capacity problems would slow the movement of raw materials, goods, or services. A controlled access highway could benefit businesses that currently use this route. By providing a transportation facility with uniform roadway characteristics, few geometric constraints and higher levels of service than the existing route, shipping costs and overall operating costs for businesses could be reduced.

#### ***Trucking Company Survey Results***

Fifty-five (55) trucking companies were surveyed within the study area. Fifty-eight percent (58%) of those surveyed currently use U.S. 71 as part of their trucking routes. Forty-two percent (42%) do not use U.S. 71 (local deliveries or east/west deliveries via I-40) and of this group 3 trucking companies specifically noted that they avoid the use of U.S. 71 when shipping goods to southern destinations such as Dallas, Texas. U.S. 71 is the main route for trucking companies surveyed in Sevier, Polk, and Scott Counties, while trucking companies in Sebastian and Crawford counties

use I-40/I-540 and only the northern portions of U.S. 71 to transport raw materials and goods.

Of the trucking companies that use U.S. 71, the majority of the service destinations are greater than 32 kilometers (20 miles) from their place of origin. Future level of service projections show that 97% of existing U.S. 71 will be operating at a level of service D or worse (Table 1-6). These capacity deficiencies, in addition to the roadway characteristics and geometric constraints previously discussed, could act to reduce the overall efficiency of truck transportation within and through the study area. Changes in the running speed of larger motor vehicles consume additional fuel as well as increase wear on components. Variables such as the roadway curvature, roadway gradient, and speed changes could affect motor vehicle running costs (AASHTO, 1987). The proposed highway could be beneficial to trucking companies by providing more gradual grades, flatter horizontal curves and two lanes of travel in each direction, thus reducing the operating costs and producing travel time savings.

#### **1.4.9 Intermodal Connectivity**

Several modes of transportation for movement of people and commodities are available within the U.S. 71 study area. These facilities are distributed throughout the corridor and include airports, bus lines, freight depots, water ports and pipelines.

Three commercial airports link the study area with larger airports that provide national and international service. These airports are the Fort Smith Regional Airport, the Texarkana Regional Airport and Drake Field at Fayetteville. Air freight service is also available at the Fort Smith and Texarkana airports. There are also several general aviation airports in the study area including DeQueen, Mena, Waldron, and Van Buren. A general aviation airport is used for private and chartered flights but does not provide scheduled commercial flights.

Passenger bus service provides north-south travel along U.S. 71. The Kerrville Bus Line provides passenger service between Texarkana and Fort Smith. The stops within the study area include DeQueen, Grannis, Wickes, Cove, Hatfield, Mena, Waldron and Greenwood. There are two additional stops south of the study area; Ashdown and Lockesburg. The Jefferson Bus Line provides service between Fort Smith and Fayetteville with service to communities north of the study area including Winslow and West Fork.

Travelers from within the study area can use the Kerrville and Jefferson Bus Lines to connect with national bus and rail services, enabling access to cities throughout the United States. Nationwide bus service is available through the Greyhound Bus Line at the Fort Smith Bus Terminal.

Several freight rail lines serve the study area with rail yards and terminals. These sites serve as the transfer points for raw materials and finished products between rail cars and trucks for further distribution. The Kansas City Southern Railroad can be accessed in Texarkana, Ashdown, DeQueen and Fort Smith. The Union Pacific Railroad can be accessed in Texarkana and Fort Smith. The DeQueen and Eastern Railroad Company provides east-west service at DeQueen. The Arkansas and Missouri Railroad, the Fort Smith Railroad and the Burlington Northern Rail Company can be accessed in Fort Smith.

Two ports are located in the study area. The Port of Van Buren, on the Arkansas River, unloads and loads various products for several clients. In addition to the port operation, there is a grain elevator and a warehouse at the same facility. Adjacent to the facility is a wood fiber plant. All of these facilities are accessed by the same entrance and generate substantial truck traffic. The Fort Smith Port, on the Poteau River, provides loading, unloading and warehousing activities for several clients. The freight being transferred at this facility includes steel and steel products. The products are unloaded off of barges and loaded either onto barges or trucks.

A fuel tank terminal in Fort Smith serves several major pipelines passing through the study area and

allows for the transfer of fuel from pipeline to trucks for further distribution.

The study area has a variety of transportation modes on which to move people and commodities. Any "trip" on the intermodal network involves highway usage at some point. The various modes of travel are available and currently in use. The existing roadway is a weak link in this chain of intermodal dependency. Construction of the proposed highway will provide more seamless intermodal connections and provide a high level of service for the highway dependent portion of any trip.

#### **1.4.10 Military Demand**

Fort Chaffee, located in Sebastian County east of Fort Smith and Barling, is a training facility currently owned and operated by the U.S. Department of the Army. This facility trained over 55,000 active and reserve personnel in the 1995 fiscal year and is expected to train at least 55,000 troops in FY 1996. This facility's operations are to be turned over to the Arkansas Army National Guard in 1998. Training activities are expected to remain steady with this transaction (Ables, 1995).

Access to Fort Chaffee is critical for maintaining current and future military operations. Interstate 40 provides a safe and efficient roadway for troop transportation from western and eastern points of origin. However, troops from points south such as

El Dorado, Magnolia, Camden, Hope and Texarkana travel to Fort Chaffee on existing two-lane state and U.S. routes. In general, these routes have frequent speed changes and limited opportunities for safe passing. The increased cost of troop transportation to out of state training facilities was cited as a key factor in keeping Fort Chaffee operational (Times Record, 1995). Efficient movement of these troops will need to be maintained or enhanced, if the cost of troop transportation to Fort Chaffee is to remain more efficient than sending troops out of state. This will become increasingly more difficult as the level of service degrades on existing U.S. 71 in the future.

#### **1.4.11 National Recreation Demand**

Tourism in western Arkansas is founded in the region's many State Parks and National Forest Recreational Areas. Table 1-7 lists several State Parks, National Forest Recreational Areas and Corps of Engineers Project Parks that are representative of the recreational attractions in the study area that can be accessed via U.S. 71.

In addition to these parks there are other attractions of national and historic interest. In Mena, Janssen Park provides picnic areas, a small zoo and an historic cabin built in 1851. In Van Buren, the downtown area is listed as a National Historic District depicting the 1800s architecture, and within that district the Crawford County

Table 1-7 SELECTED RECREATIONAL ATTRACTIONS WITHIN THE STUDY AREA								
	CAMPING	FISHING	LAUNCH RAMP	LODGE	MUSEUM	NATURE TRAIL	PICNIC AREA	SWIMMING
Cossatot River State Park		X				X	X	X
Queen Wilhelmina State Park	X			X	X	X	X	
Bard Springs Recreational Area	X					X	X	X
Big Brushy Recreational Area	X	X				X		
Jack Creek Recreational Area	X	X				X	X	X
Knoppers Ford Recreational Area	X						X	X
Little Pines Recreational Area	X	X	X			X		X
Mill Creek Recreational Area	X	X				X		X
Rich Mountain Recreational Area						X	X	
Shady Lake Recreational Area	X	X	X			X	X	X
DeQueen Lake	X	X	X			X	X	X
Dierks Lake	X	X	X			X	X	X
Gillham Lake	X	X	X			X	X	X
Springhill Park	X	X	X			X	X	
Vache Grasse Park	X		X				X	

Source: AHTD, U.S. Army Corps of Engineers

Courthouse, the Old Train Station and the King Opera House are listed on the National Register of Historic Places. In Fort Smith, the National Cemetery, Old Fort Museum, Belle Grove Historic District, Miss Laura's Social Club, and Weidman's Old Fort Brew Pub are listed on the National Register of Historic Places.

Construction of the HPC would provide a safe, efficient highway to access these points of interest. Currently, travelers originating from points east or west can reach some of these places using I-40. Points of interest in the northern areas such as the Ozarks and the Fayetteville/Springdale area can then be accessed by S.H. 540. However, access to these places from the south is not as easy. Further, points of interest south of Fort Smith, such as the Rich Mountain National Recreation Area, are not accessed by I-40 or S.H. 540. Improved access to these places will result in growth in tourism-based businesses, which are important to the local economy.

#### **1.4.12 Social Demands and Economic Development**

An examination of the population, housing, employment and unemployment, and income statistics for the counties and communities of the study area suggests a healthy, growing economy. In nearly every category evaluated for the period 1980 to 1990, the five county area of Sevier, Polk,

Scott, Sebastian and Crawford experienced growth beyond that of the state.

- The population of the five county area grew by 6% compared to the state of Arkansas at 3%.
- Job growth grew 16% overall in the five county area (ranging from 9% to a high of 25%), compared to that of the state at 14%.
- The income of those jobs increased substantially more than the statewide income growth: 8% versus 3%.
- Unemployment rates for 1994 in the five county area were lower than statewide: 4.8% compared to 5.3%.
- The number of families living below the poverty level dropped 2% compared to a statewide increase of 4%.
- Housing unit growth which correlates to traffic growth increased 13% compared to the state at 11%.
- The value of those housing units also grew, and at a rate greater than that of the state except for one county. The value of housing units statewide grew 49% with the county figures ranging from 44% to 59%.

The increase in population, jobs, income and in the number and value of housing units indicate steady and moderate economic growth in the counties and communities that make up the study area. Construction of the HPC will accommodate the

social demands associated with steady population growth as well as support and enhance continued economic growth of the study area.

Local economic development activities for several communities along the route include the attraction of retirement communities to the area. If successful, these developments will generate additional traffic that would further degrade the predicted 2020 level of service on existing U.S. 71. One community is currently being evaluated as a possible location for a plant site of a major food service corporation. Commuting and commercial trips that would result from such an action would also degrade the future level of service of U.S. 71. Construction of the proposed highway would provide efficient and safe travel for all trips associated with these developments.

### **1.5 PUBLIC AND LOCAL OFFICIAL INVOLVEMENT**

Meetings with the general public and local officials was an integral part of the development of this project. The initial step conducted for the study was to meet with the public and local officials. A total of six meetings (including a meeting with state and federal resource agencies) were held in July 1995 as part of the scoping process for this project. These meetings had several objectives:

1. To inform all parties of the project, the various steps in the study, and the schedule

2. To request early information from these parties that may be pertinent to the study
3. To present and obtain input on the environmental issues to be considered at various steps in the study
4. To inform the public and local officials of the points in the study at which public meetings would occur and how to participate throughout the study
5. To obtain input on the transportation needs of existing U.S. 71 from a public perspective.

With respect to project need, the four public meetings and one large group meeting for local officials provided a forum in which to discuss:

1. Concerns relative to the local use of U.S. 71
2. Benefits anticipated from the construction of the proposed highway
3. Concerns about the construction of the proposed highway.

A summary of the comments received is provided in Table 1-8. The main suggestion made by numerous participants was the need to locate the proposed highway within about 3 kilometers (2 miles) of the communities so that access would be maximized, the potential for economic decline of local businesses would be minimized and displacements would be minimized. In other words, participants felt that the highway should be close enough to serve their needs, but far enough

<b>Table 1-8</b> <b>SUMMARY OF COMMENTS</b> <b>JULY 1995 PUBLIC INVOLVEMENT MEETINGS</b>	
<b>EXISTING U.S. 71</b>	
<b>LIKES</b>	<b>DISLIKES</b>
Scenic Good access No undesirable traffic Good access to recreation areas Secluded	Unsafe Too many trucks Too much traffic Too winding Cannot pass Difficult to drive at night Too narrow No turning lanes Congested areas Narrow bridges Lack of shoulders
<b>BENEFITS OF PROPOSED HIGHWAY</b>	
Improve safety Reduce travel time Attract industry Reduce truck traffic on existing route Generate tourism Provide new scenic possibilities Benefit towns economically Provide economic diversity Improve living conditions	
<b>CONCERNS ABOUT PROPOSED HIGHWAY</b>	
Property impacts Should not use existing route for new highway Decline of local businesses May not provide enough interchanges to serve communities Increase in crime could result Impact on natural resources - Ouachita National Forest Impact on existing recreational areas	

Source: Michael Baker Jr., Inc.

away to minimize residential displacements and bypass effects on local business. A concern raised most often was the impact to personal property and residences.

Local officials of the study area also identified close access to communities (within 3 kilometers) as important. Agreement on the need for an Interstate-type highway to support recent growth and enhance continued economic growth was strong among local officials. Local officials from the northern end of the study area felt that a highway on new location would be most effective in meeting their overall transportation and development needs and would also be less disruptive to communities.

A summary of public meeting dates, times, attendance and other data is provided in Section 8.

## 1.6 SUMMARY

The U.S. 71 corridor has been designated as a High Priority Corridor by the 1991 ISTEA legislation. This act establishes the purpose of the project to function as a critical link in the Interstate system that will serve travel, economic development and commercial demands of the south-central United States.

Studies completed for the U.S. 71 Relocation from DeQueen to Interstate 40 have identified level of service, safety, social, and economic needs of the existing roadway system and study area.

Construction of the proposed highway would:

- Complete a critical link in the Interstate system
- Provide for local, regional and national economic growth
- Provide a transportation facility that is consistent with local land use plans and development goals
- Produce travel time savings of up to 50 minutes for a trip between DeQueen and Interstate 40
- Provide the highest level of service possible on the HPC and improve the level of service along 91% of the existing route to acceptable levels
- Provide sufficient capacity for the growing population of the study area
- Improve traffic safety
- Improve the connectivity of existing rail, bus, air and water transportation modes
- Improve the efficiency and capacity of the local street network in a number of communities
- Improve access to military installations, medical facilities and recreational attractions in the study area
- Improve efficiency of transportation for the trucking industries and businesses and facilities dependent on trucking
- Provide a trade corridor in support of NAFTA legislation.

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## Section 2: ALTERNATIVES

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### 2.1 THE STUDY PROCESS

The study process for the completion of the location and environmental study for the U.S. 71 Relocation is shown in Exhibit 2-1. Four primary phases of work are involved:

- Phase 1 consists of the scoping process, assessment of project purpose and need and the Major Investment Study
- Phase 2 consists of the development of broad *corridor* alternatives, approximately 3 kilometers (2 miles) in width within the study area
- Phase 3 consists of the development of specific *alignment* alternatives (approximately 150 meters or 500 feet average width) within a preferred corridor, and detailed environmental studies of these alignments
- Phase 4 consists of the preparation of the Draft and Final Environmental Impact Statements and the selection of an alignment.

The multi-step study of alternatives for this project provided for a full range of alternatives with increasing detail as the study progressed. In this fashion, the alternatives were evaluated in several stages so that only the most reasonable alternatives, that is, that met the project purpose and need, and minimized potential environmental

impacts, were advanced to the next phase of study.

#### 2.1.1 The Major Investment Study Process

The Major Investment Study (MIS) considered alternatives, called investment *strategies*, that could be employed in the Fort Smith urbanized sections of the U.S. 71 Relocation. These strategies were evaluated against the purpose of the High Priority Corridor, the project need, as well as environmental factors. This study was conducted at a planning level and did not involve actual "location" alternatives. The MIS is only required in urban areas and it was not necessary to develop such strategies in the rural portions of the study area.

The objective of the MIS was to reach a consensus on the type of strategy to utilize for the HPC through the urban portion of the U.S. 71 Relocation project. The MIS consisted of the following tasks:

- Form a multi-disciplined MIS Working Group
- Develop HPC strategies
- Obtain public comments
- Refine and evaluate strategies
- Recommend strategy for implementation.

The MIS was conducted between August 1995 and November 1995 and resulted in the selection of one strategy for implementation.

## 2.1.2 The Corridor and Alignment Study Process

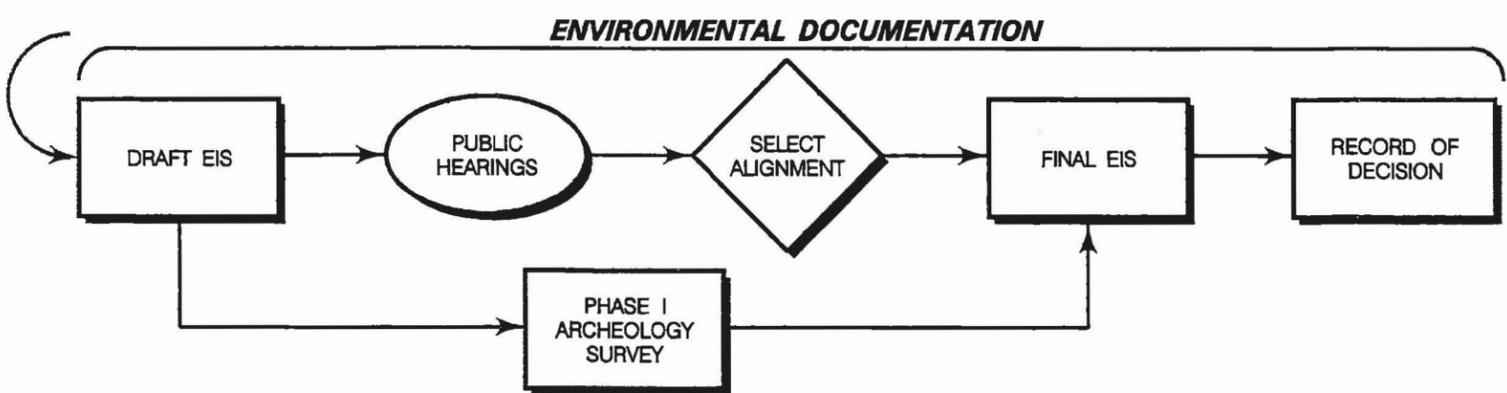
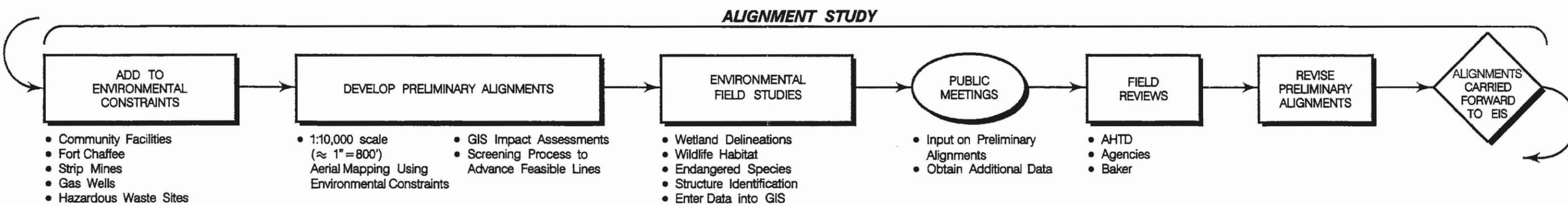
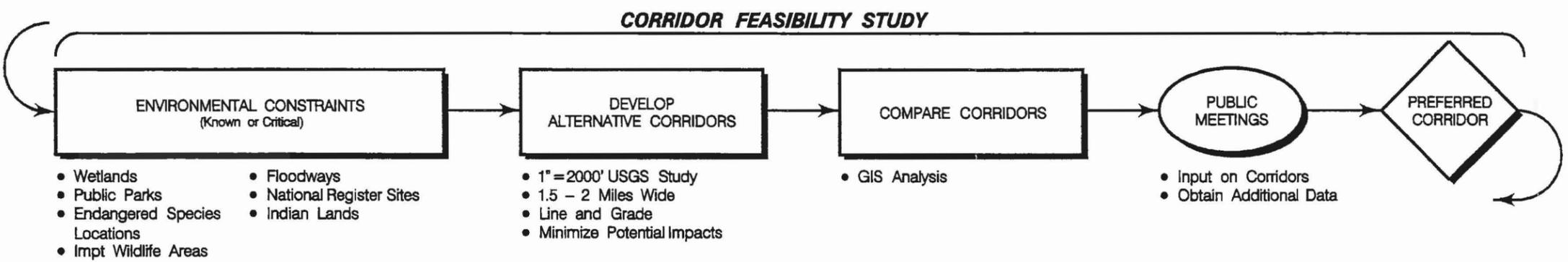
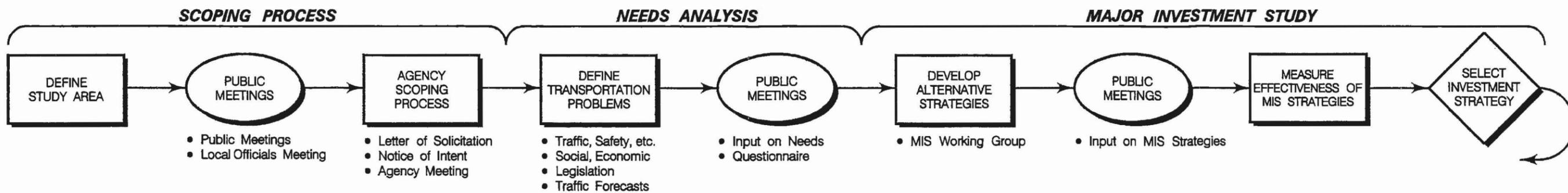
The corridor and alignment study methodology is depicted graphically in Exhibit 2-2. The Corridor Feasibility Study considered the feasibility of broad corridor alternatives which were evaluated on the basis of critical environmental features (social, economic, natural and cultural). The Alignment Study considered alignment alternatives within a preferred corridor and was conducted using additional, field-verified environmental data.

The objective of the Corridor Feasibility Study was to develop general highway locations (corridors) within the study area, compare the feasibility of the corridors and identify one corridor as the preferred. The feasibility of a corridor was determined by the ability to develop a highway alignment within it that meets the purpose and need of the project, meets the design criteria, is constructable, and can avoid or minimize impacts to the sensitive resources known to exist within it. These sensitive resources were identified jointly with the public and with state and federal resource agencies in July 1995 during the scoping process and are listed in Table 2-1. Following the scoping process, a series of public meetings was held to discuss the purpose and need for the project and the existence of any environmental constraints that could influence corridor development. A constraint map of critical environmental resources within the entire study area was prepared so that corridors could be

developed that first avoided, then minimized impact to these resources. U.S. Geological Survey 7.5 minute quadrangle maps were used as the base mapping for the corridor study. This base mapping and data were used to initiate a Geographic Information System (GIS) for the project, that was continually updated and enhanced throughout the study.

Further, the public suggested that the highway be located as close to communities as possible without resulting in severe residential displacements. A 3 kilometer (2 mile) proximity to communities guided corridor development where possible. The public generally felt that this proximity of the resultant highway would be close enough to town to serve their needs, but far enough away to minimize residential displacements and bypass effects on local businesses.

Beginning with the environmental constraint map as a base, and the issues and needs developed by the public and local officials, corridors were developed by identifying engineering control locations throughout the project length. These control locations would include crossroads identified as interchange locations, ridge and valley elevations, acceptable river crossing locations and others.



U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 2-I  
STUDY PROCESS**

Baker

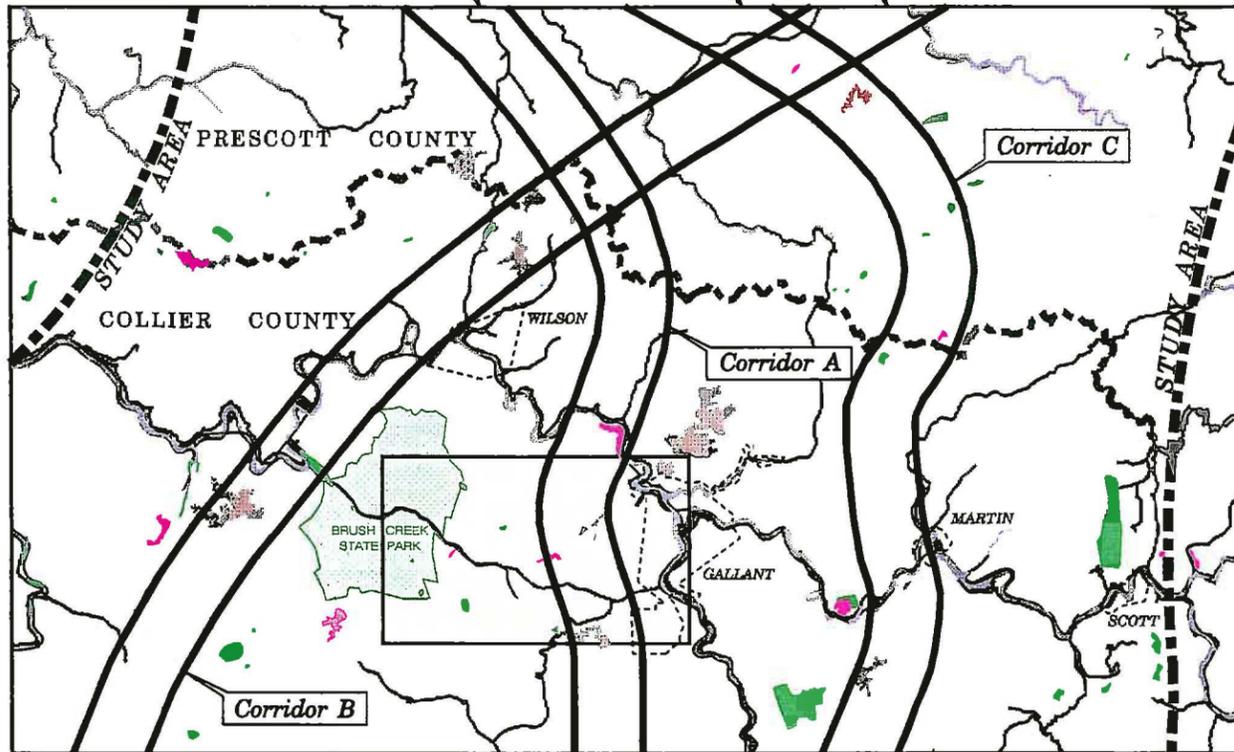


NOTE: The Needs Analysis and Major Investment Study public meetings were held concurrently.

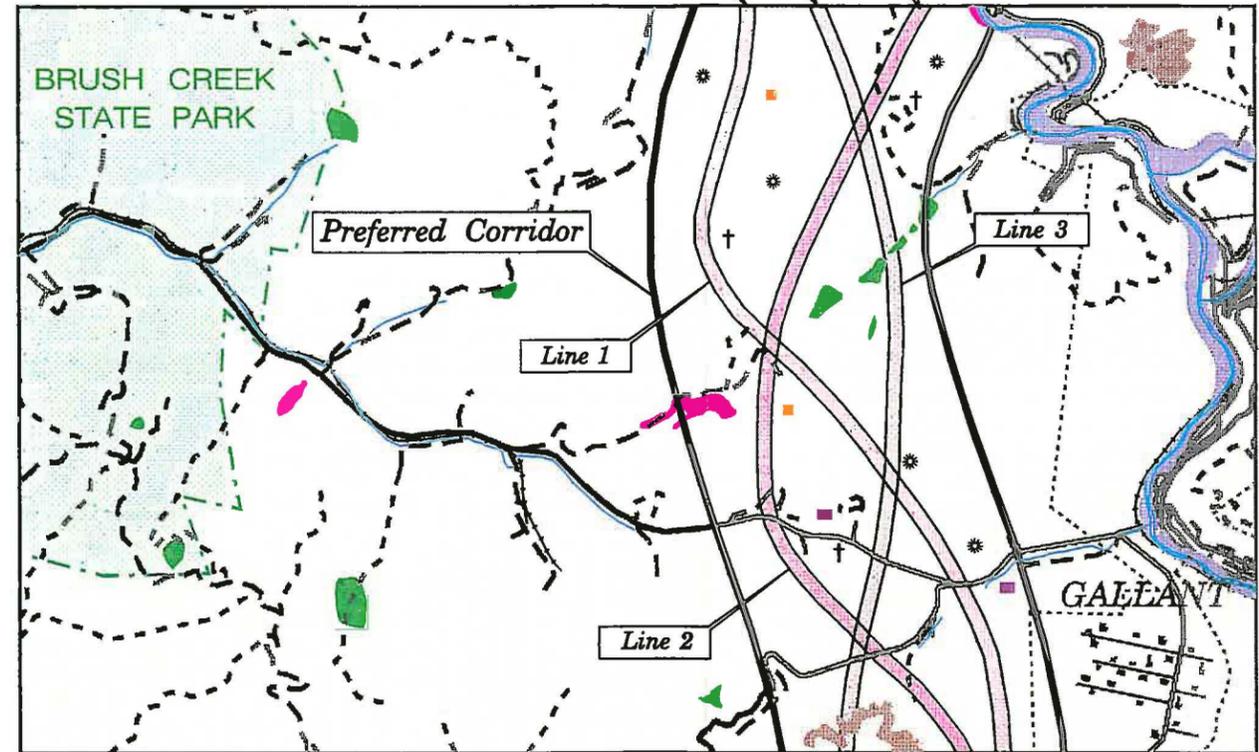
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**CORRIDOR ALTERNATIVES**  
3 kilometers or 2 miles wide

**ALIGNMENT ALTERNATIVES**  
Average Width =  
150 meters or 500 feet



**CORRIDOR STUDY**



**ALIGNMENT STUDY**

**NOTE:**  
The corridor and alignment locations and constraints shown are for illustrative purposes only and do not relate to the U.S. 71 Relocation project study area.

**LEGEND**

☼ GAS WELL	WETLANDS
† CEMETERY	FLOODPLAINS
■ HISTORIC STRUCTURE	ARCHEOLOGICAL SITES
■ THREATENED and ENDANGERED SPECIES	STRIP MINES
	RESIDENTIAL AREA

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 2-2**  
**CORRIDOR AND ALIGNMENT**  
**STUDY METHODOLOGY**

Baker NOT TO SCALE

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<b>Table 2-1 ENVIRONMENTAL CONSTRAINTS FOR CORRIDOR STUDY</b>	
<b>CATEGORY</b>	<b>CONSTRAINT</b>
Public Health & Safety	<ul style="list-style-type: none"> <li>• Irons Fork Watershed</li> <li>• Floodways</li> </ul>
Social & Economic	<ul style="list-style-type: none"> <li>• City and local parks</li> <li>• Corps of Engineers' parks</li> <li>• Residential areas &amp; communities</li> <li>• Commercial areas &amp; businesses</li> </ul>
Natural Resources	<ul style="list-style-type: none"> <li>• Endangered species - red-cockaded woodpecker, American burying beetle, leopard darter*</li> <li>• Wetlands (minimize impacts)</li> <li>• Extraordinary Resource Waters - Cossatot and Mountain Fork</li> <li>• Poteau Mountain Wilderness Area</li> <li>• Iron Mountain and Cossatot River Natural Areas</li> <li>• Wildlife management areas</li> </ul>
Cultural Resources	<ul style="list-style-type: none"> <li>• Known archeological sites (e.g. north of Mena)</li> <li>• National Register sites (sites currently listed on or considered eligible for)</li> <li>• Areas considered high probability for archeological sites</li> </ul>

Source: Michael Baker Jr., Inc.

\* Other endangered species were identified during data collection and were considered in the corridor and alignment studies.

These control locations were then joined together to form corridors if the engineering design criteria could be satisfied and if potential impacts to environmental resources were avoided or minimized.

Following public meetings in November 1995 and a resource agency meeting in December 1995, which presented the alternative corridors and the results of the corridor study, a corridor was identified as the preferred corridor to advance to the Alignment Study. The preferred corridor was identified by the Arkansas Highway and Transportation Department and the Federal Highway Administration and considered public comments, environmental constraints and engineering feasibility.

The objective of the Alignment Study was to develop specific highway locations (alignments) within the preferred corridor and field-verify the environmental resources of the alignments. The Alignment Study was initiated with detailed mapping (1:10,000 or 1" = 833') of the preferred corridor and with the GIS resource inventory prepared from the corridor study. Environmental constraints within the preferred corridor were added to the resource inventory prior to the development of alignments. For each alignment, the horizontal and vertical geometry, locations of underpasses and overpasses, proposed interchange locations and extent of cut and fill

slope limits were determined. The mapping detail made residential areas and environmental features visible for consideration in the early location planning for the project.

Environmental field studies of the various alignments included delineation of wetlands, stream assessments, identification of houses and businesses, historic site identification, noise analyses, endangered species studies and identification of other resources or issues that could be impacted by an alignment.

The preliminary alignments were presented to the public in a series of meetings held in February, March, April and May 1996. Various revisions were made based on public comment, including some major alignment shifts and the development of additional alignments. In addition, field trips were conducted with several state and federal resource agencies to obtain their early input on the preliminary alignments. Following this review process, the alignments were finalized, the analyses completed, and one alignment was identified as the Preferred Alignment, as described and presented in the Draft EIS.

The alternatives (strategies, corridors, or alignments) developed and considered in the Major Investment Study, the Corridor Feasibility Study and the Alignment Study are described later in this section.

## 2.2 THE NO-ACTION ALTERNATIVE

Inherent in each step of the study was the concept of the No-Action alternative. Each alternative is being compared to the decision to take no action, as described below.

Under this alternative, the only projects undertaken would be planned safety and capacity improvement projects. Safety projects would involve shoulder widening and curve realignment where necessary. The four-lane widening project currently under construction from S.H. 10 to Witcherville would be completed for this alternative (AHTD, 1991). In addition, the following two sections of existing U.S. 71 would be widened to four lanes under the No-Action alternative:

- 12.5 kilometers (7.7 miles) from Witcherville to Mansfield
- 9.5 kilometers (5.9 miles) from Mena to Acorn.

Should the U.S. 71 Relocation project be constructed, these two sections of U.S. 71 may not be widened. However, safety improvements would be implemented regardless of the decision to construct the proposed highway. Depending on the timing of construction of the proposed highway, it may be necessary to widen these and possibly other segments of existing U.S. 71 to serve local capacity demands.

Under the No-Action alternative, the majority of the existing route would remain a two-lane facility. As

a result, the level of service and safety issues identified in Section 1 would remain and deteriorate to the point at which nearly the entire route would provide poor service to the traveling public.

Serious level of service problems would exist on I-540 and congestion would increase. The level of service on the two-lane sections of the U.S. 71 route would also degrade. Truck traffic would increase as a percentage of overall traffic volume, as NAFTA would still likely result in an increase in commercial traffic even on this two-lane road. Delays along the two-lane road would be more severe than exist today and accidents would be expected to increase.

The social benefits of increased accessibility to services and retail centers, medical facilities and educational institutions would not be realized. The rural communities that exist between Texarkana and Fort Smith would continue to be isolated from urban centers. Accessibility to these job centers would not improve. The travel time of these trips would increase when trucks and slower moving vehicles increase as a percentage of the total traffic, and passing opportunities remain few.

The Interstate system would continue to exist with a major 800 kilometer (500 mile) gap and no economic development benefits would be realized. Potential industries may not consider the study area as a plant site without a controlled access

transportation facility to transport raw materials and finished products. The planned development of the Fort Chaffee excess land would be severely impeded, without the access provided by the proposed highway.

Selection of the No-Action alternative would avoid a major state and federal expenditure, impact to the social, economic, natural and cultural environment including residential displacements. These environmental impacts include noise, disruption of wildlife habitat, archeological resource disruption, and water quality and wetland modifications.

The No-Action alternative has been maintained throughout this study.

### **2.3 MAJOR INVESTMENT STUDY ALTERNATIVES**

The Major Investment Study (MIS) for the U.S. 71 Relocation in the Fort Smith urbanized area was conducted within the context of the High Priority Corridor from Shreveport to Kansas City.

The AHTD, the Bi-State Transportation Study, (which serves as the Metropolitan Planning Organization of the Fort Smith / Van Buren area), the FHWA and the Federal Transit Administration formed an MIS Working Group to conduct the study. This Working Group was made up of a diverse group of transportation providers, citizens, local public officials, transportation decision-

makers, engineers and planners. The make-up of the Working Group and the process to be used to conduct the MIS were approved by the Bi-State Policy Committee of the metropolitan planning organization. The Working Group participants are listed in Table 2-2.

The Working Group identified numerous investment strategies for the High Priority Corridor through Fort Smith and Van Buren. These include:

- Widen I-540 and I-40
- Construction of an elevated cantilevered lane to be used exclusively for through traffic
- Transit alternative
- Construction of an Interstate-type highway on new location east of I-540 to connect to I-40
- Non-constructive strategies:
  - institute flexible hours programs
  - use shoulders during peak hours
  - establish high-occupancy vehicle lanes.

Prior to eliminating or evaluating strategies, a special public meeting was held in October 1995 to obtain comments on the strategies and to consider others, although none were suggested. The general opinion of those in attendance was that construction of a new location highway would involve less impact to Fort Smith.

<b>Table 2-2 MIS WORKING GROUP PARTICIPANTS</b>	
<b>Participants:</b>	<b>Representatives:</b>
Arkoma Regional Planning Commission	Ken O'Donnell
City of Fort Smith	Van Lee
City of Van Buren	Carl Hines
City of Barling	Richard Haberman
City of Greenwood	O.B. McKinney
Fort Smith Planning Commission	Lynn Snyder
AHTD	Joe Shipman/Harold Beaver, Virginia Porta and Lynn Malbrough
Fort Chaffee	Warren L. Johnson and 1SG Inocencio Rodriguez
Fort Smith Regional Airport	Bob Johnson/Dave Krutsch
Federal Highway Administration	Gary DalPorto
Federal Transit Administration	Peggy Crist (participation via minutes)
Crawford County	Judge Harold Loyd
Sebastian County	Judge W.R. Harper
The Port of Fort Smith	Buck Shell
The Port of Van Buren	Jerry Janson
Two (2) representatives of the community	Ed Craig and Alan Lewis/Bobby Ferrell
Fort Smith Chamber of Commerce	Billy Dooly/Michael Tilley
Van Buren Chamber of Commerce	Marjorie Armstrong

Source: Michael Baker Jr., Inc.

There were a few comments favoring a widening strategy, although these persons felt that a six-lane facility could accommodate the future traffic. (The traffic figures discussed in Section 1 and in detail below were presented at the public meeting.)

After further careful consideration, the Working Group eliminated the transit alternative, the elevated through-lane strategy and all non-construction strategies. Such strategies were found to be unreasonable based on the purpose of the project and the traffic forecasts for year 2020 presented in Section 1. The transit alternative would not provide the continuous interstate facility intended for the High Priority Corridor and would not promote additional development in the Fort Smith / Van Buren area, as identified by the Working Group. The non-construction strategies typically do not reduce traffic volumes sufficiently and therefore cannot accommodate the future traffic. The elevated through lane was evaluated using trip data for the Fort Smith area. This alternative alone would divert 22,200 trips from I-540, an insufficient volume for the existing facility to function at an acceptable level of service.

The remaining reasonable investment strategies were refined as follows and rigorously tested against several *measurements of effectiveness*:

- Strategy 1a*: Widen I-540 to 8 lanes and I-40 to 6 lanes and accept level of service D for the operations of I-540
- Strategy 1b*: Widen I-540 to 8 lanes and I-40 to 6 lanes and use a combination of non-highway construction strategies to reduce traffic to provide level of service C for the operations of I-540
- Strategy 2*: Build an Interstate-type highway east of I-540 through the western portion of Fort Chaffee.

The evaluation of the strategies utilized I-540 and I-40 traffic forecasts by year from 1995 to 2020. These traffic forecasts are provided in Tables 2-3 and 2-4. These tables present the growth of traffic on an annual basis with the number of lanes required to accommodate these volumes shown in different shades. The opening year for the HPC was assumed to be 2005 for this analysis.

### 2.3.1 Evaluation of MIS Strategies

The evaluation process measured the effectiveness of each strategy in:

- meeting the purpose and need of the project
- ease of implementation
- potential to minimize effects to the natural, social and cultural environment
- public acceptance
- relative cost.

**Table 2-3  
I-540 / I-40 TRAFFIC VOLUMES BY YEAR  
UNDER "WIDENING" INVESTMENT STRATEGIES**

From:	U.S. 71	S.H. 255	S.H. 45	Phoenix On-Ramp	Leigh Ave	S.H. 22	Grand Ave.	Kelley Hwy.	S.H. 59	U.S. 71/ U.S. 64	I-40
To:	S.H. 255	S.H. 45	Phoenix On-Ramp	Leigh Ave	S.H. 22	Grand Ave.	Kelley Hwy.	S.H. 59	U.S. 71/ U.S. 64	I-40	S.H. 540 Interchange
1994	31,150	35,700	43,000	40,200	42,030	37,000	39,480	32,170	28,160	20,660	20,110
1995	32,000	36,700	44,200	41,400	43,200	38,100	40,600	33,100	29,000	21,300	20,700
1996	32,900	37,800	45,500	42,600	44,400	39,200	41,800	34,100	29,800	21,900	21,300
1997	33,800	38,900	46,800	43,800	45,700	40,300	43,000	35,100	30,700	22,500	21,900
1998	34,800	40,000	48,100	45,100	47,000	41,500	44,200	36,100	31,600	23,100	22,500
1999	35,800	41,200	49,500	46,400	48,400	42,700	45,500	37,100	32,500	23,800	23,100
2000	36,800	42,400	48,900	45,800	47,800	43,900	46,800	38,200	33,400	24,500	23,700
2001	37,900	43,600	50,300	47,100	49,200	45,200	48,100	39,300	34,400	25,200	24,300
2002	39,000	44,900	51,700	48,500	50,600	46,500	49,500	40,400	35,400	25,900	25,000
2003	40,100	46,200	53,200	49,900	52,100	47,800	50,900	41,600	36,400	26,600	25,700
2004	41,300	47,500	54,700	51,300	53,600	49,200	52,400	42,800	37,400	27,400	26,400
2005	46,400	52,800	60,200	56,700	59,100	54,500	57,800	48,000	42,400	32,100	31,000
2006	47,700	54,300	61,900	58,300	60,800	56,100	59,500	49,400	43,600	33,000	31,800
2007	49,100	55,900	63,700	60,000	62,600	57,700	61,200	50,800	44,900	34,000	32,700
2008	50,500	57,500	65,500	61,700	64,400	59,400	63,000	52,300	46,200	35,000	33,600
2009	52,000	59,200	67,400	63,500	66,300	61,100	64,800	53,800	47,500	36,000	34,500
2010	53,500	60,900	69,300	65,300	68,200	62,900	66,700	55,300	48,900	37,000	35,400
2011	55,000	62,700	71,300	67,200	70,200	64,700	68,600	56,900	50,300	38,100	36,400
2012	56,600	64,500	73,400	69,100	72,200	66,600	70,600	58,500	51,700	39,200	37,400
2013	58,200	66,400	75,500	71,100	74,300	68,500	72,600	60,200	53,200	40,300	38,400
2014	59,900	68,300	77,700	73,100	76,400	70,500	74,700	61,900	54,700	41,500	39,400
2015	61,600	70,300	79,900	75,200	78,600	72,500	76,900	63,700	56,300	42,700	40,500
2016	63,400	72,300	82,200	77,400	80,900	74,600	79,100	65,500	57,900	43,900	41,600
2017	65,200	74,400	84,600	79,600	83,200	76,700	81,400	67,400	59,600	45,200	42,700
2018	67,100	76,500	87,000	81,900	85,600	78,900	83,700	69,300	61,300	46,500	43,900
2019	69,000	78,700	89,500	84,300	88,100	81,200	86,100	71,300	63,100	47,800	45,100
2020	71,100	80,600	92,400	86,700	90,400	83,500	88,600	73,300	65,000	49,300	46,300

Source: Michael Baker Jr., Inc.

	Traffic Volumes require 6 lane highway to yield level of service C
	Traffic Volumes require 8 lane highway to yield level of service C
	Traffic Volumes require 10 lane highway to yield level of service C

**Table 2-4  
I-540 / I-40 TRAFFIC VOLUMES BY YEAR  
UNDER "BUILD AN INTERSTATE-TYPE HIGHWAY" INVESTMENT STRATEGY**

From:	U.S. 71	S.H. 255	S.H. 45	Phoenix On-Ramp	Leigh Ave	S.H. 22	Grand Ave.	Kelley Hwy.	S.H. 59	U.S. 71/ U.S. 64	I-40
To:	S.H. 255	S.H. 45	Phoenix On-Ramp	Leigh Ave	S.H. 22	Grand Ave.	Kelley Hwy.	S.H. 59	U.S. 71/ U.S. 64	I-40	S.H. 540 Interchange
1994	31,150	35,700	43,000	40,200	42,030	37,000	39,480	32,170	28,160	20,660	20,110
1995	32,000	36,700	44,200	41,400	43,200	38,100	40,600	33,100	29,000	21,300	20,700
1996	32,900	37,800	45,500	42,600	44,400	39,200	41,800	34,100	29,800	21,900	21,300
1997	33,800	38,900	46,800	43,800	45,700	40,300	43,000	35,100	30,700	22,500	21,900
1998	34,800	40,000	48,100	45,100	47,000	41,500	44,200	36,100	31,600	23,100	22,500
1999	35,800	41,200	49,500	46,400	48,400	42,700	45,500	37,100	32,500	23,800	23,100
2000	36,800	42,400	48,900	45,800	47,800	43,900	46,800	38,200	33,400	24,500	23,700
2001	37,900	43,600	50,300	47,100	49,200	45,200	48,100	39,300	34,400	25,200	24,300
2002	39,000	44,900	51,700	48,500	50,600	46,500	49,500	40,400	35,400	25,900	25,000
2003	40,100	46,200	53,200	49,900	52,100	47,800	50,900	41,600	36,400	26,600	25,700
2004	41,300	47,500	54,700	51,300	53,600	49,200	52,400	42,800	37,400	27,400	26,400
2005	28,000	34,400	41,800	38,300	40,600	35,100	38,400	28,500	22,900	12,600	14,700
2006	28,800	35,400	43,000	39,400	41,800	36,100	39,500	29,300	23,600	13,000	15,100
2007	29,600	36,400	44,200	40,500	43,000	37,100	40,600	30,100	24,300	13,400	15,500
2008	30,500	37,400	45,500	41,700	44,200	38,200	41,800	31,000	25,000	13,800	15,900
2009	31,400	38,500	46,800	42,900	45,500	39,300	43,000	31,900	25,700	14,200	16,300
2010	32,300	39,600	48,100	44,100	46,800	40,400	44,200	32,800	26,400	14,600	16,700
2011	33,200	40,700	49,500	45,400	48,100	41,600	45,500	33,700	27,200	15,000	17,200
2012	34,200	41,900	50,900	46,700	49,500	42,800	46,800	34,700	28,000	15,400	17,700
2013	35,200	43,100	52,400	48,000	50,900	44,000	48,100	35,700	28,800	15,800	18,200
2014	36,200	44,300	53,900	49,400	52,400	45,300	49,500	36,700	29,600	16,300	18,700
2015	37,200	45,600	55,500	50,800	53,900	46,600	50,900	37,800	30,500	16,800	19,200
2016	38,300	46,900	57,100	52,300	55,500	47,900	52,400	38,900	31,400	17,300	19,700
2017	39,400	48,300	58,700	53,800	57,100	49,300	53,900	40,000	32,300	17,800	20,200
2018	40,500	49,700	60,400	55,300	58,700	50,700	55,500	41,200	33,200	18,300	20,700
2019	41,700	51,100	62,100	56,900	60,400	52,200	57,100	42,400	34,200	18,800	21,300
2020	42,900	52,400	64,200	58,500	62,200	53,700	58,800	43,500	35,200	19,500	22,000

Source: Michael Baker Jr., Inc.

 Traffic Volumes require 6 lane highway to yield level of service C

The Working Group agreed upon the relative importance, or weighting factor, of each of the categories measured and the score for each measurement. Scores were -1, 0, or 1 with -1 being the least effective at meeting a need or having the greatest anticipated impact, and 1 being the most effective at meeting a need or having the least anticipated impact. A complete explanation of the scoring for each measurement is provided in Appendix B. The results of this measurement of effectiveness evaluation are shown in Table 2-5.

Strategy 1a had the lowest score overall (-0.75) and the lowest score in meeting the purpose and need of the project (-0.52), primarily because it would not provide a continuous Interstate facility with a high level of service. Further, High Priority Corridor users would be best served if through traffic were separated from local traffic. The numerous merge and diverge points along I-540 that serve local use would interrupt the continuous through movements of the High Priority Corridor traffic. A widening I-540 strategy also provides the least potential for future development and provides little flexibility for future expansion or addition of other modes of travel, factors identified by the Working Group as local objectives. With respect to the identified needs, this strategy provides marginal improvement in the operation of I-540. This strategy would be most disruptive to the

community in terms of direct displacements as well as construction related impacts to I-540 users and those adjacent to construction activities. Although traffic would be maintained on I-540 during construction, congestion and delays would likely occur, and cross streets would be closed temporarily as bridges and interchanges are reconstructed. This strategy received a moderate score in the category of environmental impacts (natural and historic resources) because it remains completely within the urbanized area. With respect to relative cost, Strategy 1a is expected to cost more, due to the high cost of reconstruction of the interchanges and the Arkansas River bridge, and the additional costs associated with maintenance and protection of traffic during construction along the heavily traveled I-540. It is expected that approximately ten interchanges and seventeen underpasses and overpasses would require reconstruction under a widening strategy. Further, this strategy (as well as Strategy 1b) requires widening approximately 9.6 kilometers (6 miles) of I-40 which is not required under Strategy 2. Pavement costs would be similar for all strategies. Right-of-way acquisition through the urban area under Strategy 1a would be substantially higher than Strategy 2 through Fort Chaffee. Strategy 1b scored similar to Strategy 1a, with the middle score overall of -0.49. The areas in which Strategy 1b scored differently are discussed below.

**Table 2-5  
MAJOR INVESTMENT STUDY EVALUATION RESULTS**

MEASUREMENT CATEGORY		8-Lane I-540, 6-Lane I-40 and Accept LOS D on I-540			8-Lane I-540, 6-Lane I-40 and Traffic Reduction Strategies			Interstate Type Highway East of I-540 Through the Western Portion of Ft. Chaffee		
		RAW SCORE	WEIGHT	SCORE	RAW SCORE	WEIGHT	SCORE	RAW SCORE	WEIGHT	SCORE
PURPOSE:	Continuous Interstate System at LOS C	-1			1			1		
	Serves High Priority Corridor Traveler	-1			0			1		
	Connectivity	0			0			0		
	Development Potential	-1			-1			1		
	Future Capacity or Mode Uses	-1			-1			1		
	<b>AVERAGE</b>	<b>-0.8</b>	<b>40%</b>	<b>-0.32</b>	<b>-0.2</b>	<b>40%</b>	<b>-0.08</b>	<b>0.8</b>	<b>40%</b>	<b>0.32</b>
NEEDS:	Improved Serviceability of I-540	-1			0			0		
	Improves Safety	-1			-1			1		
	Meets Transportation Plans	-1			-1			1		
	<b>AVERAGE</b>	<b>-1</b>	<b>20%</b>	<b>-0.20</b>	<b>-0.67</b>	<b>20%</b>	<b>-0.13</b>	<b>0.67</b>	<b>20%</b>	<b>0.13</b>
EASE OF IMPLEMENTATION:	Disruption to the Community and I-540 Users	-1			-1			1		
	Education and Public Relations Requirements	0			-1			1		
	<b>AVERAGE</b>	<b>-0.5</b>	<b>5%</b>	<b>-0.03</b>	<b>-1</b>	<b>5%</b>	<b>-0.05</b>	<b>1</b>	<b>5%</b>	<b>0.05</b>
IMPACTS & ACCEPTANCE:	Environmental Impacts	1			1			-1		
	Residential Displacements	-1			-1			1		
	Business Displacements	-1			-1			1		
	Historic Resources	1			1			0		
	Community Support	0			-1			1		
	<b>AVERAGE</b>	<b>0</b>	<b>15%</b>	<b>0.00</b>	<b>-0.2</b>	<b>15%</b>	<b>-0.03</b>	<b>0.4</b>	<b>15%</b>	<b>0.06</b>
RELATIVE COST:	Interchanges	-1			-1			0		
	Arkansas River Bridge	-1			-1			0		
	Right of Way Acquisition	-1			-1			1		
	Maintenance and Protection of Traffic	-1			-1			1		
	Facility Maintenance Costs	-1			-1			-1		
	<b>AVERAGE</b>	<b>-1</b>	<b>20%</b>	<b>-0.20</b>	<b>-1</b>	<b>20%</b>	<b>-0.20</b>	<b>0.2</b>	<b>20%</b>	<b>0.04</b>
<b>OVERALL</b>		<b>-0.75</b>			<b>-0.49</b>			<b>0.60</b>		

Source: Michael Baker Jr., Inc.

Because this strategy involves non-construction techniques to improve the level of service, this strategy scored slightly higher than Strategy 1a for project purpose, as well as the level of service category under project need, for a combined purpose and need score of -0.21. However, this strategy would likely have the least community support due to the restrictions placed on I-540 users and would also involve the most public education to inform motorists about system usage (shoulder use during rush hours, restricted lanes, etc.).

Strategy 2, construction of an Interstate-type highway through Fort Chaffee, scored the highest overall (0.60) as well as the highest score for purpose and need of 0.45. This strategy provides the highest type of facility to the HPC traveler with continuous level of service C or higher. It best meets the local objectives of development potential, future intermodal flexibility (Section 1.4.9) and is consistent with the local transportation plan. This strategy also best improves the serviceability of I-540. This strategy could be implemented with the least direct impact to the community in terms of displacements and there would be little or no construction related inconveniences except where the proposed highway would provide an interchange with an existing road. With respect to relative cost, this strategy scored higher than the

I-540 strategies because it involves no urban reconstruction.

### 2.3.2 MIS Resolution

Based on the measurements of effectiveness evaluation, the I-540 / I-40 widening strategies (1a and 1b) do not meet the purpose and need of the project and would involve extraordinary social impacts and community disruption due to residential and commercial displacements and construction inconveniences.

Only Strategy 2, a new location strategy, will provide a high level of service on the HPC, the purpose of the project. The I-540 / I-40 widening strategies will provide LOS D, which is unacceptable for the HPC. Further, a new location strategy will ease the present and predicted traffic congestion and level of service problems on I-540 until 2014, approximately 10 years longer than without the facility. In order to address the potential level of service degradation that may occur even with the HPC, an action plan was outlined in the MIS resolution. This action plan can be employed in the 10 years following the opening of the HPC. This plan will enable the transportation officials to collect data, identify problem areas, evaluate solutions and effectively resolve any future traffic problems that may occur on I-540. The Working Group prepared a resolution to select Strategy 2 for the High Priority Corridor which was subsequently approved by the Bi-State

Policy Committee. The MIS resolution and complete documentation of the MIS are included in Appendix B.

## **2.4 CORRIDOR FEASIBILITY STUDY: CORRIDOR ALTERNATIVES**

Four full length corridors and two partial corridors were developed within the study area. To respond to public comment, most corridors remain within about 3 kilometers (2 miles) of the existing U.S. 71, and follow its general shape. Corridors were not developed in other locations due to more mountainous terrain, the presence of sensitive environmental resources, the inability to meet the design criteria and distance from existing U.S. 71.

The corridors are presented in Exhibit 2-3 and are identified as A, B, C, D, E and F. Corridors A, B, and C begin adjacent to U.S. 71 less than two miles north of DeQueen and end at the I-40 / S.H. 540 interchange. At the southern terminus, the corridors connect to the convergence point of the location alternatives proposed in the Texarkana to DeQueen project of the HPC. Corridor D follows the existing route of U.S. 71. The partial corridors are identified as E and F and are located in the Waldron and Jenny Lind areas respectively.

During the initial development of some corridors, it became evident that potential impacts to the natural, social, economic or cultural environment could be great or that the corridor did not meet the

project purpose and need. In such cases, these corridors or partial corridors were not advanced throughout the corridor study. This determination applies to Corridor D, developed along the existing route of U.S. 71, as well as the two partial corridors, E and F, described later in this section.

### **2.4.1 Comparison of Corridors A, B and C**

Corridors A, B and C were retained for further evaluation based on the critical environmental constraints defined during the scoping process. Each corridor was assessed based on its ability to satisfy a need or issue and to avoid sensitive resources. All corridors contain sensitive resources. The presence of a resource within a corridor is not an indication that the resource would be affected. Within a 3 kilometer (2 mile) corridor, the right-of-way of the proposed highway would be approximately 150 meters (500 feet) in most areas, providing the opportunity to avoid the most sensitive areas. However, alignments developed within any corridor would involve impact to the environment and would involve residential displacements. The corridors were evaluated based on their potential to accommodate alignments that minimize environmental impacts and residential displacements while serving the purpose and need for the project.

The results of the comparative evaluation of Corridors A, B and C are presented in Table 2-6. A brief description of each corridor follows.

**Corridor A**

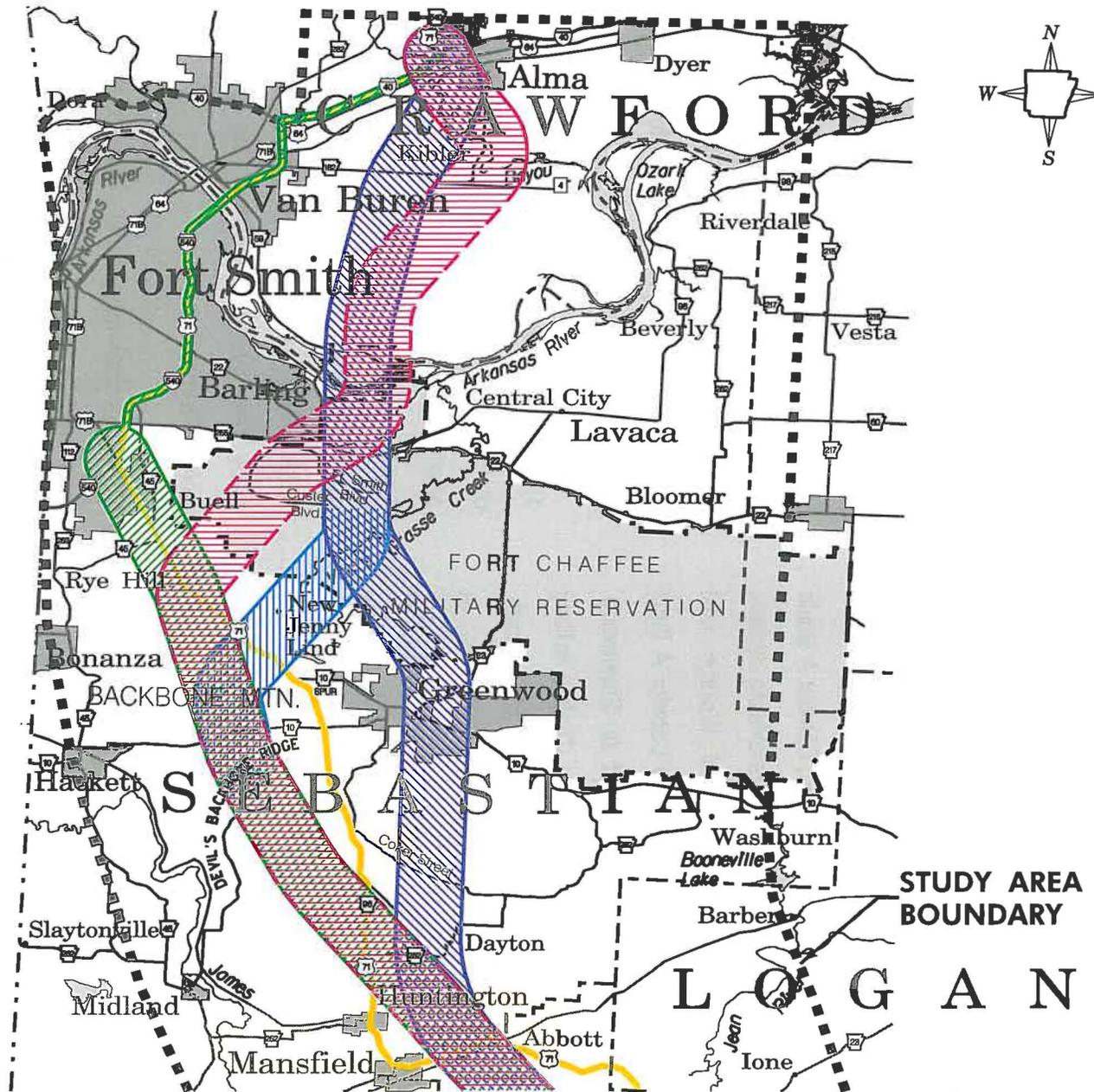
Corridor A remains west of existing U.S. 71 until just south of Hatton and is the only corridor that passes north and west of Mena. This corridor takes a nearly due north course crossing Fourche Mountain east of Foran Gap and would cross existing U.S. 71 three times through the sweeping S-curve in the route. At Waldron, Corridor A would provide a route to the west of the existing bypass. All corridors converge north of Waldron until reaching the Abbott area, where Corridor A turns nearly due north, passing east of Greenwood. Corridor A would cross the Fort Chaffee military reservation east of the barracks. Continuing north, this corridor crosses the Arkansas River at Springhill Park and turns slightly east, passing to the west of Kibler, and then connects to the existing I-40 / S.H. 540 interchange at Alma.

Corridor A is the shortest corridor and would provide the greatest travel time savings. This corridor is the only one of the three retained that remains west of U.S. 71 from DeQueen to Vandervoort. Because it crosses U.S. 71 twice in this reach, it would provide more direct access to some of the communities in this reach of the project. Corridor A contains no active and 2 inactive red-cockaded woodpecker sites and has the least length of crossing of the Irons Fork Watershed.

Concerns with respect to Corridor A include impacts to the Rich Mountain Recreation Area, visual effects in the form of deep cuts into Fourche Mountain and the need for a tunnel, effect on Fort Chaffee training operations, the crossing of Springhill Park and residential displacements at Cove, Mena, Greenwood and Kibler. The need for a tunnel through Fourche Mountain results in a high additional cost for any alignment within this corridor. The preliminary estimate for construction of an anticipated 1370 meter (4500 foot) tunnel in Corridor A is \$126 million.

The northern portion of Corridor A was initially developed in order to determine the feasibility of passing east of Greenwood, which forces Corridor A into areas of Fort Chaffee that have been deemed critical to continued base operations. This determination came midstream during the corridor study and therefore rendered this portion of Corridor A unworkable.

Corridor A does not provide access to the Mena Intermountain Municipal airport, identified as important to local officials in Mena. In the Waldron area, Corridor A was preferred overall by the public and local officials because it remains the closest to existing U.S. 71.





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ISSUE / RESOURCE	CORRIDOR			COMMENTS
	A	B	C	
Community access	2	3	1	Based on preliminary evaluation of proximity to communities and ability to locate interchanges.
Severity of cut	2	3	1	Corridors A and C would require tunnel per AHTD design criteria.
Residential displacements	2	3	1	
Proximity to communities (< 2 miles)	2	3	1	
Fort Chaffee impacts	1	2	3	
Public parks	2	2	3	Impacts to parks will be minimized or avoided during alignment development.
Wetlands	1	2	2	
Archeological sites	2	2	2	Alignments within all corridors would have a similar effect on archeology sites.
Historic structures (on record at Arkansas Historic Preservation Program)	3	3	3	Alignments within all corridors could avoid or minimize impact to historic structures.
Endangered species:				* Alignments could be developed within all corridors that would likely not affect these species.
<i>Arkansas fatmucket mussel*</i>	3	3	3	
<i>Red-cockaded woodpecker sites</i>	3	2	1	Based on known sites
<i>Interior least tern*</i>	3	3	3	
<i>American burying beetle</i>	2	2	2	All corridors contain habitat of this species; alignments within corridors would minimize impacts.
<i>Bald eagle</i>	2	2	3	FWS has been notified of nest site in Corridors A and B. Alignments could be developed to avoid this site.
<i>Leopard darter*</i>	3	3	3	
Floodways	2	3	1	
Irons Fork watershed	3	2	1	
Natural areas: <i>Limestone glades</i> <i>Upper Fourche Gap</i> <i>Iron Mountain</i> <i>Cossatot River</i>	1	2	3	Based on the location of the natural areas within the corridor.  Limestone glades and Upper Fourche Gap are under consideration as natural areas.
Poteau Mountain Wilderness Area	3	3	2	Corridors A and B can better avoid the small area within them.
Rich Mountain Recreation Area	2	3	3	Corridors B and C avoid the area completely.
<b>TOTALS</b>	<b>44</b>	<b>51</b>	<b>42</b>	<b>Total Possible Score: 60</b>

Source: Michael Baker Jr., Inc.

Ranking system: 3= most effective at addressing issue or greatest ability to avoid resource  
 2= moderately effective at addressing issue or moderate ability to avoid resource  
 1= least effective at addressing issue or least ability to avoid resource

**Corridor B**

Corridor B remains to the east of existing U.S. 71 from DeQueen to Mena, where it converges with Corridor C at the crossing of McKinney Creek. North of Mena, this corridor follows the sweeping curve of existing U.S. 71 through Foran Gap, crossing U.S. 71 just southwest of Y-City. Corridor B would then remain west of U.S. 71 until just south of Waldron where it would cross U.S. 71. This corridor would remain east of Waldron until crossing U.S. 71 again, north of town. North of this point, Corridor B converges with the other corridors until reaching Abbott where it continues on a northwesterly course until crossing U.S. 71 near Rye Hill and turning northeast to Fort Chaffee. Through the Fort, Corridor B remains within the property released by military officials until crossing S.H. 22 just east of Barling and providing an interchange at this location. Corridor B would turn north just before crossing the Arkansas River at Springhill Park until turning northeast and passing to the east of Kibler. Corridor B would then connect to the existing S.H. 540 / I-40 interchange at Alma.

Corridor B would provide the best access to communities with a greater ability to locate interchanges than on Corridors A and C. Because Corridor B follows the existing route through Foran Gap in Fourche Mountain, this corridor would have the least earthwork and least associated visual impact to this area. Preserving the scenic, natural

landscape through this reach was an important issue to many people attending the public meetings. This location across Fourche Mountain also provides the opportunity to follow the existing route across the Irons Fork Watershed, Mena's water supply, thereby minimizing the total highway crossing length of this sensitive area. Corridor B contains 1 active and 2 inactive red-cockaded woodpecker sites. Corridor B is also expected to have the least number of residential displacements at Cove, Mena, Greenwood and Fort Smith. Corridor B avoids the Rich Mountain Recreation Area and has the least potential to impact floodways.

The concern with respect to Corridor B is the crossing of Springhill Park. Alignments within Corridor B could be developed to avoid military training areas and the munitions depot, both on Fort Chaffee, which fall partially within this corridor.

**Corridor C**

Corridor C provides the most easterly route between DeQueen and Mena until it converges with Corridor B at the crossing of McKinney Creek. Corridor C crosses S.H. 8 and S.H. 88 in Mena and follows Corridor B until it diverges at the Ouachita National Forest boundary near the Irons Fork Reservoir. Corridor C would then sweep east through a higher pass in Fourche Mountain, nearly 7 kilometers (4 miles) east of Foran Gap. Corridor C would turn northwest and cross U.S. 71 several

kilometers southwest of Y-City, remaining well to the west of U.S. 71 and Waldron. It would then converge with Corridors A and B near the point where all corridors leave the Ouachita National Forest. Corridor C would follow Corridor B to Rye Hill, then converge with Corridor D and existing U.S. 71. The width of Corridor C from the I-540 / U.S. 71 interchange to the existing I-40 / S.H. 540 interchange is 300 meters (1,000 feet).

Corridor C contains the fewest known important cultural resource sites and cemeteries. It also contains the fewest natural areas. Because it follows I-540 through Fort Smith, this corridor would avoid Springhill Park and contains the fewest known wetlands (National Wetlands Inventory source) in this reach. South of Fort Smith, Corridor C contains similar wetland areas as Corridor B. (NWI wetlands are not field verified.)

Following I-540 and I-40 through Fort Smith and Van Buren would not provide a regional Interstate highway that serves the HPC traveler with sufficient capacity and a high level of service. Therefore, Corridor C following I-540 would not satisfy the project purpose as discussed in the previous Major Investment Study discussion. Even though this corridor (or strategy) would not meet the purpose and need, it was evaluated in the corridor study in order to respond to any inquiries about this location. As discussed in the Major Investment Study, a detailed traffic analysis of I-540

from the U.S. 71 / I-540 interchange to the I-40 / S.H. 540 interchange was conducted (Refer to Tables 2-3 and 2-4). I-540 and I-40 would operate at unacceptable levels by 2020, if these highways remained four-lane facilities. I-540 would not operate acceptably, for local use and HPC use unless eight lanes, and in some sections ten lanes, were available to carry traffic. Interstate 40 from I-540 to S.H. 540 would not operate acceptably in 2020 unless it were widened to six lanes. It is important to note that I-40 will operate acceptably in 2020 if a new location corridor is selected. Corridor C involves reconstruction of nearly 9.6 kilometers (6 miles) of Interstate highway that would not otherwise be required. It was for these reasons, along with the anticipated severity of residential and business displacements, that the widening strategies were not selected in the MIS.

In order to confirm the potential relocation impacts, a field inspection was made of Corridor C from the U.S. 71 / I-540 interchange to the I-40 / S.H. 540 interchange. The following houses, businesses and community facilities were identified during the field inspection of the 300 meter (1,000 foot) corridor:

- 582 single family homes
- 116 businesses, including car dealerships, two bottling plants and a steel wire factory
- 57 apartment buildings

- 3 churches
- 1 cemetery
- 1 school
- 1 state police headquarters.

The above figures represent the order of magnitude of the displacements that would result from construction of the HPC within this corridor. Whether directly or indirectly impacted, the density of the existing development along I-540 and I-40 led to the conclusion that widening I-540 and I-40 would result in community disruption and social impacts of an extraordinary magnitude. Further, following an existing route does not provide the opportunity to avoid or minimize impacts to wetlands, floodplains and other environmental resources adjacent to the route.

The above findings of the Corridor Feasibility Study confirm the findings of the MIS relative to an MIS strategy alternative or a corridor alternative along I-540.

Concerns with the new location portion of Corridor C are the longest crossing of the Irons Fork watershed (a public water supply), the most red-cockaded woodpecker sites (1 active and 3 inactive), the most area within the Poteau Mountain Wilderness Area, the least access to communities, visual effects in the form of deep cuts into Fourche Mountain (183 meters (600 feet)) and the potential for considerable residential and commercial

impacts from Rye Hill to I-540. This corridor would also require a tunnel for any alignment developed within it. Preliminary figures for the additional cost associated with construction of an estimated 2440 meter (8000 foot) tunnel in Corridor C is \$224 million. Further, Corridor C would not satisfy the concerns of local officials relative to the benefits of a highway on new location in the northern end of the study area. This corridor would pass through the Ouachita National Forest at the most remote location and furthest removed from the developed corridor. Locating the proposed highway close to the already developed corridor was suggested at the public meetings as a manner in which to reduce impacts to the wildlife habitat of the forest.

#### **2.4.2 Corridors Considered and not Advanced**

##### ***Corridor D - Existing Location Corridor***

Corridor D is centered on the existing U.S. 71 highway and was developed to consider the feasibility of reconstructing the route to Interstate standards (Grimes, 1995). As a result, the width of Corridor D is 300 meters (1,000 feet) as opposed to 3 kilometers (2 miles) as in the new location corridors. This corridor consists of two distinct parts, rural and urban. The rural part follows U.S. 71 from its intersection with U.S. 70 in DeQueen to the interchange of U.S. 71 with I-540 and is primarily a two-lane roadway with uncontrolled access. The urban part follows I-540 from U.S. 71 to I-40 and then follows I-40 to S.H. 540 and is a

four-lane fully controlled access highway (Refer to the discussion of existing roadway characteristics in Section 1.) The differing issues that result from the extreme differences in the roadways of each part of Corridor D are discussed below.

The rural part of Corridor D was analyzed in the field against the following factors:

- Ability to meet the design criteria
- Potential residential and commercial displacements
- Access to property
- Impacts to community facilities
- Utility relocations.

The ability to meet the design criteria was evaluated through examination of the existing horizontal and vertical geometry along the route. An assessment was made as to whether reconstruction within the 300 meter (1,000 foot) corridor was possible. Potential residential and commercial displacements and potential loss of access to property were evaluated on the basis of the number of residential and commercial driveways that exist along U.S. 71. Locations of churches, schools and cemeteries were identified along the route to assess potential impacts to communities. Utility relocation requirements were assessed through field surveys of the route. A summary of the data collected for this evaluation is presented in Table 2-7.

FACTOR	RESULTS
Meets horizontal design criteria (km(miles) / % length)	24 km (15 mi) / 12%
Meets vertical design criteria (km(miles) / % length)	53 km (33 mi) / 27%
Residential driveways (total number)	655
Commercial driveways (total number)	217
Impacts to churches, schools, cemeteries	Major - all sections
Railroads (km (miles) parallel)	14.5 km (9 mi)
Underground utility relocations	Major - all sections
Overhead utility relocations	Major - all sections

Source: Grimes Consulting Engineers, Inc.; Michael Baker Jr., Inc.

Based on the above results, the rural part of Corridor D has been eliminated from further consideration. Corridor D would not meet the

purpose and need established for the project because at most 12% of the route could meet the design criteria. Further, the potential direct impacts

to residences, businesses and community facilities and the additional displacements resulting from loss of access between Witcherville and I-540 would be extreme. The direct impact to the many businesses along the route would also result in economic impact through job loss, should the businesses not relocate.

The urban I-540 part of Corridor D is the same as the I-540 part of Corridor C and was found unreasonable based on not meeting the purpose and need and severity of impacts, as previously discussed.

#### ***Partial Corridors E and F***

Partial Corridor E begins south of Waldron and diverges northeasterly from Corridor B just past the crossing of S.H. 250. It then turns north and northwest to form a loop east of Waldron, but further east than Corridor B. Corridor E then merges with Corridors A and B at the northern boundary of the Ouachita National Forest. The length of this corridor is approximately 18 kilometers (11 miles).

Partial Corridor E was eliminated from further consideration due to its inability to provide an interchange with U.S. 71 north of Waldron and its proximity (< 3 kilometers or 2 miles) to the city limits.

Partial Corridor F diverges from Corridors B and C north of Devil's Backbone Ridge and crosses U.S.

71 between Old Jenny Lind and Rye Hill. It continues in a northeasterly direction until converging with Corridor A within Fort Chaffee, just south of the barracks. The length of this corridor is 14.6 kilometers (9 miles).

Corridor F was eliminated from further consideration because it passes through restricted Fort Chaffee land and potential wetland areas along Little Vache Grasse Creek and tributaries.

#### **2.4.3 Corridor Decision-making Process**

Summaries of all public meetings, including phase of study, attendance and locations are provided in Section 8.

#### ***Public Involvement***

Open forum public meetings were held in DeQueen, Mena, Waldron and Fort Smith during November 1995 with nearly 300 persons attending. In addition to the series of public meetings, information was placed in the Mena and Fort Smith public libraries and several city halls for detailed inspection. Dates, locations and items for the public meetings were widely publicized through numerous media, and meeting announcements were sent directly to all persons who attended the previous public meetings. In addition to displaying the corridor locations, environmental constraints were presented along with the comparative analysis of Corridors A, B and C. Small scale maps and the comparative analysis were prepared

for handouts. In addition to one on one conversations with AHTD representatives, comment forms were provided that allowed residents to comment on their overall corridor preference as well as preferences in a specific location. It is important on a project of this length to obtain input from the persons most directly affected by the project in a particular area. For example, the people living in the Waldron area and commenting on the corridor locations in Waldron would be more directly affected by the ultimate decision than people from Fort Smith commenting on the corridor locations in Waldron. Overall corridor preference and specific area preferences were considered in the identification of the preferred corridor.

Comment results were positive overall for the corridors presented and there were no specific comments received that were in disagreement with the corridor locations. Review of comment forms completed at the meetings, as well as those received by mail throughout December 1995 showed that most people commenting preferred Corridor B overall. In the specific areas of DeQueen to Mena, Mena, Fourche Mountain, Greenwood and Fort Smith, most persons commenting also preferred Corridor B. However, Corridor A was preferred overall in the Waldron area by residents and business persons.

A special town meeting was held in December 1995 in Kibler, Arkansas which was attended by residents of Kibler, Van Buren and Alma. Despite efforts to inform the public about the project from June 1995 to December 1995, some persons in this area felt largely uninformed. As a result, these residents were not in favor of any corridor through the southern portion of Crawford County. Reasons cited were the potential changes to the rural area and wildlife habitat; the potential cost; and due to their perception that utilizing I-540 would be less costly or better meet the project purpose and need. Previous discussions and conclusions reached in this study provide the basis for not using I-540 as the preferred corridor. A subsequent public meeting held in Kibler in May 1996 to present the preliminary alignments had favorable results. Various suggestions were made by Kibler residents to improve the alignments and these were adopted in the final alignments.

#### ***Local Official Involvement***

As with similar meetings to obtain guidance for the corridor development process, a meeting of local elected officials of all communities and counties within the study area was held in conjunction with the public meetings. Nearly 100 local elected officials and community leaders representing twenty-seven communities were requested to attend through personal letters. The purpose of this meeting was to discuss any specific concerns relative to the corridors within a given community.

This meeting also provided the opportunity for the elected officials to review the corridors in order to participate actively and on an informed basis at the public meetings.

As a result of their previous involvement on the development of the corridors, no concerns were raised by this group with respect to the corridor locations. Although informal discussions did take place during the meeting with respect to corridor preference, community representatives within this group did not announce formally their preference for a corridor.

### ***Agency Involvement***

In addition to ongoing coordination with state and federal resource agencies to collect environmental constraint data, a meeting was held in Little Rock on December 7, 1995 to discuss the results of the Corridor Feasibility Study. Informational materials were provided to each agency several weeks prior to this meeting. The agency representatives were informed of the preference for Corridor B (following A in Waldron) and were invited to discuss this preference. No serious concerns with respect to the preferred corridor were voiced.

The Corps of Engineers agreed with the findings of the MIS and Corridor Feasibility Study. To confirm the findings of these studies, the Corps recommended that an alignment within Corridor C along I-540 and I-40 be developed during the

Alignment Study. This recommendation was accepted by the Arkansas Highway and Transportation Department and the Federal Highway Administration and is included in this document.

Agency representatives were requested to respond in writing. Because there were no concerns voiced with respect to corridor preference, the agencies were invited to provide guidance regarding future alignment development within the preferred corridor.

Comment letters from all participating agencies are included in Appendix C.

### **2.4.4 The Preferred Corridor for the U.S. 71 Relocation**

Based on the results of the Major Investment Study and the Corridor Feasibility Study, and the involvement of resource agencies, local officials and the public, Corridor B from DeQueen to Waldron, Corridor A in Waldron, and Corridor B from Waldron to I-40 was identified as the preferred corridor to be advanced to the Alignment Study.

The preferred corridor:

- provides the best opportunity to minimize environmental impacts during alignment development
- received the most local support

- best meets the purpose and need identified for the project
- is consistent with local transportation, development and comprehensive plans
- provides the best opportunity to minimize displacements
- best meets the design criteria and avoids construction of a tunnel, for an estimated cost savings of at least \$126 million
- enables the Fort Chaffee excess property to be accessed and redeveloped by local authorities with minimal impacts to the remaining military land.

## 2.5 ALIGNMENT STUDY: ALIGNMENT ALTERNATIVES

The Alignment Study of the proposed highway resulted in three distinct alignment locations within the preferred corridor. These alignments (also called "lines") are presented in Exhibit S-3, and Exhibit 2-4. The three alignments are identified simply as Line 1, Line 2 and Line 3. For short distances, one, two or all of the lines may run together and at several points along the corridor, one, two or all of the lines may intersect. These points have been identified by letters A through O and thereby divide the alignments into 14 segments. If two lines cross at a lettered point,

there is an ability to "switch" from one line to another at this location. However, in some cases, only two of the lines cross and a switch cannot be made to the third line. This would be the case at points B, C, E, and F.

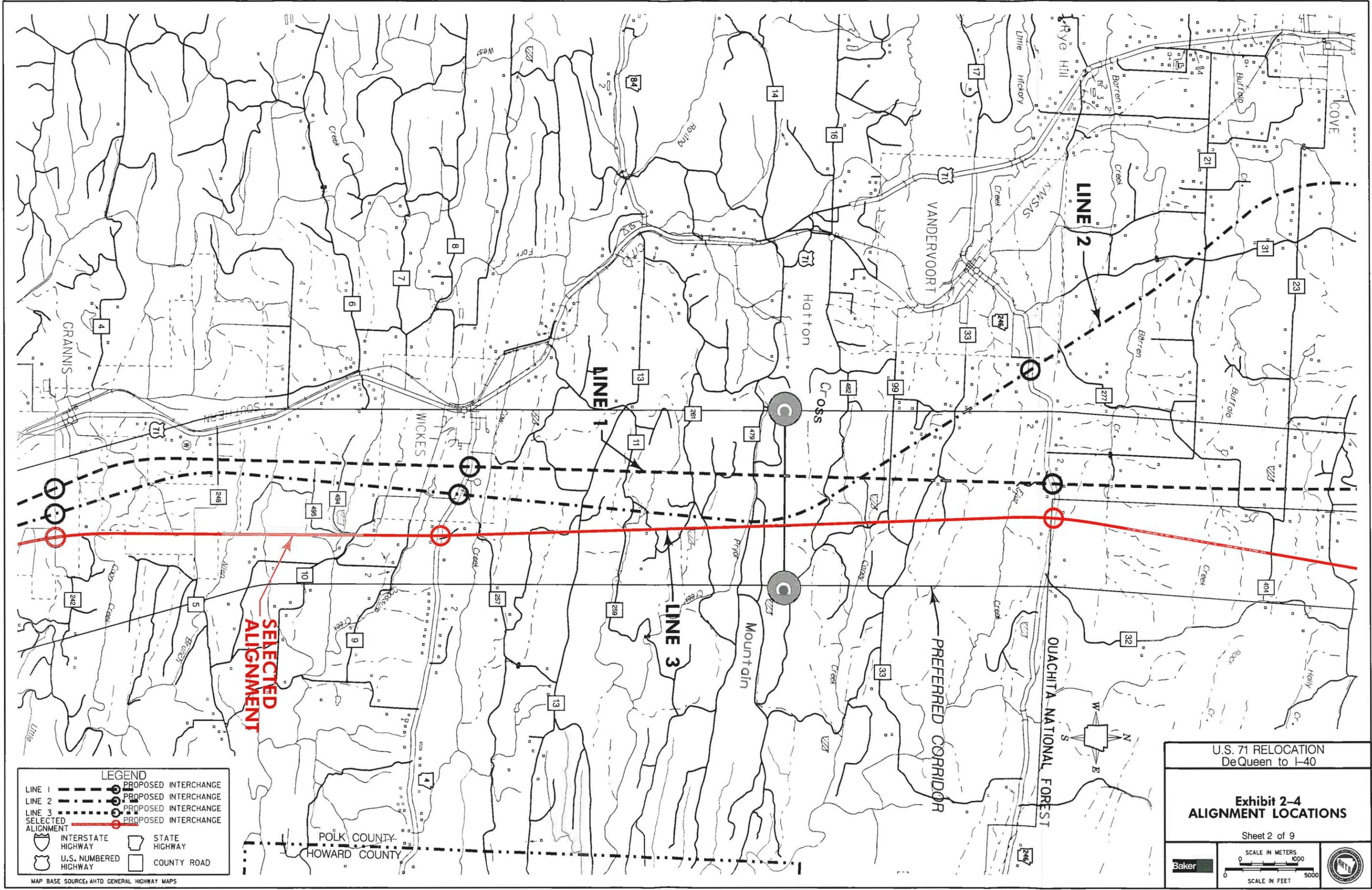
Early in the Alignment Study the decision was made to extend the preferred corridor south a short distance to connect with the alternatives under study in the Texarkana to DeQueen project of the HPC at U.S. 70, as shown on Exhibit 2-4, Sheet 1 of 9. All lines therefore have a southern terminus at U.S. 70. The northern terminus of all lines is at the existing I-40 / S.H. 540 interchange. Pertinent information for each line such as length, interchange locations, grade separations and estimated construction cost is provided in Tables 2-8 through 2-12.

The design features of each alignment would be two northbound lanes and two southbound lanes with appropriate shoulder widths and a 24 meter (80 foot) median, as described in Section 1. Specific information on the typical cross section is provided in Exhibit 1-3. Any exceptions to the basic design are noted below in the alignment descriptions that follow, which highlight the distinguishing features of one line as compared to the others.

**Table 2-8  
ALIGNMENT SUMMARY DATA**

ITEM	NO-ACTION	LINE 1	LINE 2	LINE 3	SELECTED
Length km (mi)	215.1 (133.6)	191.8 (119.4)	198.9 (123.7)	198.5 (123.4)	196.5 (122.3)
Estimated Construction Cost (in millions)	\$ 20.6	\$ 1096.5	\$ 1114.4	\$ 1077.0	\$ 1074.9
Number of Interchanges	N/A	22	23	21	22
Number of Grade Separations	N/A	78	83	75	81
Number of River Crossings	N/A	21	24	20	22

Source: Michael Baker Jr., Inc.



**LEGEND**

- LINE 1 ——— PROPOSED INTERCHANGE
- LINE 2 ..... PROPOSED INTERCHANGE
- LINE 3 - · - · - · PROPOSED INTERCHANGE
- SELECTED ALIGNMENT ——— PROPOSED INTERCHANGE
- INTERSTATE HIGHWAY [Symbol]
- U.S. NUMBERED HIGHWAY [Symbol]
- STATE HIGHWAY [Symbol]
- COUNTY ROAD [Symbol]

U.S. 71 RELOCATION  
DeQueen to I-40

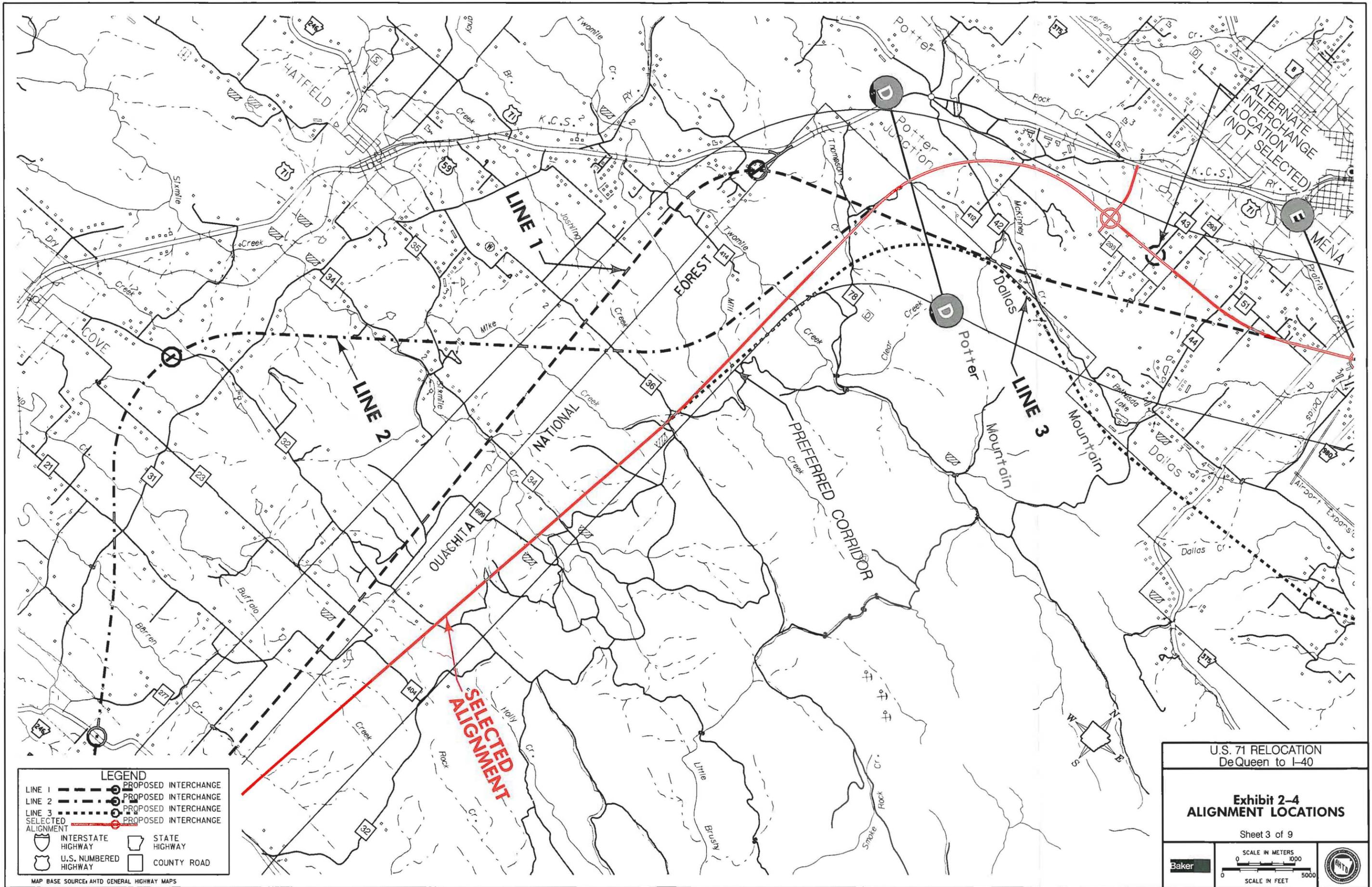
**Exhibit 2-4  
ALIGNMENT LOCATIONS**

Sheet 2 of 9

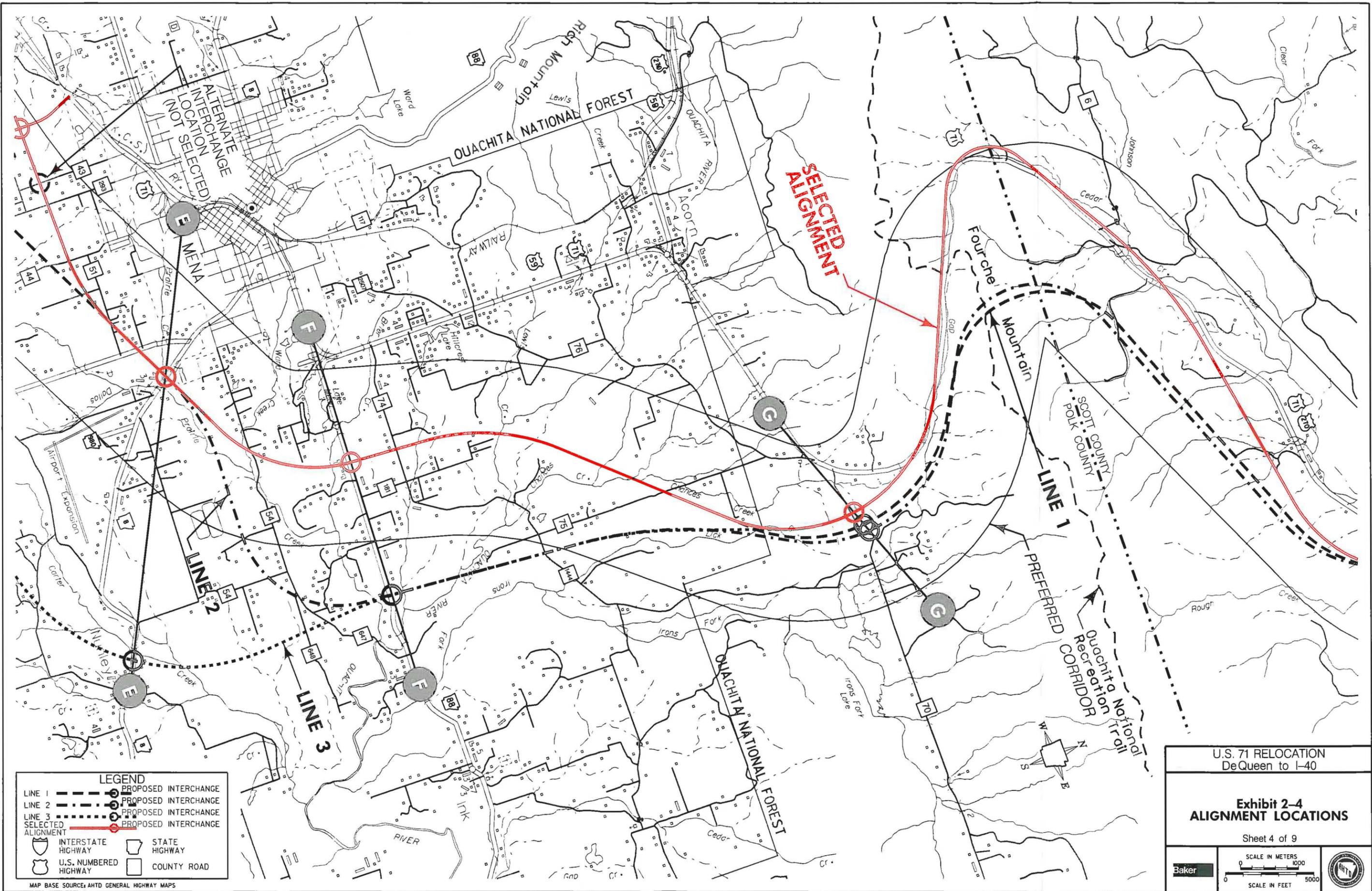
SCALE IN METERS 1000  
SCALE IN FEET 5000

Baker

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**LEGEND**

LINE 1	---	PROPOSED INTERCHANGE
LINE 2	...	PROPOSED INTERCHANGE
LINE 3	- . - .	PROPOSED INTERCHANGE
SELECTED ALIGNMENT	—	PROPOSED INTERCHANGE
		STATE HIGHWAY
		COUNTY ROAD

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 2-4**  
**ALIGNMENT LOCATIONS**

Sheet 4 of 9

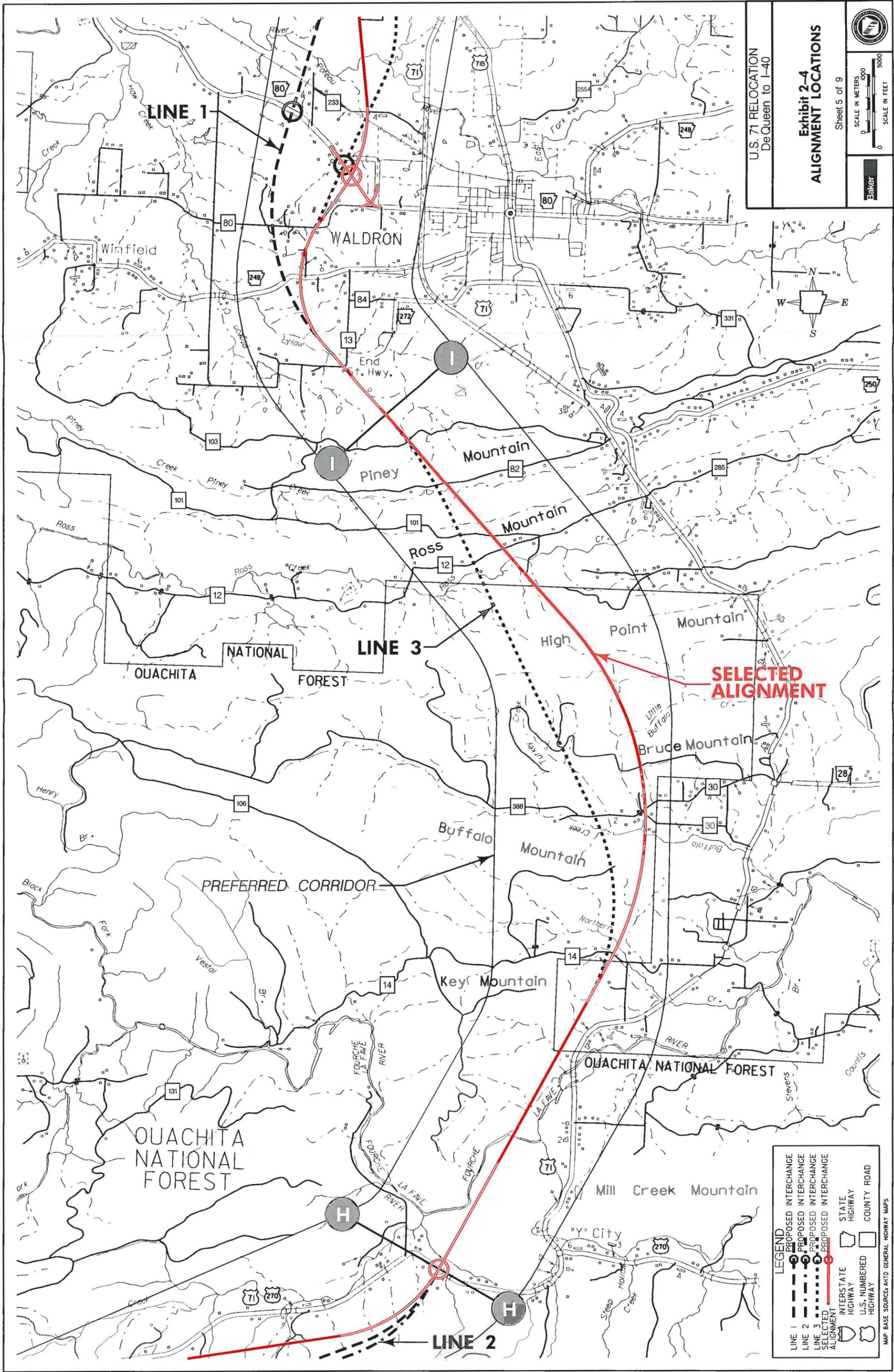
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U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 2-4  
ALIGNMENT LOCATIONS**

Sheet 5 of 9

SCALE IN METERS 0 1000 5000

SCALE IN FEET 0 1000 5000

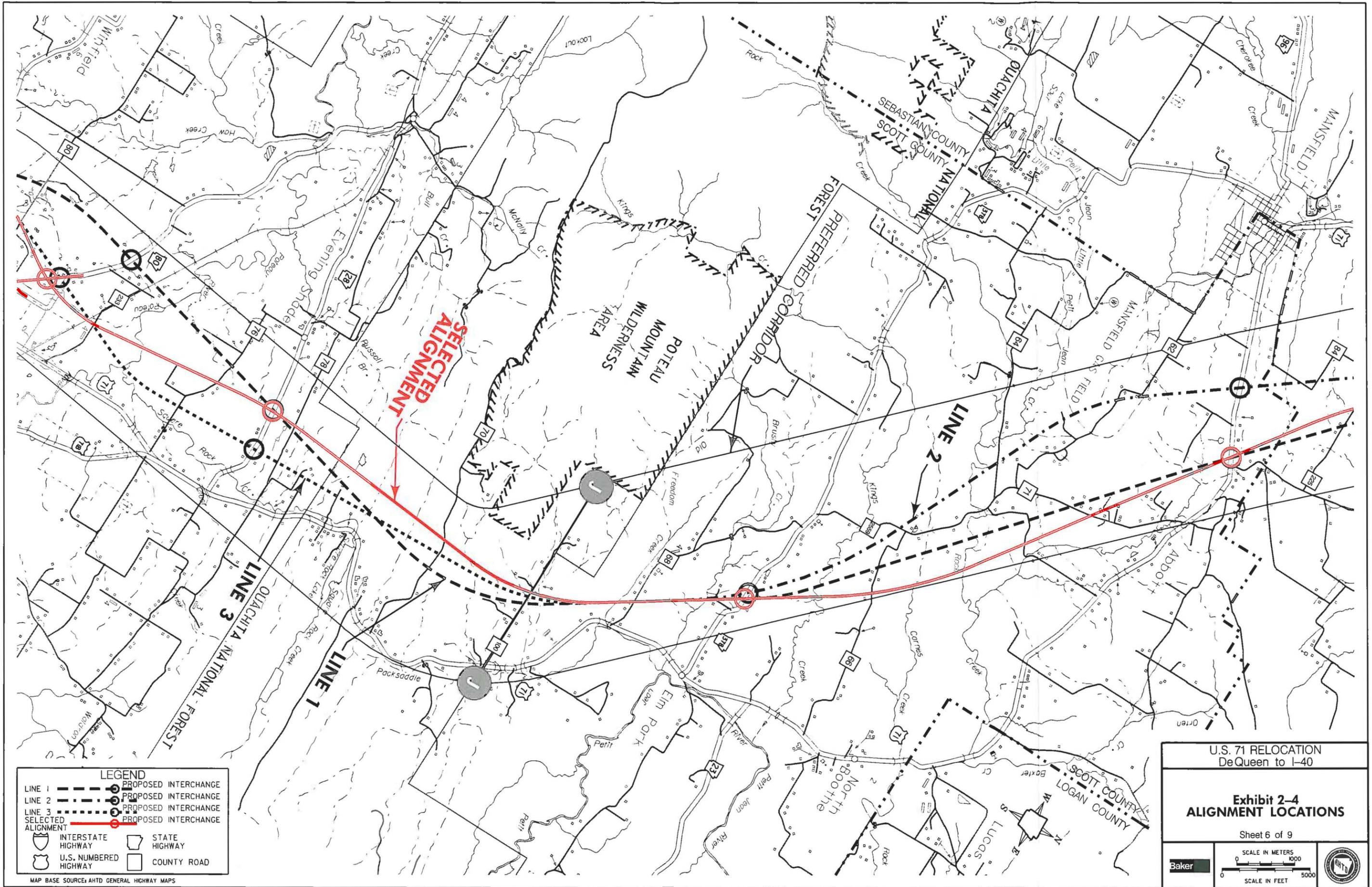
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**LEGEND**

- LINE 1
- LINE 2
- LINE 3
- SELECTED ALIGNMENT
- INTERSTATE HIGHWAY
- U.S. NUMBERED HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD
- PROPOSED INTERCHANGE

MAP BASE SOURCE: ARTD GENERAL HIGHWAY MAPS

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**LEGEND**

LINE 1	---	PROPOSED INTERCHANGE	○
LINE 2	- - -	PROPOSED INTERCHANGE	○
LINE 3	- · - · -	PROPOSED INTERCHANGE	○
SELECTED ALIGNMENT	— (Red)	PROPOSED INTERCHANGE	○ (Red)
INTERSTATE HIGHWAY	— (Thick)	STATE HIGHWAY	— (Thin)
U.S. NUMBERED HIGHWAY	— (Thin)	COUNTY ROAD	— (Thin)

MAP BASE SOURCE: AHTD GENERAL HIGHWAY MAPS

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 2-4  
ALIGNMENT LOCATIONS**

Sheet 6 of 9

Baker

SCALE IN METERS  
0 1000

SCALE IN FEET  
0 5000

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**LEGEND**

- LINE 1 - - - - - PROPOSED INTERCHANGE
- LINE 2 - - - - - PROPOSED INTERCHANGE
- LINE 3 - - - - - PROPOSED INTERCHANGE
- SELECTED ALIGNMENT - - - - - PROPOSED INTERCHANGE
- INTERSTATE HIGHWAY
- U.S. NUMBERED HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD

MAP BASE SOURCE: AHTD GENERAL HIGHWAY MAPS

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 2-4  
ALIGNMENT LOCATIONS**

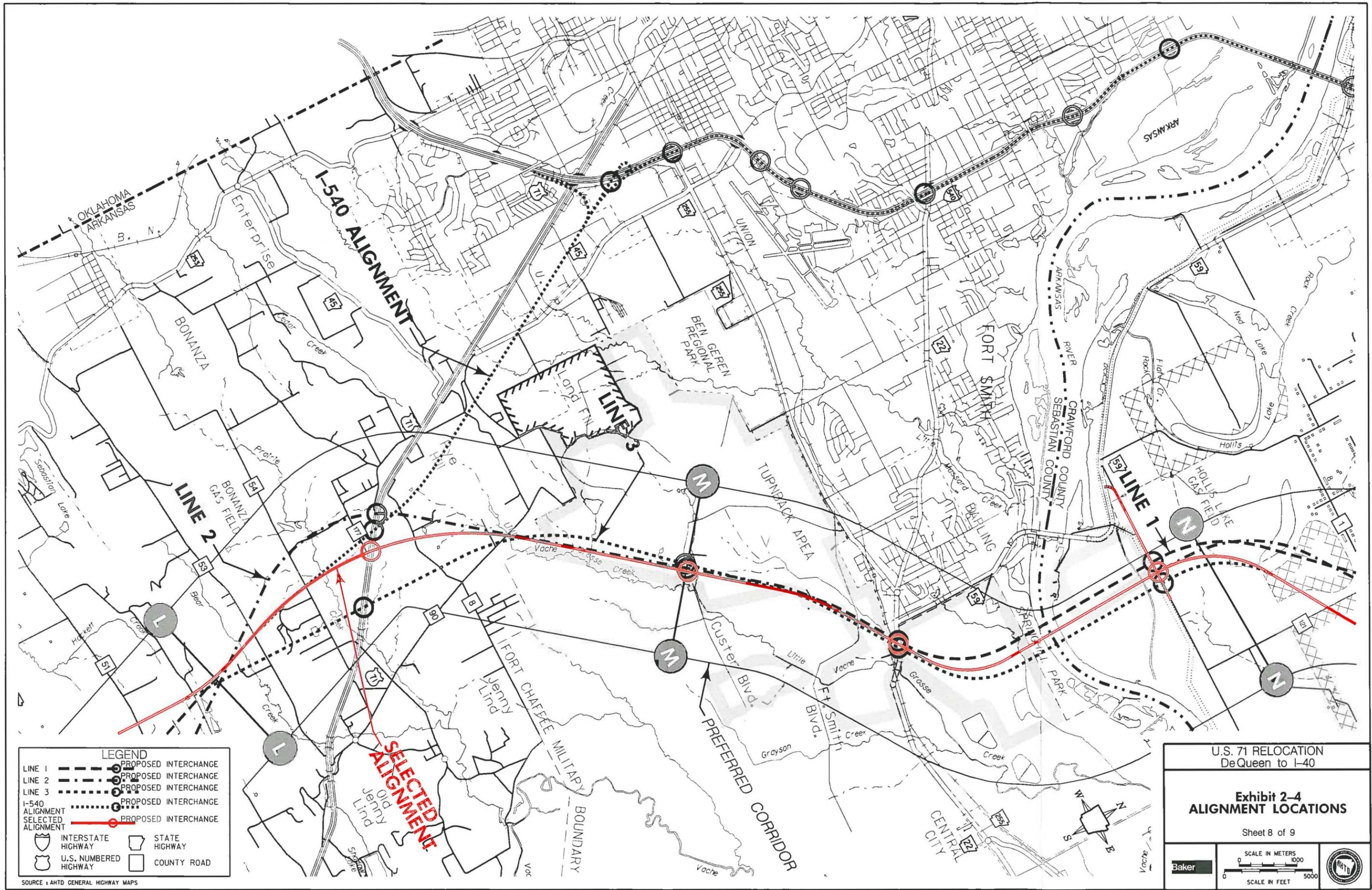
Sheet 7 of 9

SCALE IN METERS 1000

SCALE IN FEET 5000

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**LEGEND**

- LINE 1 --- PROPOSED INTERCHANGE
- LINE 2 - - - PROPOSED INTERCHANGE
- LINE 3 - - - PROPOSED INTERCHANGE
- I-540 ALIGNMENT - - - PROPOSED INTERCHANGE
- SELECTED ALIGNMENT - - - PROPOSED INTERCHANGE
- INTERSTATE HIGHWAY [Shield]
- U.S. NUMBERED HIGHWAY [Shield]
- STATE HIGHWAY [Shield]
- COUNTY ROAD [Shield]

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 2-4  
ALIGNMENT LOCATIONS**

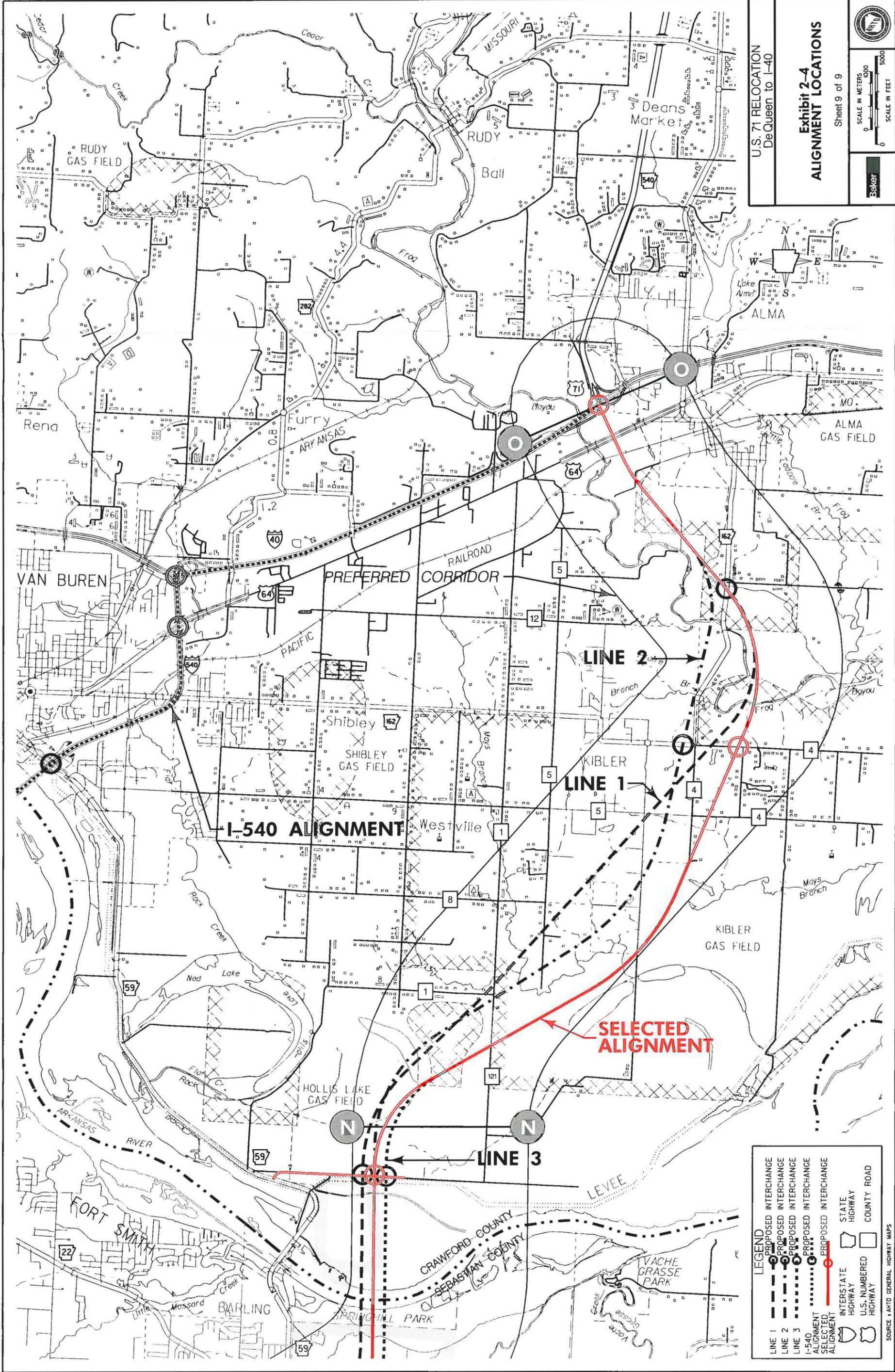
Sheet 8 of 9

SCALE IN METERS 0 1000

SCALE IN FEET 0 5000

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U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 2-4  
ALIGNMENT LOCATIONS**

Sheet 9 of 9

SCALE IN METERS 1:1000  
SCALE IN FEET 1:3000

Baker

**LEGEND**

- LINE 1 ——— PROPOSED INTERCHANGE
- LINE 2 - - - - PROPOSED INTERCHANGE
- LINE 3 ······ PROPOSED INTERCHANGE
- I-540 ALIGNMENT ——— PROPOSED INTERCHANGE
- SELECTED ALIGNMENT ——— PROPOSED INTERCHANGE
- INTERSTATE HIGHWAY
- U.S. NUMBERED HIGHWAY
- COUNTY ROAD

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**Table 2-9  
ALIGNMENT STUDY COST ESTIMATE (in 1996 \$)**

Item	Unit Cost	Unit	Line 1		Line 2		Line 3		Selected	
			Amount	Cost	Amount	Cost	Amount	Cost	Amount	Cost
Earthwork	\$ 2.40	m3	97,461,250	\$ 233,907,000	93,402,908	\$ 224,166,000	91,025,174	\$ 218,460,000	87,733,496	\$ 210,560,000
Bridges - Normal Span	\$ 7,506	meter	19,990	\$ 150,045,000	20,630	\$ 154,849,000	19,000	\$ 142,614,000	19,670	\$ 147,643,000
Arkansas River	\$ 9,383	meter	4,180	\$ 39,221,000	4,180	\$ 39,221,000	4,180	\$ 39,221,000	4,180	\$ 39,221,000
Grading & Drainage	\$ 1,087,000	km	189.9	\$ 206,408,000	196.9	\$ 214,027,000	196.4	\$ 213,527,000	194.4	\$ 211,355,000
Base and Pavement	\$ 1,057,000	km	189.9	\$ 200,712,000	196.9	\$ 208,120,000	196.4	\$ 207,634,000	194.4	\$ 205,521,000
Signing and Miscellaneous	\$ 31,000	km	189.9	\$ 5,887,000	196.9	\$ 6,104,000	196.4	\$ 6,090,000	194.4	\$ 6,027,000
Interchanges	\$ 3,250,000	each	21	\$ 68,250,000	22	\$ 71,500,000	20	\$ 65,000,000	21	\$ 68,250,000
I-40 / S.H. 540	\$ 10,000,000	each	1	\$ 10,000,000	1	\$ 10,000,000	1	\$ 10,000,000	1	\$ 10,000,000
15% (Design Engineering & Contingencies)				\$ 137,165,000		\$ 139,198,000		\$ 135,381,875		\$ 134,787,000
<b>Total Construction Cost</b>				\$ 1,051,595,000		\$ 1,067,185,000		\$ 1,037,928,000		\$ 1,033,364,000
<b>Right-of-Way Acquisition Cost (Land, Improvements &amp; Utilities)</b>				\$ 44,941,000		\$ 47,204,000		\$ 39,885,035		\$ 41,540,000
<b>Total Project Cost</b>				\$ 1,096,536,000		\$ 1,114,389,000		\$ 1,077,813,000		\$ 1,074,904,000

Source: Michael Baker Jr., Inc.

NOTE: Lengths have been adjusted for the Arkansas River Bridge and do not represent the total length of the alignments.

**Table 2-10  
PROPOSED INTERCHANGE LOCATIONS**

No-Action	N/A			
<b>Line 1</b>	U.S. 70 - DeQueen CO. RD. 41 - Gillham CO. RD. 242 - Grannis S.H. 4 - Wickes S.H. 246 - Vandervoort U.S. 71 Conn. - Potter Jct. Hatfield	S.H. 8 - Mena S.H. 88 - Mena CO. RD. 70 - Acorn U.S. 71 - Y-City S.H. 80 - Waldron S.H. 28 - Waldron	S.H. 378 - Elm Park U.S. 71 - Abbott/Mansf. U.S. 71 - Huntington S.H. 10 - Greenwood U.S. 71 - Rye Hill Custer Blvd. - Fort Chaf.	S.H. 22 - Barling S.H. 59 Conn. - Kibler S.H. 162 - Alma I-40 (Mod.) - Alma
<b>Line 2</b>	U.S. 70 - DeQueen CO. RD. 41 - Gillham CO. RD. 242 - Grannis S.H. 4 - Wickes S.H. 246 - Vandervoort CO. RD. 32 - Cove	U.S. 71 Conn. - S. Mena S.H. 8 - Mena S.H. 88 - Mena CO. RD. 70 - Acorn U.S. 71 - Y-City S.H. 80 - Waldron	S.H. 28 - Waldron S.H. 378 - Elm Park U.S. 71 - Abbott/Mansf. U.S. 71 - Huntington S.H. 10 - Greenwood U.S. 71 - Rye Hill	Custer Blvd. - Fort Chaf. S.H. 22 - Barling S.H. 59 Conn. - Kibler S. H. 162 - Kibler I-40 (Mod.) - Alma
<b>Line 3</b>	U.S. 70 - DeQueen CO. RD. 41 - Gillham CO. RD. 242 - Grannis S.H. 4 - Wickes S.H. 246 - Vandervoort S.H. 8 - Mena	S.H. 88 - Mena CO. RD. 70 - Acorn U.S. 71 - Y-City S.H. 80 - Waldron S.H. 28 - Waldron S.H. 378 - Elm Park	U.S. 71 - Abbott/Mansf. U.S. 71 - Huntington S.H. 10 - Greenwood U.S. 71 - Rye Hill Custer Blvd. - Fort Chaf. S.H. 22 - Barling	S.H. 59 Conn. - Kibler CO. RD. 4 - Kibler I-40 (Mod.) - Alma
<b>Selected</b>	U. S. 70 - DeQueen CO. RD. 41 - Gillham CO. RD. 242 - Grannis S.H. 4 - Wickes S.H. 246 - Vandervoort U.S. 71 Conn. - S. Mena	S.H. 8 - Mena S.H. 88 - Mena CO. RD. 70 - Acorn U. S. 71 - Y-City S.H. 80 - Waldron S.H. 28 - Waldron	S.H. 378 - Elm Park U.S. 71 - Abbott/Mansf. U.S. 71 - Huntington S.H. 10 - Greenwood U.S. 71 - Rye Hill Custer Blvd. - Fort Chaf.	S.H. 22 - Barling S.H. 59 Conn. - Kibler CO. RD. 4 - Kibler I-40 (Mod.) - Alma

Source: Michael Baker Jr., Inc.

**Table 2-11  
PROPOSED GRADE SEPARATIONS**

LINE	COUNTY, STATE, OR U.S. HIGHWAYS							
<b>No-Action</b>	N/A							
<b>Line 1</b>	C.R. 45	C.R. 9	C.R. 34	C.R. 75	C.R. 76	S.H. 252	C.R. 54	U.S. 64
	C.R. 350	C.R. 13	C.R. 36	C.R. 14	C.R. 78	C.R. 36	C.R. 8	
	C.R. 70	C.R. 11	C.R. 414	C.R. 30	C.R. 70	C.R. 34	C.R. 90	
	Railroad	C.R. 261	C.R. 78	C.R. 12	C.R. 100	C.R. 37	Ft. Smith Blvd.	
	C.R. 249	C.R. 479	C.R. 412	C.R. 101	C.R. 68	C.R. 43	Railroad	
	C.R. 2401	C.R. 482	C.R. 42	C.R. 82	C.R. 66	S.H. 253	C.R. 1	
	Railroad	C.R. 99	C.R. 44	C.R. 103	C.R. 201	C.R. 125	C.R. 1	
	Local Road	C.R. 33	C.R. 51	C.R. 13	C.R. 71	Local Street	C.R. 5/119	
	C.R. 2	C.R. 23	S.H. 375	S.H. 248	C.R. 225	C.R. 51	C.R. 4	
	C.R. 5	C.R. 23	C.R. 54	C.R. 80	C.R. 85	C.R. 52	C.R. 4	
	C.R. 248	C.R. 32	C.R. 74	Railroad	C.R. 226	C.R. 53	Railroad	
<b>Line 2</b>	C.R. 53	C.R. 9	C.R. 21	C.R. 44	C.R. 103	C.R. 64	C.R. 126	Railroad
	C.R. 45	C.R. 13	C.R. 23	C.R. 51	C.R. 13	C.R. 64	S.H. 253	C.R. 121
	C.R. 85	C.R. 259	C.R. 31	S.H. 375	S.H. 248	C.R. 62	C.R. 28	C.R. 119
	C.R. 350	C.R. 11	C.R. 34	C.R. 54	C.R. 80	C.R. 225	C.R. 51	C.R. 5
	C.R. 70	C.R. 261	C.R. 35	C.R. 647	Railroad	C.R. 85	C.R. 52	Railroad
	Local Road	C.R. 479	C.R. 36	C.R. 74	C.R. 233	C.R. 226	C.R. 53	U.S. 64
	C.R. 2401	C.R. 482	C.R. 78	C.R. 14	C.R. 76	S.H. 252	C.R. 54	
	C.R. 236	C.R. 99	C.R. 42	C.R. 30	C.R. 78	C.R. 37	C.R. 177	
	C.R. 2	C.R. 33	C.R. 412	C.R. 12	C.R. 70	C.R. 40	C.R. 8	
	C.R. 5	C.R. 277	C.R. 43	C.R. 101	C.R. 100	C.R. 42	C.R. 90	
	C.R. 248	C.R. 31	C.R. 293	C.R. 82	C.R. 68	C.R. 43	Ft. Smith Blvd.	
<b>Line 3</b>	C.R. 58	C.R. 9	C.R. 32	C.R. 388	C.R. 78	C.R. 36	Ft. Smith Blvd.	
	C.R. 45	C.R. 257	C.R. 699	C.R. 12	C.R. 70	C.R. 34	Railroad	
	C.R. 350	C.R. 13	C.R. 34	C.R. 101	C.R. 100	C.R. 37	C.R. 121	
	C.R. 70	C.R. 259	C.R. 36	C.R. 82	C.R. 68	S.H.253 & C.R.43	C.R. 119	
	C.R. 352	C.R. 11	C.R. 78	C.R. 103	C.R. 66	C.R. 125	C.R. 4	
	Local Road	C.R. 261	C.R. 402	C.R. 13	C.R. 201	C.R. 51	C.R. 4	
	C.R. 2401	C.R. 479	S.H. 375	S.H. 248	C.R. 71	C.R. 52	S.H. 162	
	C.R. 236	C.R. 482	C.R. 56	C.R. 80	C.R. 225	C.R. 53	Railroad	
	C.R. 2	C.R. 99	C.R. 647	Railroad	C.R. 85	C.R. 54	U.S. 64	
	C.R. 5/248	C.R. 33	C.R. 74	C.R. 233	C.R. 226	C.R. 8		
	C.R. 10	C.R. 404	C.R. 14	C.R. 76	C.R. 252	C.R. 90		
<b>Selected</b>	C.R. 58	C.R. 9	C.R. 31	C.R. 293	C.R. 82	C.R. 68	S.H. 253 & C.R. 43	C.R. 119
	C.R. 45	C.R. 257	C.R. 21	C.R. 44	C.R. 103	C.R. 66	C.R. 125	C.R. 5
	C.R. 350	C.R. 13	C.R. 23	C.R. 51	C.R. 13	C.R. 201	C.R. 51	Railroad
	C.R. 70	C.R. 259	C.R. 31	S.H. 375	S.H. 248	C.R. 71	C.R. 52	U.S. 64
	C.R. 352	C.R. 11	C.R. 34	C.R. 54	C.R. 80	C.R. 225	C.R. 53	
	Local Road	C.R. 261	C.R. 35	C.R. 74	Railroad	C.R. 85	C.R. 54	
	C.R. 2401	C.R. 479	C.R. 36	C.R. 75	C.R. 233	C.R. 226	C.R. 8	
	C.R. 236	C.R. 482	C.R. 78	C.R. 14	C.R. 76	C.R. 252	C.R. 90	
	C.R. 2	C.R. 99	C.R. 42	C.R. 30	C.R. 78	C.R. 36	Ft. Smith Blvd.	
	C.R. 5/248	C.R. 33	C.R. 412	C.R. 12	C.R. 70	C.R. 34	Railroad	
	C.R. 10	C.R. 277	C.R. 43	C.R. 101	C.R. 100	C.R. 37	C.R. 121	

Source: Michael Baker Jr., Inc.

**Table 2-12  
RIVER CROSSINGS**

LINE	MAJOR DRAINAGES					
	Red River	Ouachita River	Fourche LaFave River	Poteau River	Petit Jean River	Arkansas River
<b>No-Action</b>	N/A					
<b>Line 1</b>	Carter Creek Branch Carter Creek Two-Mile Creek	Ouachita River Brier Creek Chances Creek	Fourche LaFave River Buffalo Creek	Poteau River Ross Creek Old Prairie Creek Prairie Creek Haw Creek Prairie Creek	Brushy Creek Kings Creek Rock Creek	Arkansas River Arkansas River Relief Mays Branch Frog Bayou
<b>Line 2</b>	Pepper Creek Carter Creek Branch Carter Creek Six-Mile Creek Two-Mile Creek McKinney Creek	Ouachita River Prairie Creek Brier Creek	Fourche LaFave River Buffalo Creek	Poteau River Ross Creek Old Prairie Creek Prairie Creek Haw Creek Prairie Creek	Brushy Creek Kings Creek Rock Creek	Arkansas River Arkansas River Relief Mays Branch Frog Bayou
<b>Line 3</b>	Carter Creek Branch Carter Creek Two-Mile Creek	Ouachita River Brier Creek	Fourche LaFave River Buffalo Creek	Poteau River Ross Creek Old Prairie Creek Prairie Creek Haw Creek Prairie Creek	Brushy Creek Kings Creek Rock Creek	Arkansas River Arkansas River Relief Mays Branch Frog Bayou
<b>Selected</b>	Carter Creek Branch Carter Creek Two-Mile Creek McKinney Creek	Ouachita River Brier Creek Chances Creek	Fourche LaFave River Buffalo Creek	Poteau River Ross Creek Old Prairie Creek Prairie Creek Haw Creek Prairie Creek	Brushy Creek Kings Creek Rock Creek	Arkansas River Arkansas River Relief Mays Branch Frog Bayou

Source: Michael Baker Jr., Inc.

### 2.5.1 Line 1

Line 1 remains the closest to U.S. 71 from U.S. 70 to the Wickes area. For this reason, this line would result in the most residential displacements in this area of the project and was not favored publicly. Although it is closest to the existing road, it does not provide additional access, so that the proximity is not an advantage.

Line 1 provides an interchange in the Potter Junction area, while the other lines do not, because of their distance from U.S. 71 in this reach. Line 1 is the only line that provides an interchange near the Mena Intermountain Municipal airport. Line 2 crosses at this point but does not provide an interchange. Line 3 crosses S.H. 8 and provides an interchange at a point nearly 5 kilometers (3 miles) southeast of the airport.

Line 1 is the farthest from Waldron and the U.S. 71 bypass in this area. Close proximity to Waldron was identified by local officials as extremely important for economic viability of the existing businesses in Waldron and for future development there. This proximity is viewed locally as a disadvantage of Line 1 in this area of the project.

Overall, Line 1 would result in the most residential displacements, many of which occur at the south end between DeQueen and Wickes.

### 2.5.2 Line 2

Line 2 in segment C-D is the only line which provides an interchange to serve the Cove and Hatfield areas. This distinction came as a result of the public involvement process during the Alignment Study. Line 2 originally followed the preferred corridor but was modified to turn west and provide access to this reach of U.S. 71. Slightly north of this area, Line 2 draws close into Mena at the south end of town and provides an interchange for the south Mena area. This change also was the result of early public and local official involvement. Business owners and other citizens were concerned that businesses at the south end of town would be bypassed and did not believe that the Potter Junction interchange proposed on Line 1 would provide needed access to south Mena. Line 2 was also revised at the east end of Mena as a result of public involvement. Some people involved in the Alignment Study public meetings felt that Line 1 was too close to Mena and would not allow for growth. Line 2 was therefore located as shown to attempt to accommodate this concern. The resultant access point at S.H. 88 on Line 2 is further from the city limits than Line 1, which was a concern to some business owners at this end of town.

Line 2 is the closest line to Waldron and has received the most positive feedback there. Both Lines 2 and 3 involve the relocation of S.H. 80 to remove the existing right angle bend in this

highway. The proposed interchange would be constructed along the relocated section of this state highway. This revision came as a result of public and local official involvement meetings. There was some concern that an interchange located on the east-west section of existing S.H. 80 would cause an increase in traffic past the schools in this area. Further, the proposed relocation and interchange provide the most central access to the existing businesses along the Waldron bypass.

As discussed in Section 4, Line 2 appears to impact the site of an 1863 Civil War skirmish located on Devil's Backbone Ridge. Lines 1 and 3 in this area are further west and essentially avoid this site. Also in this reach of project, Line 2 impacts a community center in Excelsior, which is housed in an old church building.

Line 2 affects the most wetlands compared to the other lines.

### **2.5.3 Line 3**

Line 3 remains primarily in forested land at the south end of the project and results in the fewest residential displacements in this reach and overall. Line 3 also has the fewest displacements in segment C-D because it traverses the Ouachita National Forest in this reach.

Line 3 provides the least access to the Cove, Hatfield and Mena areas. Because it swings southeast of Mena, it is 6.4 kilometers (4.0 miles)

from the city limits of Mena on S.H. 8. Line 3, like Line 2, is 4.2 kilometers (2.6 miles) east of Mena on S.H. 88, and may be less likely to relieve some of the traffic volumes through the city.

Line 3 follows existing U.S. 71 through Foran Gap of Fourche Mountain. The design of this reach of the proposed highway would utilize the typical section for restricted areas in order to minimize the effects on the surrounding landscape. Existing U.S. 71 would be functional from the north in order to provide access to the Ouachita National Recreation Trail. From the south, U.S. 71 would remain in service from relocated County Road 70 to about 1.5 kilometers (1 mile) north for property access. Ouachita National Forest roads in this reach would be maintained or relocated as necessary.

Line 3 between Needmore and Waldron (segment H-I) would impact a red-cockaded woodpecker inactive site west of Bruce Mountain.

### **2.5.4 I-540 Alignment**

In order to finalize and confirm all previous studies and to respond to public comments, the right-of-way requirements for I-540 as the HPC were estimated. With this information, displacements were verified in the field and wetlands were delineated. A comparative analysis of this data from the proposed U.S. 71 interchange at Rye Hill to the I-40 / S.H. 540 interchange is provided in

Table 2-13. Data for Lines 1, 2, 3 and the Selected Alignment is from the proposed interchange at U.S. 71 near Rye Hill to the northern terminus at I-40.

Table 2-13 IMPACT COMPARISON I-540 VS PROPOSED ALIGNMENTS					
	I-540	Line 1	Line 2	Line 3	Selected
Wetlands ha (ac)	6.3 (15.5)	9.5 (23.6)	11.7 (29.0)	4.2 (10.5)	4.9 (12.1)
Businesses	36	1	0	0	0
Business Park	1	0	0	0	0
Houses	102	15	20	9	11
Mobile Homes	3	1	1	3	2
Apartment Buildings	6	0	0	0	0
Church	1	0	0	0	0

Source: Michael Baker Jr., Inc.

Based on this data and the foregoing MIS and Corridor Feasibility Study, the I-540 Alignment was found to be impracticable and was not considered further. Construction of the HPC along I-540 would result in community disruption of an extraordinary magnitude and could involve greater wetland impacts.

**2.5.5 Involvement by Others in the Alignment Study**

Comprehensive involvement by the general public, local officials, and state and federal resource agencies was encouraged throughout the Alignment Study. In order to obtain the most useful comments that could be incorporated into the project plans early in the process, the following approach was used:

- Develop preliminary alignments and conduct environmental field studies
- Hold public meetings and local officials meetings to obtain comments
- Conduct field reviews of the preliminary alignments with state and federal resource agencies to obtain comments
- Consolidate comments from the above three groups
- Revise the alignments based on the comments received for consideration in the Draft EIS.

The public meetings held during the Alignment Study were specific and detailed so that residents could review the alignments with respect to property impacts, the primary public concern. Comment forms were designed to obtain specific input in the reach of the project presented at the meeting. Attendance at these meetings was excellent and many comments were received. The revisions to the preliminary alignments that resulted from the public meetings and any line preferences voiced are discussed below. Displays were provided to town halls in DeQueen, Cove, Mena, Waldron, Huntington, Greenwood, Barling and Kibler for appropriate reaches of the project. A summary of public meetings is presented in Section 8.

The local officials meetings were designed as special planning meetings with the local officials in

a specific reach of the corridor to discuss the alignments in detail. While local officials meetings on the corridor alternatives were conducted for the entire project, the meetings on the alignments concentrated on local reaches of the project to obtain specific input. Comments on the effect of the various lines on the local economy, traffic relief, planned development or consistency with development objectives were specifically sought. Connectivity of the lines with the existing roadway network was discussed in detail, as well as the relative benefits of the proposed interchange locations.

All appropriate state and federal resource agencies were invited to attend the field reviews. Agencies were aware of the issues relevant to a particular reach of the project and attended the field reviews accordingly. Detailed maps similar to those used at the public meetings were reviewed in the field with the agencies.

### ***Public Involvement***

Six public meetings were held to review the preliminary lines as follows: DeQueen, Mena (two meetings), Waldron, Fort Smith and Kibler over the months of February, March, April and May 1996.

Those attending the DeQueen meeting voiced a strong preference for Line 3 from DeQueen to Wickes because it would impact the fewest houses.

Many attendants at the first Mena meeting in March 1996 expressed strongly that the lines were too close to the city and should be pulled farther out in order to minimize displacements and so that the city can grow out towards the proposed highway rather than beyond it. Because this differed from opinions heard during the corridor public meetings, a special meeting was held in Mena in April 1996 to inform additional residents about the project and to discuss the proximity issue in detail. Comments heard at this meeting and the letters and comment forms received were reviewed and the lines were revised as described in a later section. The revised lines were sent to City Hall with comment forms to get feedback on the revisions. The majority of comments received in June 1996 seemed to revert back to the idea that the proposed highway should be close to town. There were some that expressed a preference for Line 3 that swings well outside town but most seem to prefer either the original Line 1 or the revised Line 2, both which stay relatively close to town.

Waldron residents were strongly in favor of Line 2 in Waldron because it comes the closest to the existing U.S. 71 bypass there. Minor changes were made to the preliminary lines in this area as described in a later section.

The majority of comments received at the Fort Smith meeting dealt with the Howard Hill and Rye Hill Road (County Road 8 area) crossings of the

proposed highway. A new housing development there has caused concern of citizens who wanted the proposed lines shifted east to reduce the number of houses directly and indirectly affected. The location of the lines in this area was dictated by numerous constraints on the Fort Chaffee property but some revisions were developed to respond to these comments as described in a later section. Most people preferred Line 3 in the Rye Hill area west of U.S. 71 because it is furthest west and impacts the fewest number of houses.

The Kibler meeting was well-attended and residents provided constructive comments that were used to modify Line 3 and provide an interchange to serve this area. Following this meeting, the Kibler City Council passed a resolution to this effect. A copy of this resolution is provided in Section 8.

#### ***Local Official Involvement***

Planning meetings for local officials were held from March through May 1996 in Mena, Waldron, and Barling. Officials representing the reach of the project from DeQueen to Mena met in Mena in March 1996, officials from Mena to Huntington met in Waldron in April 1996 and officials from Waldron to I-40 met at Fort Chaffee in May 1996.

The Mena meeting brought out the need to consider a Cove and Hatfield interchange as well as a connection to the south of Mena. Few felt that

the proposed Potter Junction interchange on Line 1 in this area provided adequate access for Mena or for Cove and Hatfield. Mena officials expressed preference for Line 3 through Foran Gap based on its least potential to affect the city's water supply.

The Waldron meeting centered on the interchange locations serving Waldron and the possible future expansion of the Waldron airport. The interchange and alignments proposed in the Huntington area were found acceptable.

The Barling meeting was well attended by Greenwood, Fort Smith, Van Buren and Kibler officials. The discussions here centered on the Fort Chaffee property, interchanges for Crawford County and alignment changes and interchanges for Kibler.

#### ***Agency Involvement***

Three field review meetings were held, consisting of at least two days in the field for the DeQueen to Mena, Mena to Huntington, and Huntington to I-40 reaches of the project. These trips were attended by the Arkansas Natural Heritage Commission, the Forest Service, the Corps of Engineers, the Coast Guard, and the National Guard. These meetings focused primarily on the effect of the various routes on the environmental resources and general discussions about minimization and mitigation of impacts.

The Forest Service was provided detailed maps of the preliminary alignments and provided comments on the impact to forest roads. This agency stated a preference for Line 3 through Foran Gap in Fourche Mountain because it involves the least impact to forest lands. The Ouachita National Recreation Trail in this reach was discussed as well as visual impact of the proposed highway on the surrounding forest landscape.

Locations of various species of special concern were discussed with the Natural Heritage Commission representative as sites were shown on the mapping provided for the meetings.

The alignments at the Arkansas River were discussed in detail and considerable time was spent in the field at Springhill Park discussing this area with the Corps of Engineers, the Coast Guard and the National Guard.

### ***Summary of Alignment Revisions***

The following revisions came as a result of the comments received from the public, the local officials and state and federal resource agencies and were incorporated into the alignments evaluated in the Draft EIS:

1. Revise Line 2 to come close to Cove and provide an interchange there

2. Revise Line 2 in Mena to come close to U.S. 71 south of town and provide an interchange there

3. Revise Line 3 to swing well south and east of Mena
4. Revise Line 2 in Waldron and provide a revised interchange location on relocated S.H. 80
5. Revise all lines in Waldron to provide for possible future expansion of the airport
6. Revise Lines 2 and 3 in the Rye Hill area on both sides of U.S. 71 to reduce the number of residential displacements in this area
7. Provide an interchange near S.H. 59 just north of the Sebastian-Crawford county line (north of the Arkansas River)
8. Modify Line 3 in the Kibler area to draw further east of town and connect to Line 1, as well as provide an interchange on County Road 4 just east of S.H. 162.

Other minor revisions were made to the preliminary alignments based on data collected in the field, such as to miss active gas wells, sensitive environmental areas, or to improve the geometry of the proposed highway.

## **2.6 THE SELECTED ALIGNMENT**

The Selected Alignment for the U.S. 71 Relocation is shown in Exhibit 2-4. The basis for the Selected Alignment in each segment of the project is summarized in Table 2-14 and discussed below.

<b>Table 2-14 IDENTIFICATION OF THE SELECTED ALIGNMENT</b>		
SEGMENT	SELECTED ALIGNMENT	BASIS FOR SELECTED ALIGNMENT
A-B	Line 3	Line 3 takes the fewest houses and is publicly preferred.
B-C	Line 3	Line 3 takes the fewest houses and is publicly preferred.
C-D	Line 3 / Line 2 combination	Line 3 (modified to connect to Line 2 south of point D) takes the fewest homes; impacts the fewest streams, floodplains, farmlands, and wetlands; has the fewest noise impacts, the shortest length and lowest construction costs. This line does not provide direct access to Cove but best serves the general public due to its shorter length and corresponding shorter travel time.
D-E	Line 2	Line 2 provides the best access for a moderate cost, has slightly more displacements than the other lines but the fewest floodplain impacts. Line 2 is the only line that can provide access to south Mena in this reach and therefore the only line that can serve to alleviate traffic congestion in Mena by diverting existing U.S. 71 traffic to the proposed highway.
E-F	Line 1	Line 1 provides the greatest potential of the three lines around Mena to reduce traffic congestion, provide access to the city and to promote development in accordance with Mena's Future Land Use plan. In spite of its increased residential relocations (2 additional homes and two additional mobile homes over Line 2), this line has been maintained as the Selected Alignment in order to best serve its intended purpose.
F-G	Line 1	Based on segment E-F preference, Line 1 is preferred in this segment.
G-H	Line 3	Line 3 replaces the existing route through the gap, is publicly preferred, is preferred by the Forest Service, is preferred by the City of Mena and has the least potential to affect the Iron's Fork watershed, minimizes impact to the Ouachita National Recreation Trail, and has the lowest estimated construction cost.
H-I	Line 1	Of the two lines that avoid all red-cockaded woodpecker active and recruitment areas (Lines 1 and 2), Line 1 takes fewer houses and has a similar cost to Line 2.
I-J	Line 2	Line 2 is preferred overall in Waldron by the public and local officials, has the best potential to integrate new businesses and commercial operations into the existing economic structure of the city.
J-K	Line 3	Line 3 impacts the fewest wetlands, takes the fewest houses and impacts no producing gas wells.
K-L	Line 3	Line 3 has the least impact on residential areas in this densely populated reach of the project. Line 3 is the furthest from the Devil's Backbone Ridge Civil War site which is impacted by Line 2. It also avoids the Excelsior Community Center which is impacted by Line 2.
L-M	Line 1	Line 1 takes the fewest houses in this reach which was voiced repeatedly by the public during early alignment development.
M-N	Line 2	Line 2 across the Arkansas River and Springhill Park minimizes impacts overall to park facilities and the military water obstacle training area east of the park.
N-O	Line 3	Line 3 takes the fewest houses, is publicly preferred in Kibler, is the location established in the June 3, 1996 City Council resolution and impacts the least wetland areas.

Source: Michael Baker Jr., Inc.

With the exception of following a combination of Line 2 and Line 3 in segment C-D, the location of the Selected Alignment is the same as the Preferred Alignment identified in the DEIS.

The Selected Alignment provides excellent access to most communities, an issue which was important in the corridor study. Twenty-two interchanges are proposed for the Selected Alignment, more than anticipated in the corridor study. The Selected Alignment avoids all active red-cockaded woodpecker sites, cemeteries, natural areas, and wilderness areas within the preferred corridor. Of the over 1,000 hectares (2,500 acres) of NWI (National Wetlands Inventory) wetlands within the preferred corridor, the Selected Alignment would impact only 21 hectares (51.9 acres).

The Selected Alignment results in a reduction in every impact category, when compared to the DEIS Preferred Alignment. The Selected Alignment reduces home relocations (from 86 to 81), floodplains (from 286.4 to 252.1 ac), farmlands (from 2101.2 to 2070.1 ac), noise impacts (from 234 to 211), stream crossings (from 90 to 86), and potential cultural resources impacts (60 to 58). The Selected Alignment is also shorter (from 125.3 to 122.3 miles) and has a lower estimated construction cost (from \$1.083 billion to \$1.075 billion).

### ***Segment A-B: Line 3***

Line 3 is the furthest east in the reach from U.S. 70 east of DeQueen to the King area. This line also has the fewest noise impacts than the other lines, due to its eastern location. It carries a slightly higher estimated construction cost than Lines 1 or 2 due to more mountainous terrain in the Line 3 area.

### ***Segment B-C: Line 3***

Line 3 between King and Cross Mountain provides the greatest transportation benefit to the area without undue relocation impacts. Line 3 relocates 9 homes compared to 26 and 13 on the other lines. Similar to segment A-B, it also has the fewest noise impacts. Line 3 crosses the most streams in this segment, but moving west to reduce stream crossings would take increasingly more homes. Line 3 represents the best balance between impacts to the natural environment versus the human environment.

### ***Segment C-D: Line 3 / Line 2 Combination***

Segment C-D from Cross Mountain to south Mena was the subject of debate during the preparation of the DEIS and during the comment period on the DEIS. Originally, no line was located close to Cove as the preferred corridor traveled roughly 8 kilometers (5 miles) east of Cove. Local official involvement during the Alignment Study prompted the development of a line in this area and consideration of an interchange to serve Cove and

Hatfield. The reasons cited for this were potential business decline, the need for a closer access to Cove for residents, as well as truck traffic associated with Cove and Hatfield lumber mills. This line (Line 2) was subsequently identified as the Preferred Alignment in the DEIS based on local official and public support at that time.

During the DEIS comment period, several inquiries and a petition containing over 200 signatures indicated that a large percentage of the public was not in agreement with Line 2 as the Preferred Alignment. This group commented that selecting Line 3 in the Ouachita National Forest would take substantially fewer homes, would be substantially shorter than Line 2, would not impact valuable farmland, would not cross as many streams and would cost several million dollars less. The need for an interchange to serve Cove was not discussed specifically by this group, though they did state that they disagree with the reasons given by their local officials as to the need for the line near Cove.

Prior to making the decision to select a combination of Line 3 / Line 2 in this reach, additional studies were conducted in the Cove area.

The objectives of the additional studies were to:

- assess the travel time differences for Cove and Hatfield residents and truck traffic between Line 2 and the Selected Alignment
- assess the total user cost of the proposed highway under Line 2 versus the Selected Alignment
- determine the number and type of highway-oriented businesses in Cove and Hatfield and determine the ratio of through-traffic versus local-traffic patrons
- review relevant studies to assess bypass effects on communities similar to Cove

The results of the studies follow.

#### Travel Time

Travel time for Cove and Hatfield residents would vary depending on whether their trips are destined for points north or south (Table 2-15). Hatfield residents heading north to the proposed south Mena interchange would have a longer trip if the Cove interchange on Line 2 were used compared to using existing U.S. 71 to travel to the south Mena interchange (11.2 minutes compared to 18.3 minutes). Hatfield residents heading south would have a shorter trip between Hatfield and point C under Line 2 compared to the Selected Alignment (15.2 minutes compared to 18.6 minutes).

Route Comparisons	Travel Time (Minutes)	Distance km (mi)	YEAR 2020 USER COSTS			Cost Change from Preferred to Selected
			Cars	Trucks	Total Costs	
1a. The Preferred Alignment in the Cove Area, from south of Vandervoort to the south Mena interchange.	17.3	30.3 (18.8)	\$12,338,694	\$12,150,383	\$24,489,077	<b>-\$4,000,174</b>
1b. The Selected Alignment in the Cove Area, from south of Vandervoort to the south Mena interchange.	14.5	25.3 (15.7)	\$10,325,814	\$10,163,089	\$20,488,903	
2a. From Hatfield north via Cove interchange to the south Mena interchange (Preferred Alignment).	18.3	27.5 (17.1)	Based on travel time differences, these trips would access the new highway facility at the South Mena interchange			
2b. From Hatfield north via U.S. 71 to south Mena interchange (Selected Alignment).	11.2	15.0 (9.3)				
3a. From Hatfield south via the Cove interchange to south of Vandervoort (Preferred Alignment).	15.2	22.2 (13.8)	\$567,725	\$185,694	\$753,419	<b>\$148,250</b>
3b. From Hatfield south via U.S. 71 to the S.H. 246 interchange to south of Vandervoort (Selected Alignment).	18.6	25.8 (16.0)	\$680,356	\$221,313	\$901,669	
4a. From Cove north via the Cove interchange to the south Mena interchange (Preferred Alignment).	13.4	20.8 (12.9)	\$514,453	\$168,981	\$683,434	<b>\$86,553</b>
4b. From Cove north via U.S. 71 to south Mena interchange (Selected Alignment).	16.1	21.6 (13.4)	\$581,423	\$188,564	\$769,987	
5a. From Cove south via the Cove interchange to south of Vandervoort (Preferred Alignment).	10.3	15.5 (9.6)	\$388,123	\$127,622	\$515,745	<b>\$149,774</b>
5b. From Cove south via U.S. 71 to the S.H. 246 interchange to south of Vandervoort (Selected Alignment).	13.7	19.0 (11.8)	\$502,277	\$163,242	\$665,519	

Source: Michael Baker Jr., Inc.

NOTE: User costs are based on the following data and assumptions;

1. 3,700 vehicles/day are diverted from US 71 to new highway facility.
2. 1,850 vehicles/day (50%) of this diverted volume originates from the Cove/Hatfield area.
3. Of the 1,850 vehicles/day, 925 originate in Cove and 925 originate in Hatfield; trips are split 50/50, north/south.
4. Assume 10% truck traffic on routes 2-5.

Cove residents would have a shorter trip traveling north or south if Line 2 were selected compared to the Selected Alignment (13.4 minutes for a north-bound trip to south Mena on Line 2 compared to 16.1 minutes on the Selected Alignment; 10.3 minutes for a south-bound trip to point C on Line 2 compared to 13.7 minutes on the Selected Alignment).

Lumber-related truck traffic in the Cove/Hatfield area was assessed to determine the predominant in-coming and out-going truck traffic patterns. Based on interviews with the four primary lumber-related businesses in Cove and Hatfield on truck routing information, approximately 40% of in-coming and out-going trips would be expected to benefit from an interchange at Cove that provided access to Line 2. Shipments to and from the south from both towns would benefit from Line 2, while only shipments to and from the north from Cove would show a travel time savings, based on the travel times provided above. This locally generated truck traffic currently comprises roughly 10% of the total truck traffic on this segment of U.S. 71 (110 trucks of the total 1176 trucks based on the 1995 AADT volume, see Tables 1-3 and 1-6). If the HPC were in place today, roughly 44 trucks (40%) would use the Cove interchange, with most, if not all, of the remaining 1132 trucks originating from points outside of Cove and Hatfield already diverted to the HPC. The majority of the

truck traffic would therefore divert to the proposed highway regardless of which alignment is selected.

Truck traffic on the existing route has been the subject of concern to local residents based on comments received during public meetings. Safety on the existing route, particularly through communities was specifically noted by residents. Selection of Line 2 in Segment C-D would force truck traffic through Cove and would likely affect noise levels, quality of life and could present safety problems.

#### User Cost Comparison

In order to assess the effect of the travel time differences, the annual user costs for year 2020 were calculated for HPC traffic under Line 2 and the Selected Alignment. Choosing Line 2 would result in an annual user cost increase of approximately \$4,000,000 to through travelers (Table 2-15). The annual user costs for trips originating in Cove and Hatfield destined for the HPC were calculated for Line 2 and the Selected Alignment. For year 2020, 3,700 vehicles were diverted to the HPC using diversion techniques based on travel time ratios (ITE, 1965). In order to calculate user costs, a conservative assumption that 50% of these diverted trips originated in the Cove / Hatfield area was used. It was further assumed that half of these trips originated in Cove and half originated in Hatfield. Based on the resulting trips accessing the HPC in the Cove /

Hatfield area, the Selected Alignment results in an annual user cost increase of approximately \$400,000 for these travelers. Overall, the Selected Alignment would produce a year 2020 net annual user cost savings of \$3,600,000 for this segment of the project, compared to Line 2 in this reach.

Highway Oriented Businesses

Comments received from the mayors of Cove and Hatfield cited loss of business should the HPC be constructed anywhere except Line 2. Four businesses in Cove and four in Hatfield were initially considered highway-related: six businesses with gas pumps and two restaurants. Interviews with the proprietors of each establishment revealed that all believed local customers comprised the majority of their business. Two businesses, Greg's Autoparts and Razorback Autoparts were removed from the survey list due to limited amounts of gasoline sales. Both these establishments generate the majority of their sales selling auto-parts to local customers, based on proprietor interviews. To determine the percentage of through-traffic versus local-traffic patronage, customers of the six remaining businesses (Scotty's Phillips 66, Miller's Garage, and the Hungry Hound in Cove; the City Limits Cafe, Vicky's Diner, and Don's Station in Hatfield) were surveyed between the hours of 7:00 a.m. and 8:00 p.m. from April 14 through May 3, 1997, including weekends. The results are presented in Table 2-16. Scotty's Phillips 66 in Cove and the City Limits

Cafe in Hatfield accounted for nearly 80% of the respondents. Based on survey results, it could be concluded that, should the patronage remain the same in the future, between 82 and 91 percent of the patrons would continue to obtain services at these businesses regardless of the alignment selected for the HPC.

	Number	% of Total
Local Customers	428	82
Local Through Traffic (Trips from Mena to Vandervoort, Wickes, Hatton, Grannis, Gillham and DeQueen)*	47	9
Regional Through Traffic	49	9
Total Surveyed	524	100

\*Travelers may or may not use HPC for trip

Relevant Bypass Studies

Since the construction of the interstate system in the United States, the topic of economic decline due to bypassing communities has received considerable attention. Many studies have been conducted to attempt to assess this impact. More than twenty studies were reviewed to determine if a correlation between studied effects and future effects on Cove and Hatfield could be made.

These studies suggest:

- ❑ Several factors play a role in whether or not a community experiences economic decline, including community size, distance to interstate, distance to a larger community, diversity of businesses, local industry, competition with other communities, and the willingness of the community residents and leaders to exploit new opportunities (Erion and Mitchell, 1966; Sanders, 1972; Studer and Bootsma, 1972; Vockrodt, 1972; Iowa Department of Transportation, 1992; Wisconsin Department of Transportation, 1988)
- ❑ Economic impacts of bypasses on communities of similar size, type and distance from a highway bypass are not uniform and in most cases appear to be minor or short term in nature (Anderson et al., 1993; Buffington et al., 1967, Missouri State Highway Department, 1960; Otis and Anderson, 1995)
- ❑ Many external factors may contribute to the economic impact of a bypass on communities such as the health of the regional and national economy; other regional or national initiatives, both public and private, such as the opening or closing of a plant or the opening or closing of a government facility; the growth or decline of a particular industry (steel, lumber, automotive,

poultry) (Erion and Mitchell, 1966; Anderson et al., 1993; Liff et al., 1996)

- ❑ Bypass impacts to individual highway-oriented businesses (service stations and restaurants) may be positive or negative depending on the percentage of local patronage business, the age and physical condition of the business facility (old or modern), and the characteristics of the owner and manager (Buffington 1966a,b; Oklahoma Department of Transportation, 1964; Sanders, 1972)
- ❑ Bypasses reduce the volume of through traffic, including truck traffic, on the old route which relieves congestion, improves safety, and is generally viewed as a positive economic effect by most communities (Anderson et al. 1993; Buffington, 1968; Missouri Department of Transportation, 1960; Wisconsin Department of Transportation, 1988; Otis and Anderson, 1995; Vockrodt, 1968; Sanders, 1972; Studer and Bootsma, 1972).

The most recent and comprehensive study conducted on bypass impacts of rural communities and urban areas of less than 50,000 people was completed by the Transportation Research Board in May 1996 (Liff et al., 1996). Liff et al. surveyed U.S. and Canadian departments of transportation to obtain bypass studies and conducted a subsequent review of agency-supplied studies and other published literature. More than 190 studies

were reviewed. The author concluded that while there is some evidence of business decline on bypassed routes, the overall assessed impacts are limited or inconclusive. Furthermore, most studies reviewed suggest that bypasses have a favorable impact on rural communities. Interviews and surveys of bypassed residents and businesses indicate that bypasses increase development potential along the new highway and due to traffic diversion, relieve congestion and increase safety along the old route. Competition from other communities and general changes in economic conditions make it difficult to identify a bypass as the sole cause of declining business sales on the bypassed route.

Specific studies on communities similar in size to Cove and Hatfield are limited. In addition, many of the studies reviewed stated that economic impacts of bypasses on communities of similar size, type and distance from highway are not uniform and are related to a number of factors specific to each individual community. Erion and Mitchell (1966) studied five communities, three of which were similar in size to Cove and Hatfield (Populations 397, 604, and 940). The authors found a wide range of effects depending on the nature of the community, the strength of local industry, and the reaction of the community to the bypass. Some business decline was noted in one community, another remained stable, and one viewed the

bypass as an overall opportunity for growth and expansion.

The Iowa Department of Transportation (1992) found in a study of 85 bypassed communities that the effect of the bypass on communities between 500 and 2,000 people will depend on local factors such as type of community (bedroom town or isolated community), traffic mix (local vs. through traffic), and location of businesses. This study found while service stations, restaurants, and motels are likely to experience some decrease in sales, many will find that the total volume of business from through traffic is very small in comparison to overall sales. Service stations which do more than just sell gas experienced little or no noticeable decrease in overall sales. Restaurants that have a good local reputation draw a very high percentage of business from local people and a bypass has a minimal effect on this business group.

Sanders' (1972) study of Interstate 35 in Oklahoma reported varying bypass effects on three small communities (Populations 262, 320, and 330). These communities did not possess an expanding economy at the time of the study and the interstate was neither beneficial nor detrimental to their economies. The study found that food businesses were not effected in any community, but gasoline sales decreased in one community. One community retained the same number of retail

establishments over the entire twelve year study period, indicating that I-35 was not harmful to the economy.

In summary, Cove and Hatfield would likely follow trends observed in numerous bypass studies. The Cove and Hatfield communities do not currently possess a measurably expanding economy and the proposed highway would likely be neither beneficial nor detrimental to their overall economies. Highway-oriented businesses may be slightly affected, however, the patronage survey conducted found that the majority of customers were of local origin. This would indicate that the total volume of business for the surveyed establishments from through traffic is small in comparison to overall sales, and would be similarly affected by any alignment location of the HPC. Both Cove and Hatfield would likely benefit from the removal of through traffic, especially truck traffic, from existing U.S. 71. Further, because Cove and Hatfield are primarily bedroom communities with most residents working and shopping in surrounding larger communities, little negative economic effect on their economy is expected. Based on these results, the decision to use a combination of Line 3 and Line 2 in Segment C-D was made final.

#### Segment C-D Conclusion

By following Line 3 and crossing over to Line 2 just south of point D, access can be provided to south

Mena (in segment D-E). This combination of Line 3 and Line 2, as shown in Exhibit 2-4, results in a Selected Alignment that provides the greatest benefit to all users of the proposed highway, is preferred by a portion of the public in Cove and Hatfield, and impacts the fewest homes, floodplains, farmlands, and streams. The Selected Alignment also has the fewest noise impacts and lowest construction cost of the alignments considered in this segment.

#### **Segment D-E: Line 2**

Line 2, the Selected Alignment, is the only line that can provide access to south Mena which was agreed upon as important by the local officials and the public who had been involved in the study. Although this line takes 3 more homes (one house and two mobile homes), a business, the Elks Club, and impacts more wetlands and farmlands, it is the only line that meets the local objectives for access and traffic relief. The Elks Club may be avoided during the final design phase of the project. A final determination on the possible impacts to this building cannot be made until that time. The Selected Alignment has the fewest noise impacts and floodplain impacts and carries a moderate construction cost.

#### **Segment E-F: Line 1**

The Selected Alignment in this segment is Line 1 with an interchange added at S.H. 8. This alignment has the greatest potential to alleviate

traffic in Mena. Diversion of traffic depends heavily on travel time. In general, the closer the proposed highway is to Mena, the shorter the length and the shorter the travel time to use this route rather than existing routes. The need to alleviate local traffic congestion along the existing route was a stated purpose and need for the project. In order to best satisfy this need, the Selected Alignment does not minimize impacts in all categories, primarily relocations (Selected Alignment - 15, Line 2 - 9, Line 3 - 4, respectively). Because it is the shortest, Line 1 is also the least costly in segment E-F.

**Segment F-G: Line 1**

This decision is dependent upon the decision in segment E-F, as discussed above. The additional wetland impacts and residential relocations that result are necessary to best satisfy the need to improve traffic flow in Mena.

**Segment G-H: Line 3**

The Selected Alignment follows the existing route through Fourche Gap. This location was preferred by the public, local officials and resource agencies, including the Ouachita National Forest. This line crosses the most streams and affects the most farmland, but does not cut through undeveloped areas of the forest. It has the shortest length in the Irons Fork watershed, similar to the existing route, with the least potential to affect the water quality of Irons Fork Lake. The Selected Alignment also

minimizes impact to the Ouachita National Recreation Trail.

**Segment H-I: Line 1**

The Selected Alignment avoids all red-cockaded woodpecker (RCW) active, inactive and recruitment areas, the main issue in this segment. Line 1 takes fewer houses than Line 2, the only other line that avoids the above noted RCW sites and has the lowest estimated construction cost.

**Segment I-J: Line 2**

The Selected Alignment in the Waldron area is Line 2, which has been agreed upon by most, if not all, involved persons. Although this line takes more homes (11 versus 7) and has more noise impacts (9 versus 4 and 1), it is the consensus that this line has the greatest potential to merge any highway-induced development into the existing economy of the Waldron area.

**Segment J-K: Line 3**

Line 3 impacts the fewest houses and no producing gas wells, has the fewest noise impacts and lowest wetland impacts, and is moderate in terms of farmland and floodplain impacts. However, public comment in this area suggested that Line 1 at the northern half of this segment may impact fewer homes than Line 3 (between the two crossings of existing U.S. 71). An analysis of this suggestion did not prove to be true, but an alignment shift will be considered during final

design of this reach to further minimize residential relocations if possible.

**Segment K-L: Line 3**

The Selected Alignment is the furthest west in this densely populated reach of the project as it nears the Fort Smith urban area. High residential relocations resulting from early alignment development prompted the development of Line 3. As a result, Line 3 has the least relocation and noise impacts. Further, Line 3 is the only line for which a "no adverse effect" finding on the Devil's Backbone Ridge Civil War Skirmish has been determined by the Arkansas Historic Preservation Program. The Selected Alignment in this segment involves slightly more floodplain impacts but similar impacts to farmlands and streams.

**Segment L-M: Line 1**

Many comments from the public were received on this segment during the Alignment Study, though few comments were received on the DEIS for this area. It appears that the revisions made to the preliminary lines are acceptable to the public. The Selected Alignment was shifted as far east as possible in order to reduce residential relocations. This was limited by the requirement to remain west of Donahoe Ridge once inside Fort Chaffee. The Selected Alignment therefore takes the fewest homes and has moderate overall impacts to wetlands, farmlands and floodplains.

**Segment M-N: Line 2**

Intensive and ongoing coordination with the Fort Chaffee Redevelopment Authority, the Arkansas Army National Guard, the U.S. Army Corps of Engineers, the Coast Guard and the Fort Chaffee Military Reservation, as well as the U.S. Army Reserve Command, has resulted in a consensus on the Selected Alignment in this segment of the project. Many issues were vital in the highway's location including minimizing impacts to Springhill Park, avoiding the Military Water Obstacle Training Area, and avoiding the Fort property deemed essential by the Base Realignment and Closure findings of 1995. A resolution passed by the FCRA is included in Section 8.

**Segment N-O: Line 3**

The Selected Alignment takes the fewest homes, impacts the least wetland area and has minimal noise impacts. All lines in this segment have high floodplain impacts as the proposed highway crosses the Frog Bayou floodplain in order to tie into the S.H. 540 / I-40 interchange. Nearly 50% of the floodplain impacts on the entire project occur in this segment. However, in order to best provide continuity of the High Priority Corridor, these impacts must occur. All required design measures will be undertaken during final design so as not to increase the risk of flooding to adjacent properties. Local floodplain ordinances will be adhered to as the project proceeds.

The Selected Alignment:

- best meets the project purpose and need
- provides excellent access to most communities
- has the greatest potential to alleviate traffic congestion and safety problems on existing U.S. 71
- minimizes impacts overall
- has a moderate estimated construction cost
- best balances the benefits expected from the project with the overall impacts.

## Section 3: AFFECTED ENVIRONMENT

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### 3.1 SOCIAL AND ECONOMIC ENVIRONMENT

The social characteristics of the study area are typical of rural America. Many small towns ranging in population from 200 to 2,000 are scattered along the route, many associated with railroad stops along the Kansas City Southern lines. As the railroads declined and the U.S. highway system was improved, some of these towns became located off the main throughway, while still others "relocated" themselves to U.S. 71. A handful of larger cities have thrived along U.S. 71, with populations over 2,000 including DeQueen, Mena and Waldron.

The communities which are closer to Fort Smith and Van Buren, while still rural in origin are in a somewhat transition period as the urban area expands southward. These communities include Greenwood, the Rye Hill area and Jenny Lind.

Patterns of development in the smaller communities consist of business establishments, churches and other facilities located directly on U.S. 71, or very close to U.S. 71. These areas may function as centers of activity for some residents, though in most cases, residents travel to nearby larger communities for most services as well as for employment. The residential areas are scattered and not well-defined in most areas, consisting of larger tracts of land, that in some

cases are in active agricultural use. In the communities with populations over 2,000, a well-defined city exists, with businesses, schools and churches also located along intersecting streets. Residential development is found along the city streets, such as in Mena, Waldron and DeQueen, which then thins out to a more typical rural development pattern beyond the city limits. In these larger cities, the city center functions as a high activity center for residents as well as residents of surrounding areas.

Development patterns in and near the preferred corridor in Sebastian and Crawford counties are rural in nature, although these are adjacent to the urban centers of Fort Smith and Van Buren. Residential development becomes denser as the preferred corridor nears Fort Smith, then again becomes dispersed in southern Crawford County.

The activities driving the economy of the rural area include poultry and livestock production, forestry products, and tourism. These activities are a direct function of the raw materials and land present in the study area, as well as the mountainous topography. Several manufacturing operations (clothing and consumer products, aircraft refurbishing and electrical motors) are also present. The poultry industry employs persons in raising chickens on individual farms as well as

employing over 8,000 persons from the area in processing and packaging plants. Livestock and chicken production are often joint farming operations, although many sole livestock operations, several very large, are present. Tourism is centered in Mena around the Rich Mountain National Recreation Area, the Ouachita National Forest, and Queen Wilhelmina State Park. Tourism-related businesses mainly involve the provision of lodging and services for tourists engaged in sightseeing and recreational activities.

Fort Smith and Van Buren have diverse economies, with their industries driven primarily by access to Interstate highways and the available labor force. As a result, retail, manufacturing, medical, transportation, financial, insurance and real estate activities are present here. Hundreds of businesses exist, with locations throughout the cities, and in the industrial parks parallel to I-540 and I-40. These enterprises employ thousands from the study area, as well as from Oklahoma, many of whom travel up to 80 kilometers (50 miles) one way to work.

Some of the largest employers in each county through which the project passes are listed below:

- ❑ Pilgrim's Pride, Poulan and Weyerhaeuser in DeQueen, Sevier County

- ❑ Aalf's, Walmart, and U.S. Electrical Motors in Mena and Tyson Foods, Inc., in Grannis, all in Polk County
- ❑ Tyson Foods, Inc. in Waldron, Scott County
- ❑ Baldor Electric Company, Gerber Products Company, Holt Krock Clinic, James River Corporation, OK Foods, Inc., Rheem Air Conditioning, Riverside Furniture Company, Sparks Regional Medical Center, St. Edward Mercy Medical Center and The Trane Company in Fort Smith and Whirlpool Corporation in Greenwood, all in Sebastian County
- ❑ Simmons Food, Inc. and Tyson Foods, Inc. in Crawford County.

Housing in the preferred corridor consists primarily of widely dispersed single family homes and some mobile homes. Typical houses are frame construction, although one-story brick and stone houses are not uncommon. These are typically the newer homes in the preferred corridor, constructed within the last twenty to thirty years. Some newer housing developments are present, such as in Mena, Waldron and the Rye Hill area. Early farmsteads are solely of frame construction. The 1990 median value of a housing unit in the preferred corridor ranges from \$34,100 in Scott County to \$48,600 in Sebastian County.

Tables 3-1, 3-2 and 3-3 present population, employment and housing data for the study area that are relevant to the above discussions.

## 3.2 ENVIRONMENTAL JUSTICE

### 3.2.1 Identification of Minority and Low-income Populations

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations" was issued by President Clinton on February 11, 1994. The purpose of this EO is to promote non-discrimination in federal programs which affect human health and the environment, and to provide minority communities and low-income communities access to information on, and the opportunity for public participation in proposed federal actions.

Information obtained from the Census Bureau (Block Numbering Area Level) was examined to determine the presence of minority or low income populations that may be affected by the proposed highway. Prior to the identification of a preferred corridor, minority and low income populations were identified in the northwest portion of Fort Smith. As a result, two early public meetings (October 4, 1995 and November 15, 1995) were held at Sutton Elementary School in that area of Fort Smith. This location was more easily accessible to these populations. The preferred corridor does not pass through any part of Fort Smith, so these populations, while still informed about the project,

would not be directly affected. Also in the early public involvement process, local officials from the study area were asked to identify any pockets of minority or low-income populations in their locales. None were identified.

Census data was examined further for the portions of each county through which the alternative alignments pass and is discussed in Section 4.

### 3.2.2 Public Outreach

The public involvement program for this project was extensive, and is described throughout this document relative to a particular phase of study (Section 2), as well as being summarized in Section 8. Public information on the project was available at no charge and without discrimination. The manner in which meetings were publicized, particularly through announcements at elementary schools, were designed to reach every segment of the population. Public meetings were held at convenient times and because of their workshop style, could be attended at any time throughout the evening. Further, informational materials were provided to easily reached city halls throughout the study area for those residents who were not able to attend during evening hours. All facilities used for public meetings were public buildings and handicapped accessible.

State, County or Community	Total Population		
	1980	1990	Change
Arkansas	2,286,435	2,350,725	3%
Sevier Co.	14,060	13,637	-3%
Polk Co.	17,007	17,347	2%
Scott Co.	9,685	10,205	5%
Sebastian Co.	95,172	99,590	5%
Crawford Co.	36,892	42,493	15%
<i>County Totals</i>	<i>172,816</i>	<i>183,272</i>	<i>6%</i>
DeQueen	4,494	4,633	3%
Gillham	252	210	-2%
Grannis	349	507	45%
Wickes	464	570	23%
Vandervoort	98	111	13%
Cove	391	346	-11%
Hatfield	410	414	1%
Mena	5,154	5,475	6%
Waldron	2,642	3,024	14%
Mansfield	1,000	1,018	2%
Huntington	662	715	8%
Greenwood	3,317	3,984	20%
Van Buren	12,020	14,979	25%
Fort Smith	71,026	72,798	2%

Source: U.S. Department of Commerce - Bureau of the Census - 1980 & 1990, Census of Population and Housing- General Population Data, Arkansas State Data Center - Population

<b>Table 3-2 EMPLOYMENT AND INCOME DATA</b>						
	<b>Employed Persons over 16</b>			<b>Median Family Income</b>		
	<b>1980</b>	<b>1990</b>	<b>Change</b>	<b>1980</b>	<b>1990 in 1980 \$</b>	<b>Change</b>
<i>Arkansas</i>	875,733	994,289	14%	\$14,641	\$15,152	3%
<i>Sevier Co.</i>	5,461	5,926	9%	\$14,726	\$17,342	18%
<i>Polk Co.</i>	5,837	6,841	17%	\$12,052	\$12,712	5%
<i>Scott Co.</i>	3,333	4,176	25%	\$10,666	\$12,050	13%
<i>Sebastian Co.</i>	40,841	46,226	13%	\$16,524	\$17,342	5%
<i>Crawford Co.</i>	14,506	18,095	25%	\$14,740	\$14,553	-1%
<i>County Totals</i>	69,978	81,264	16%	\$13,742	\$14,800	8%

Source: U.S. Department of Commerce - Bureau of the Census - 1980 & 1990, Census of Population and Housing- General Economic Characteristics

<b>Table 3-3 HOUSING DATA</b>						
	<b>Total Housing Units</b>			<b>Median Value</b>		
	<b>1980</b>	<b>1990</b>	<b>Change</b>	<b>1980</b>	<b>1990 (in 1980 \$)</b>	<b>Change</b>
<i>Arkansas</i>	898,593	1,000,667	11%	\$31,100	\$46,300	49%
<i>Sevier Co.</i>	5,527	5,880	6%	\$24,300	\$35,000	44%
<i>Polk Co.</i>	6,998	7,732	10%	\$24,300	\$36,300	49%
<i>Scott Co.</i>	3,836	4,485	17%	\$21,500	\$34,100	59%
<i>Sebastian Co.</i>	39,130	43,621	11%	\$31,500	\$48,600	54%
<i>Crawford Co.</i>	13,763	16,711	21%	\$27,900	\$43,500	56%
<i>County Totals</i>	69,254	78,429	13%	N/A	N/A	N/A

Source: U.S. Department of Commerce - Bureau of the Census - 1980 & 1990, Census of Population and Housing- General Housing Characteristics

### 3.3 LAND USE

The preferred corridor crosses Sevier, Polk, Scott Sebastian, and Crawford Counties. Land use within these counties is dominated by forest and agricultural land. Residential development varies

from urban community concentrations to widely scattered rural residences. Table 3-4 shows the major land uses in each of the above counties.

County	Cropland			Grassland			Forest			Urban			Other			Total	
	ha	ac	%	ha	ac	%	ha	ac	%	ha	ac	%	ha	ac	%	ha	ac
Sevier	983	2,428	0.6	48,492	119,822	32.0	98,471	243,318	65.0	0	0	0.0	3,574	8,832	2.4	151,520	374,400
Polk	955	2,359	0.4	32,882	81,251	14.8	183,656	453,808	82.5	2,429	6,003	1.1	2,824	6,979	1.3	222,746	550,400
Scott	0	0	0.0	48,972	121,008	21.1	183,304	452,938	78.9	0	0	0.0	0	0	0.0	232,276	573,946
Sebastian	7,953	19,652	5.7	57,944	143,178	41.7	52,982	130,917	38.1	15,255	37,694	11.0	4,953	12,239	3.6	139,087	343,680
Crawford	8,709	21,520	5.5	42,863	105,912	27.3	90,633	223,950	57.7	7,377	18,228	4.7	7,581	18,733	4.8	157,163	388,343

Source: ACOE, 1988. Arkansas River Basin  
 ASWCC, 1987. Upper Ouachita Basin  
 USDA, 1987. Red River Basin

Sevier County is dominated by forest predominantly owned and/or operated by the Weyerhaeuser Corporation. These forests are intensively managed for timber production. Agricultural operations on pastureland include the production of poultry, swine, and cattle. The largest community in this area is DeQueen, situated just west of the southern terminus of the preferred corridor.

Polk County is also dominated by forest and pastureland. Forest land accounts for over 80% of the land use in this county and includes both Ouachita National Forest and privately owned land. Most of this forest land is commercially managed

for timber production. Other land uses include poultry, swine, and cattle production as well as mineral extraction at the Hatton Quarry. Mena is the largest community in Polk County and contains a variety of residential and commercial land uses including the Mena Intermountain Airport. Subtle land use changes have begun to occur in this area as former pasture and forest land is converted to residential home sites. Other communities in Polk County include Hatfield, Cove, Wickes and Grannis.

Scott County is dominated by forest and pastureland. Forest land comprises over 75% of the county land use. Most of this land is part of the

647,500 hectare (1.6 million acre) Ouachita National Forest and is commercially managed for timber production. Pastureland is used primarily for raising livestock. Poultry operations also exist in this area and a major poultry processing plant exists in Waldron, the largest community in Scott County. Over the past several years, new commercial development in Waldron has centered on the U.S. 71 bypass. Land use has changed in this area from vacant pastureland to commercial enterprises including restaurants, motels, gas stations, and retail shopping centers. Other residential and commercial development is dispersed along the existing county road network and in downtown Waldron along U.S. 71 Business.

Southern Sebastian County is characterized by oak/pine forests and pasturelands. Several poultry operations, a dairy farm, and two ostrich ranches are found in this area. Communities in southern Sebastian County include Huntington and Mansfield. In general, residential development is associated with the county road network, but in recent years additional residential streets and some subdivisions have been established in the Rye Hill area. Land use north of the Rye Hill and Greenwood communities is dominated by the Fort Chaffee Military Reservation which is a mixture of bottomland forests, open grassland, upland forest and developed military infrastructure. The towns of Barling and Fort Smith adjoin the base to the west

and contain a variety of residential, commercial, and recreational development. The Arkansas River forms the border between Sebastian and Crawford counties.

Land use in the Crawford County area is characterized by cropland and pastureland. Remnant bottomland forests remain scattered along the Arkansas River and its tributaries. Communities in this area include Alma and Kibler. Other residential development is dispersed along the established network of county roads.

### **3.4 PHYSIOGRAPHY AND GEOLOGY**

The preferred corridor lies within two distinct physiographic provinces; the Interior Highlands and the Gulf Coastal Plain (Exhibit 3-1). The preferred corridor crosses two regions of the Interior Highlands Province: the Arkansas Valley Region and the Ouachita Mountain Region. Each province displays a terrain with distinctive bedrock structure.

#### **3.4.1 Arkansas Valley Region**

The northern portion of the preferred corridor lies within the Arkansas Valley Region. This region lies north of the Arkansas River in Crawford County and extends south to the Poteau River in Scott County near Waldron. This area contains a major sedimentary basin of bedrock that forms a transition zone between the mountains within the Ozark Plateaus Region to the north and the Ouachita Mountains to the south.

Bedrock exposed within the Arkansas Valley Region predominantly consists of geologic formations comprised of sandstones and shales. Coal beds and numerous natural gas fields are also present within this region.

Structure of the underlying bedrock was derived from compressional forces from the south that pushed the bedrock northward creating a series of east-west trending ridges. The intensity of these forces dissipated as they moved northward towards Backbone Mountain in Sebastian County. As a result, the landscape north of this mountain is characterized by gentle folds and rolling topography, while bedrock south of the mountain is characterized by folding similar to the more rugged Ouachita Mountains.

### **3.4.2 Ouachita Mountain Region**

The Ouachita Mountain Region encompasses the preferred corridor from the Poteau River at Waldron to northern Sevier County. This region is further divided into three subprovinces, the Fourche Mountains to the north, the Novaculite Uplift in the center and the Athens Plateau to the south (Arkansas Geologic Commission (AGC), 1959). The entire area consists either of mountains, intermountain valleys, or piedmont from which mountains have been carried away by erosion (Fenneman, 1938).

#### ***Fourche Mountains***

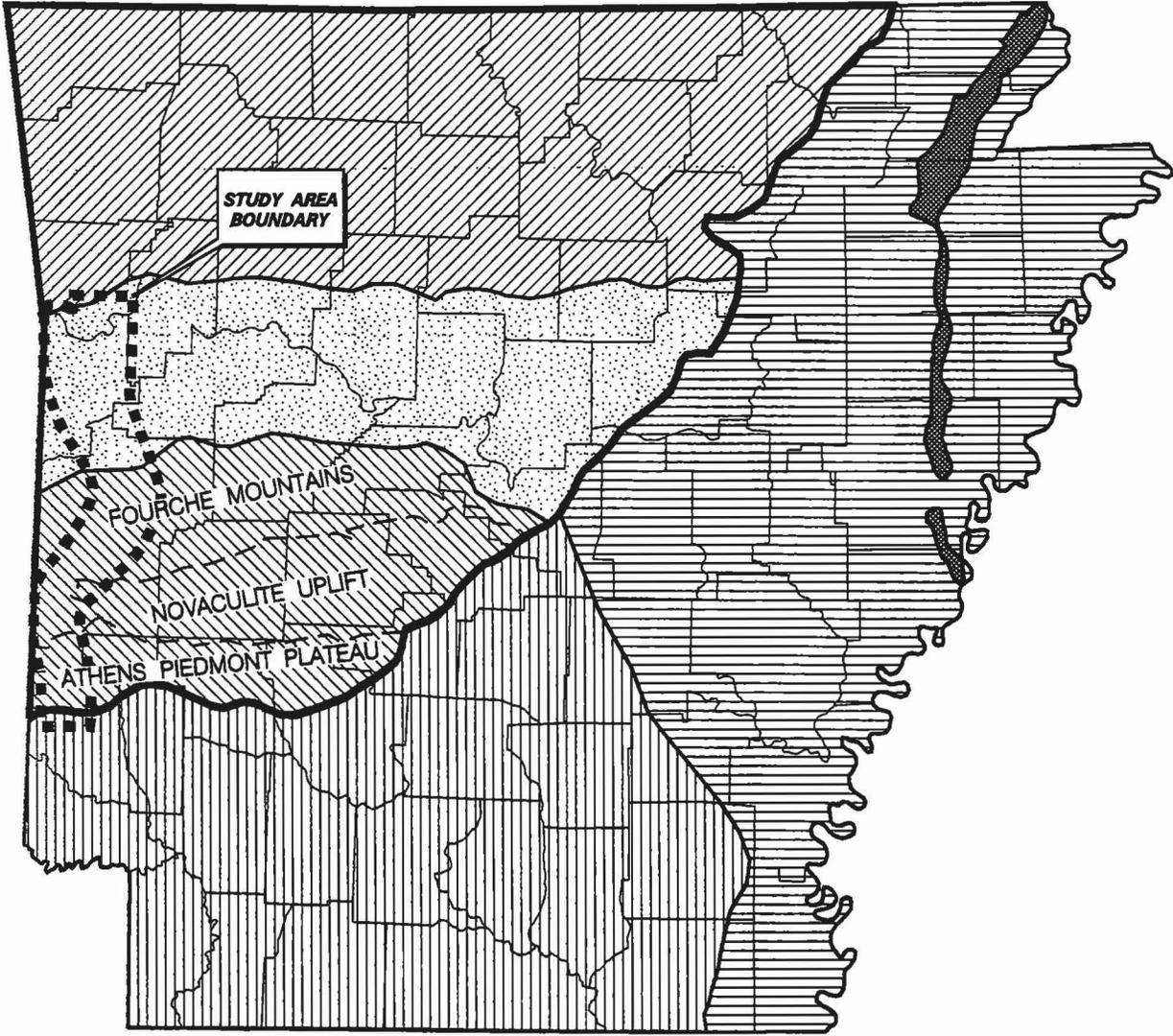
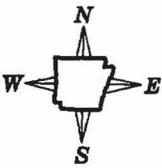
The preferred corridor enters the Fourche Mountains subprovince south of Waldron and extends to Potter Mountain in Polk County, except for passing through a portion of the Novaculite Uplift south of Mena.

Bedrock within this subprovince consists of sandstones and shales. The structure of the bedrock is dominated by tight folds resulting in rugged ridges with sharp, narrow crests. Tremendous compressive forces in this region squeezed rocks into half their original width (Albin, 1965).

#### ***Novaculite Uplift***

The preferred corridor passes through Dallas, Potter, and Cross Mountains which are all located within the Novaculite Uplift subprovince. Cross Mountain marks the southern boundary of this subprovince.

Bedrock within the Novaculite Uplift is characterized by high ridges composed of Arkansas Novaculite. Novaculite is being actively mined in this region at Cross Mountain.



**LEGEND**

-  INTERIOR HIGHLANDS PROVINCE
-  MISSISSIPPI RIVER ALLUVIAL PLAIN PROVINCE
-  GULF COASTAL PLAIN PROVINCE
-  OZARK PLATEAU REGION
-  ARKANSAS VALLEY REGION
-  OUACHITA MOUNTAINS REGION
-  CROWLEY'S RIDGE REGION

U.S. 71 RELOCATION DeQueen to I-40		
<b>Exhibit 3-1</b> <b>PHYSIOGRAPHIC PROVINCES</b> <b>OF ARKANSAS</b>		
Baker	NOT TO SCALE	

Structurally, the rocks in the western frontal Ouachita Mountains are intricately folded and mildly to severely sheared producing rugged and steep east-west ridge and valley topography.

### ***Athens Plateau***

The Athens Plateau is the southern most subdivision of the Ouachita Mountains and extends to the town of Pullman, just north of DeQueen. The Athens Plateau is dominated by east-west ridges and intervening valleys that decrease in height toward the south and provide a nearly plateau-like appearance.

Bedrock found within this region includes both shales and sandstones. The sandstones within the region weather easily and are only exposed in low-lying areas.

### **3.4.3 Gulf Coastal Plain Province**

The Gulf Coastal Plain Province extends from the town of Pullman, south beyond U.S. 70 at DeQueen. Bedrock within this province is composed of a combination of clay, sand, gravel, and limestone. The northern boundary of this province is identified by the exposure of the Trinity Formation. This formation contains the only limestone unit that outcrops within the preferred corridor.

The DeQueen limestone outcrops in an east-west band extending from U.S. 70 near Avon and continues to the Cossatot River. Whenever

limestone bedrock is encountered, the potential for the formation of karst terrain exists. Karst terrain is made up of a landscape and its subsurface and is characterized by surface water flow and groundwater flow through caves or other dissolutionally enlarged cavities, and a variety of distinctive surface landforms and hydrologic features (Quinlan, 1992). Limestones are hard sedimentary rocks, but are subject to chemical weathering due to the presence of carbon dioxide flowing through the groundwater system.

Surface expression of karst is not evident within the outcrop band of DeQueen limestone in the preferred corridor. The amount of clay present within the Trinity Formation appears to have reduced groundwater flow and dissolution of the limestone.

## **3.5 EARTH RESOURCES**

Earth resources are a direct result of the geologic history of the area. Within the preferred corridor, natural gas and coal deposits are found within sedimentary rocks located in extensive subsurface areas. The compressive forces that formed the Ouachita Mountains also altered and deformed the bedrock to form deposits of minerals such as Arkansas Novaculite.

### **3.5.1 Natural Gas**

Natural gas was first discovered in the Arkansas Valley in 1887 in Fort Smith, but no commercial

production existed until 1902 when two wells were brought in near Mansfield in Sebastian County (AGC, 1959). Two types of natural gas have been extracted in Arkansas; dry gas and wet gas. Gas within the Arkansas Valley is of the dry gas type and does not contain the quantity of heavier fluid hydrocarbons associated with wet gas.

Natural gas wells are present within the preferred corridor and penetrate lands from S.H. 378 in Scott County to Interstate 40 in Crawford County. These wells vary in depth depending on the geologic formation penetrated. Fourteen gas fields have been identified within the preferred corridor.

### **3.5.2 Coal**

Interest in coal mining in the Arkansas Valley began to increase in 1887 when the St. Louis and San Francisco Railway was extended south to Fort Smith. Extensive mining operations were started in 1888 at Huntington, Hackett, Jenny Lind, Paris, Charleston, Scranton, and other localities in the Arkansas Valley and eventually resulted in permanent residential settlements at these locations (AGC, 1959). Both underground and surface mining techniques were utilized in these areas depending on the geologic structure and thickness of the coal deposits. Underground mining of coal in western Arkansas ceased in the late 1970's. No active surface coal mines currently exist within the preferred corridor.

In Sebastian County, the Lower Hartshorne Coal has been mined extensively by both underground and strip mining techniques. Several areas of past mining activity were identified within the study area in Sebastian and Scott counties. Evidence of abandoned strip and underground mines was found along Mine 18 Road, County Road 54, S.H. 10, County Road 43, and S.H. 378.

The Mine 18 Road site is an abandoned strip mine located approximately 210 meters (700 feet) to the west of Mine 18 Road near the community of Rye Hill. Mine spoil piles are present at this mine site. No evidence or reports of reclamation activity were observed in this area.

The County Road 54 site is located at the outcrop of the Lower Hartshorne Coal along the northern side of Long Ridge. In the early to mid 1940's, this outcrop was strip mined and the western portion, about 365 meters (1200 feet), was used as a dump site for local industry. This dump site is now known as the Industrial Waste Control (IWC) Superfund site. The strip mine extended from the western edge of the Superfund site eastward approximately 550 meters (1800 feet). Underground mining of the Lower Hartshorne Coal has also occurred in this area where the coal bed dips to the north from Long Ridge. This operation extended north to a point about 600 meters (1970 feet) south of Rye Hill.

The S.H. 10 site is located between S.H. 10 and Devil's Backbone Ridge near the town of Excelsior. Abandoned strip mines of the Lower Hartshome Coal outcrop to the south of S.H. 10. In addition to strip mining, underground mining of the Lower Hartshome Coal in this area extends beneath Griffith Mountain. No evidence or reports of reclamation activity were observed in this area.

The County Road 43 site is located north and south of County Road 43 between Griffith Mountain and the northwestern flank of Devil's Backbone Ridge and contains both abandoned strip and underground mines. Two portions of this strip mined area have been reclaimed, one in the late 1970's and the other in the early 1990's (Gaston, 1996).

Two abandoned strip mine sites are located along the northern and southern sides of S.H. 378. The northern site is approximately 1.4 kilometers (0.8 miles) to the east of County Road 64 in Scott County. Mining was concluded at this site in the spring of 1995. Results of the acid base accounting analysis conducted at the site indicates that there is a 3 to 4 foot thick layer of shale above the coal that was found to be acidic (Gaston, 1996). This site is in the early stages of reclamation. As of June 1996, problems had been encountered concerning revegetation and surface water quality. A sedimentation pond located at the site was leaking water with high iron content.

Arkansas Department of Pollution Control and Ecology (ADPC&E) officials at the Russellville Department of Mining and Reclamation indicated that the source of the high iron was coming from the pond bank. Efforts are being taken to remediate the leaking by placing a bentonite layer in the pond to reduce leakage.

The southern S.H. 378 site extends approximately 1.0 kilometers (0.6 miles) to the west and 355 meters (1165 feet) to the east of the intersection of S.H. 378 and County Road 64. No reclamation activity has been reported for this area.

### **3.5.3 Arkansas Novaculite/Hatton Tuff**

Within the preferred corridor, Arkansas Novaculite and Hatton Tuff are currently being mined at the Hatton Quarry by Meridian Aggregates along Cross Mountain south of Vandervoort. The western edge of the preferred corridor crosses property that is under lease by Meridian. The quarry employs about 50 people and generates about 1 million tons a year (Lacke, 1996). Long range plans for the quarry includes continued mining operations eastward toward the Cossatot River.

Arkansas Novaculite is a hard sedimentary rock composed of microcrystalline quartz. The novaculite formation is 76 to 274 meters (250 to 900 feet) in thickness and consists of novaculite, shale, and conglomerate. Finished novaculite is used as an oilstone or whetstone for the

sharpening of tools and fine surgical instruments (AGC, 1959). It can also be used for road building and railroad ballast.

Also of economic importance, is the mining of Hatton Tuff. Tuff is a "pyroclastic" rock formed from the deposition of tiny ash-sized fragments ejected from a volcanic eruption millions of years ago. Tuff can be used as construction stone or material for the production of special cements.

### **3.6 WATER QUALITY**

#### **3.6.1 Surface Water**

The preferred corridor traverses portions of three river basins; the Arkansas River Basin, Ouachita River, and Red River Basin (Exhibit 3-2). Most of the preferred corridor is underlain by sedimentary bedrock predominantly composed of sandstone and shale. The large amount of shale material within these basins contributes clay particles to the overlying streams, often resulting in a slightly cloudy or milky appearance. Soil erosion is also common within the basins and is exacerbated by inadequate erosion and sedimentation control measures associated with land use practices. Turbidity, as a result of the combination of these two factors, is an ongoing water quality concern in all basins.

The Arkansas Department of Pollution Control and Ecology has been conducting a surface water monitoring program of Arkansas rivers and streams

for more than 20 years to establish background levels and baselines of water quality. In 1982, the department reevaluated its goals and selected high quality least impaired reference stream segments to be monitored. The result of this monitoring is to provide a long term chemical database by physiographic region in order to evaluate future water quality changes (ADPC&E, 1994). However, the amount of water quality data specifically within or near the preferred corridor is extremely limited. Only one water quality monitoring station was identified in the preferred corridor (ADPC&E, 1994). Although one station is helpful to characterize surface water quality on a local basis, it is not adequate to characterize surface water quality for multiple drainage areas.

To broadly assess existing surface water quality, a summary is provided for the Arkansas River, Upper Ouachita, and Red River Basins based on information contained in the Arkansas State Water Quality Plans (Arkansas River Basin, 1987; Upper Ouachita Basin, 1987; Red River above Fulton Basin, 1987) and ADPC&E's Water Quality Inventory Report (1994).

#### ***Arkansas River Basin***

Within the preferred corridor, the Arkansas River Basin includes the counties of Crawford, Sebastian, and Scott and occupies an area of 26,959 square kilometers (10,409 square miles) regionally. Major tributaries to the Arkansas River

in this area include Frog Bayou, Little Vache Grasse Creek, Poteau River, Ross Creek, and the Fourche LaFave River.

Stream velocities in the Arkansas River Basin are rapid in the outlying mountainous regions, but slow as the tributaries approach major outlets located within flatter topographic settings. Most stream flow occurs primarily after rainfall events with little base flow. Water quality varies throughout the basin with forested areas having the highest water quality and generally declining as water flows through pasture and cropland areas.

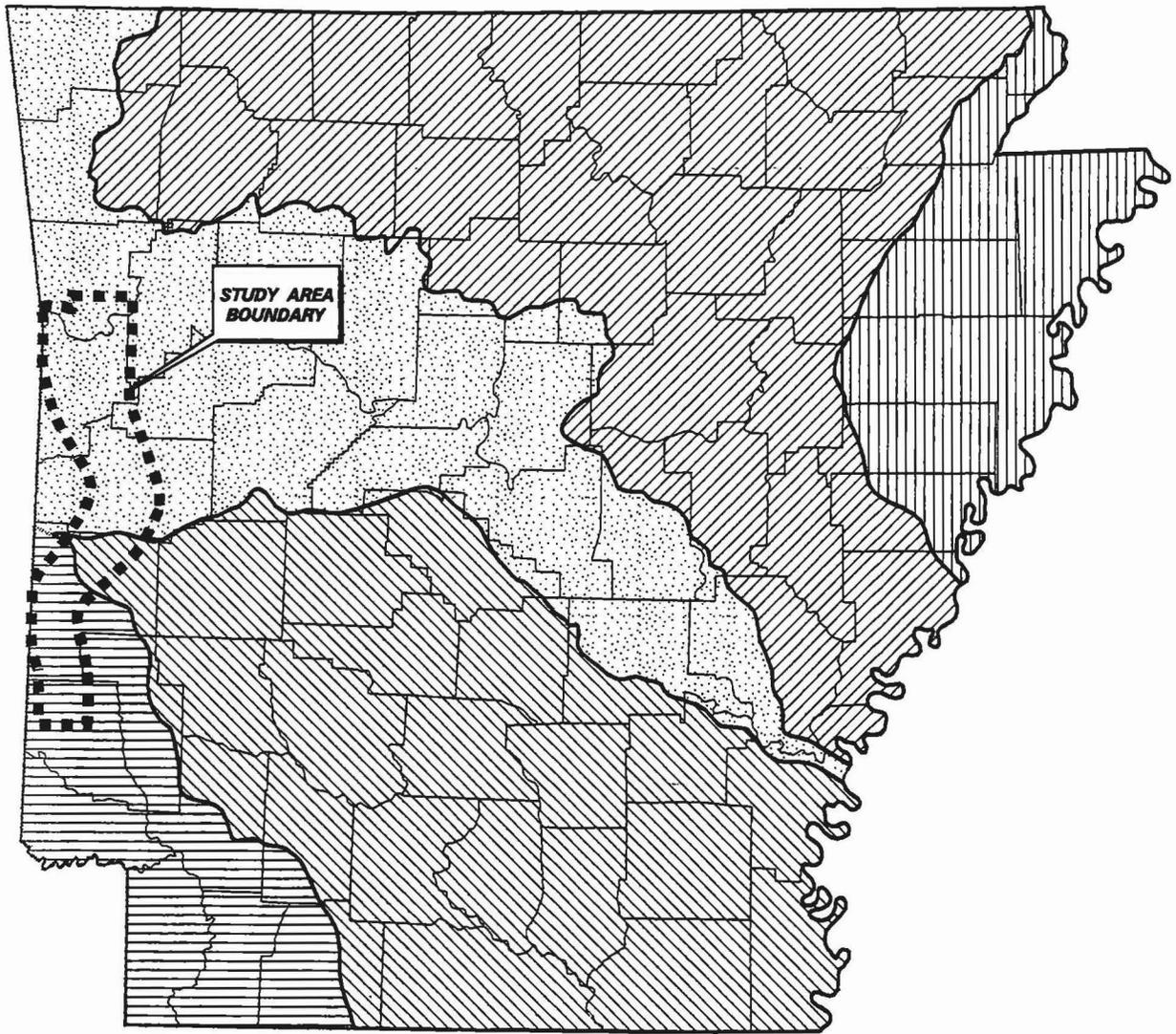
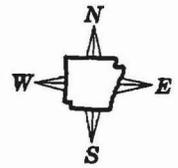
One water quality monitoring station near the northern portion of the preferred corridor is located at the confluence of Lee Creek and the Arkansas River at Van Buren. Data indicates that on average the river does not meet the state standards for turbidity. Sources of sediment are primarily from sheet and rill erosion associated with agricultural and timber practices (ACOE, 1988).

Two water quality monitoring stations are located outside the preferred corridor near Waldron on the Poteau River. Waters within this area were listed as not supporting aquatic life predominantly due to excessive turbidity (ADPC&E, 1994). Additionally, the Poteau River below Waldron is listed as not supporting drinking water use due to high nutrient concentrations where nitrate readings exceed the 10 ppm limit (ADPC&E, 1994). High nitrate

concentrations can likely be attributed to regional poultry and cattle production.

### ***Upper Ouachita Basin***

Within the preferred corridor, the Upper Ouachita Basin encompasses the northeastern portion of Polk County. All tributaries that drain into the Ouachita River are included in this basin. Regionally, this basin is approximately 14,012 square kilometers (5,410 square miles) in area. Major tributaries to the Ouachita River in this area include Irons Fork Creek, Prairie Creek, Chances Creek, Carter Creek, Dallas Creek, and Gap Creek. Gap Creek is a tributary to Irons Fork Reservoir, which supplies water to the town of Mena. Portions of the Ouachita River are designated as an Ecologically Sensitive Waterbody (ADPC&E, 1991) east of the S.H. 88 bridge crossing. The upper Ouachita River, from the headwaters to Lake Ouachita (135 kilometers, or 84 miles), is on the registry of Arkansas Natural and Scenic Rivers and is listed on the Nationwide Rivers Inventory. The preferred corridor crosses the upper Ouachita between the S.H. 88 bridge crossing and the County Road 76 bridge crossing north of Mena. No studies for National Wild and Scenic River status are currently being conducted for the upper Ouachita River. Coordination with the National Park Service has been initiated regarding this resource (see Appendix C).



**LEGEND**

-  RED RIVER BASIN
-  OUACHITA RIVER BASIN
-  ARKANSAS RIVER BASIN
-  WHITE RIVER BASIN
-  ST. FRANCIS RIVER BASIN

U.S. 71 RELOCATION DeQueen to I-40	
<b>Exhibit 3-2</b> <b>ARKANSAS RIVER BASINS</b>	
Baker	NOT TO SCALE
	

Streams within the Upper Ouachita Basin generally have steep gradients causing runoff to crest and recede rapidly. This often results in flash flooding events after periods of heavy rainfall. Steeper gradients can also produce higher stream velocities, which affect the streambed substrate by scouring, cutting channels and changing the features of the physical habitat (ADPC&E, 1987). Water quality within this basin is generally good with concentrations of most constituents within expected ranges and therefore, streams in the basin support most beneficial uses (ASWCC, 1987).

One water quality monitoring station is located within the preferred corridor along Prairie Creek southeast of Mena. Water quality at this station is within state standards with the exception of turbidity. Surrounding agricultural practices and urban development may be factors contributing to the elevated turbidity levels in this area. While turbidity levels remain a concern in this area, water quality overall is generally good and trends seem to indicate a continued improvement (ADPC&E, 1994).

### ***Red River Basin***

The Red River Basin extends from south of Potter Mountain in Polk County to beyond the southern terminus of the preferred corridor at U.S. 70 in DeQueen. Regionally, the Red River Basin above Fulton, Arkansas consists of about 5,895 square

kilometers (2,276 square miles) in area. Major tributaries within the preferred corridor include Wilson Creek, Pepper Creek, Bear Creek, Carters Creek, Six Mile Creek, Cow Creek, Thompson Creek, Two Mile Creek, and Mill Creek.

Runoff characteristics within the basin vary as the topographic relief changes from the steep mountainous terrain of the Ouachita Mountains to the gently rolling terrain of the western Coastal Plain (USDA, 1987). Within Polk and Sevier counties, water quality is reported to be fair overall with some stream segments displaying signs of agricultural nonpoint source pollution such as elevated nutrient and sediment levels resulting from timber practices and poultry and swine production (USDA, 1987). No water quality monitoring stations are located within or near the preferred corridor that would provide additional or more site specific information for this basin.

### **3.6.2 Groundwater**

Residents in rural areas beyond municipal water service limits depend on groundwater as their source of water. Wells are typically installed in the first water-bearing rock formation encountered during drilling. These wells can range in depth from shallow to very deep depending on the local geology and surrounding topography. Groundwater quantity is controlled by the number of fractures, joints, and bedding planes within a water-bearing formation that is penetrated by a

water well. Within the study area, groundwater is primarily obtained from sandstones.

Groundwater quality depends on topographic location, type of bedrock through which the groundwater flows, and land use activities. Wells located on sandstone ridges tap relatively pure groundwater. This water has not been in the groundwater flow system long enough to accumulate dissolved mineral matter. Wells penetrating shale valleys obtain water that has been in the groundwater system longer, allowing the accumulation of dissolved minerals such as iron and sulfate. Agricultural activities that produce nutrient laden runoff are more likely to affect wells in this type of topographic setting.

### ***Arkansas Valley Region***

The majority of the preferred corridor in this region is underlain by sandstones and shales. Alluvium, consisting of stream and floodplain deposits, is the principal aquifer along the Arkansas River (Tanaka and Hollowell, 1966). Existing records show that at some places wells can be developed with yields of greater than 32 liters per second (500 gallons/minute) (Baker, 1955).

Outside the Arkansas River floodplain, most wells yield less than 0.6 liters per second (10 gallons/minute) of hard or very hard calcium-bicarbonate water, suitable for most uses, but varying with location and rock type (USGS, 1990).

In most areas, the quality of water from these rocks is well within the established drinking water limits (USGS, 1990). However, hardness and concentrations of nitrate, iron, chloride, sulfate, and dissolved solids can exceed allowable limits in localized areas (ASWCC, 1988).

### ***Ouachita Mountain Region***

Groundwater availability and quality within the Ouachita Mountain region is similar to that found within the Arkansas Valley Region. Most of the units yield from 0.1-0.4 liters per second (2-7 gallons/minute) with some producing up to 22 liters per second (350 gallons/minute) depending on local topography and geology (ASWCC, 1987). Groundwater quality information within this region is very limited. Available data suggests that water quality is highly variable. Groundwater quality is typically higher toward recharge areas and lower in discharge areas. Water drawn from discharge areas tends to have a higher concentration of dissolved mineral matter, resulting from a greater period of time flowing through the groundwater system.

### ***Gulf Coastal Plain***

Within the study area, the Trinity Group predominantly consists of cross-bedded sand, gravels, and variegated clays. The upper sand unit of this formation is the principal source of groundwater (Counts, 1982). Only the areas containing significant amounts of sand or gravel

yield water to wells in this region (USDA, 1987). The limestone units of this formation apparently do not supply water to wells. This is likely due to the amount of clay within the Trinity Group that could limit the transmission of water through the formation.

Groundwater from these rocks is a mixture of sodium and calcium bicarbonate water types and is adequate for farm and domestic uses (ASWCC, 1987).

### **3.6.3 Public Water Supply**

The Arkansas Department of Health was contacted to identify the location of any sole source aquifers or wellhead protection areas within the study area. Identification and protection of sole source aquifers and wellhead protection areas are required by the Safe Drinking Water Act of 1986. No sole source aquifers have been declared within the state of Arkansas. Currently, no wellhead protection areas are located within the study area and no future plans to establish any are anticipated (Cordova, 1995).

Seven surface water sources are used as public water supplies within the study area; the Cossatot River, Gillham Lake, Irons Fork Reservoir, Lake Waldron, Square Rock Lake, Greenwood City Lake, and James Fork Lake. Irons Fork Reservoir is the only surface water source used as a public water supply within the preferred corridor.

The Cossatot River crosses U.S. 70 in DeQueen about 11 kilometers (7 miles) to the east of the intersection of U.S. 71 and U.S. 70. DeQueen uses the Cossatot River as a public water supply. The headwaters of the Cossatot River begin about 16 kilometers (10 miles) east of Cove and flow southward. The preferred corridor is located west of the Cossatot River. At its nearest point, the preferred corridor is approximately 6 kilometers (4 miles) from the Cossatot River east of Gillham.

Gillham Lake is located about 6 kilometers (4 miles) east of Grannis on the eastern edge of the study area. The Cossatot River flows into Gillham Lake. The towns of Gillham, Grannis, Wickes, Vandervoort, Cove, and Hatfield purchase water from the Gillham Regional Water District which withdraws water from Gillham Lake. Each town maintains their own water system and storage tanks. The preferred corridor is located approximately 5 kilometers (3 miles) west of Gillham Lake.

Irons Fork Reservoir is used by the City of Mena as its public water supply. The Freedom Water Association purchases water from the City of Mena and provides water to the towns of Rocky, Shady Grove, and Potter. This reservoir is located about 3 kilometers (2 miles) northeast of Mena. The western part of the reservoir lies within the far eastern portion of the preferred corridor.

Lake Waldron and Square Rock Lake are utilized as public water supplies for the City of Waldron. Lake Waldron is located about 5.5 kilometers (3.5 miles) northeast of Waldron while Square Rock Lake is located along U.S. 71 about 7 kilometers (4.5 miles) north of Waldron. The preferred corridor is located to the west of both lakes.

James Fork Lake is controlled by the South Sebastian Water Association and is used as a source of water for Sebastian County residents south of Fort Smith, excluding Greenwood. James Fork Lake is located about 3 kilometers (2 miles) south of S. H. 96 and southwest of Mansfield at the base of Poteau Mountain. The preferred corridor passes about 15 kilometers (10 miles) to the northeast of James Fork Lake.

Greenwood City Lake is used as a public water supply for the City of Greenwood and the community of Shadow Lake. The lake is located about 3 kilometers (2 miles) east of U.S. 71 and 1.5 kilometers (1 mile) south of Greenwood. The preferred corridor passes about 6 kilometers (4 miles) to the northeast of Greenwood City Lake.

### 3.7 FLOODPLAINS

The protection of floodplains and floodways is required by Executive Order 11988, *Floodplain Management*; U.S. DOT Order 5640.2, *Floodplain Management and Protection*; and 23 CFR 650. The intent of these regulations is to avoid or

minimize highway encroachments within the 100 year (base) floodplains, where practicable, and to avoid supporting land use development which is incompatible with floodplain values.

Flood Insurance Rate Maps and Flood Hazard Boundary Maps were obtained for counties within the study area. Within the preferred corridor, the largest floodplain areas occur along the Ouachita River in Polk County, along the Arkansas River in Sebastian and Crawford counties, and along Frog Bayou in Crawford County. These areas are characterized by relatively large expanses of land with gradual topographic gradients adjacent to existing waterways. During periods of highwater, floodplains serve to moderate flood flow, provide water quality maintenance, act as areas for ground water recharge, and serve as temporary habitat for a number of plants and animals.

### 3.8 WETLAND COMMUNITIES

To help slow and minimize wetland losses nationwide, Executive Order 11990 (EO 11990, May 1977) entitled, "Protection of Wetlands", established a national policy to "avoid to the extent possible the long-term and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." Wetlands within or near the preferred corridor have been evaluated in accordance with EO 11990.

Wetlands are defined by the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (EPA, 40 CFR 230.3 and COE, 33 CFR 328.3).

Potential wetland areas were initially identified using both National Wetland Inventory (NWI) mapping and 1" = 3,000' scale black and white 1994 aerial photography. NWI mapping is prepared from color aerial photography and is based on discerning the differences in color and texture of dominant vegetative classes. This mapping provided a broad overview of potential wetland areas within the study area. Based on NWI information, the preferred corridor offered the greatest wetland avoidance opportunities. Photointerpretation of black and white photography allowed the identification of smaller wetland areas not detected by the NWI mapping within the preferred corridor.

Soil survey information from Sevier, Polk, Scott, Sebastian, and Crawford County Natural Resources Conservation Services (NRCS) was reviewed to determine areas containing hydric soils. Large areas of hydric soils that did not

correspond to NWI or photointerpreted wetland information were further investigated in the field.

In addition, NRCS offices were contacted to obtain information on farmed or prior converted wetlands. Farmed wetlands are wetland areas that have been manipulated and used to produce an agricultural commodity prior to December 23, 1985, but continue to be seasonally flooded for at least 15 consecutive days during the growing season once every two years. These wetlands still meet the COE wetland delineation criteria. Coordination with NRCS identified no farmed wetlands in the preferred corridor.

Prior converted (PC) cropland identifies wetland areas that have been drained, filled, or manipulated before December 23, 1985 for the production of an agricultural commodity and have not been abandoned. NRCS identified several areas in Sebastian and Crawford counties as prior converted wetlands. These areas have been drained or altered to control the site hydrology, continue to be used for production of agricultural crops and as such, are not regulated as wetlands by the COE.

Using the above information, potential wetland areas within the alignment construction limits or within 100 meters (330 feet) of the construction limits were field verified using the methods outlined in the Corps of Engineers *Wetlands Delineation*

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Using the above information, potential wetland areas within the alignment construction limits or within 100 meters (330 feet) of the construction limits were field verified using the methods outlined in the Corps of Engineers *Wetlands Delineation*

*Manual* (COE Manual, January, 1987). Wetland identification was based on the presence of hydrophytic vegetation, hydric soils and evidence of wetland hydrology. Based on the field assessment, wetland boundaries were delineated on 1" = 300' scale project mapping and entered into the project's Geographic Information System (GIS). An attempt was made to contact all landowners before entering property to conduct field work. When property owners could not be reached or permission was denied, wetland boundaries were based on photointerpretation. The Corps of Engineers was consulted regularly throughout the wetland delineation efforts in addition to their attendance at field reviews during the Alignment Study. The Corps has reviewed and approved the wetland determination forms for the wetlands impacted by this project.

Wetlands were classified as herbaceous, scrub-shrub or forested wetlands based on dominant vegetative characteristics (Cowardin et al., 1979). Wetlands were generally located in depressional upland areas, on broad upland flats between mountain ridges, or were associated with stream or river systems. In addition, beaver dam building activity has created additional ponded water areas along stream channels that has provided favorable hydrology for wetland development.

Soils associated with these wetlands generally consisted of silty clays that reduce soil permeability

and result in poor drainage. Most wetland soils were dark gray with distinct yellowish-brown mottles in the upper 51 centimeters (20 inches). These characteristics are indicative of hydric soils (COE, 1987). Due to these soil conditions, wetland areas remained inundated or saturated for long periods after heavy rains.

A functions and values evaluation of the three main wetland types (herbaceous, scrub-shrub, forested) was conducted based on FHWA's Wetland Evaluation Technique (WET) (Adamus et al., 1991). An overview of this evaluation procedure and the results of the analysis are presented in Appendix D. Representative photographs of each wetland type are shown in Exhibit 3-3.

Herbaceous wetlands typically occur on land that was previously cleared for agriculture, and is now primarily pastureland for cattle. This wetland type was the most prevalent within the preferred corridor. Due to consistent cattle grazing and periodic haying, wetland vegetation may be visible for only brief periods during the year.

Herbaceous wetland vegetation within the preferred corridor consists primarily of a mixture of grasses, sedges and rushes. Species identification was difficult in some areas due to heavy cattle grazing. Typical herbaceous species identified include soft rush (*Juncus effusus*), drooping bulrush (*Scirpus pendulus*), shallow sedge (*Carex*

*lurida*) smartweed (*Polygonum* spp.), spike rush (*Eleocharis* spp.), buttercup (*Ranunculus* spp.) and cattail (*Typha latifolia*).

As described previously, the herbaceous wetlands observed in this area are generally small and occur in conjunction with active pastures. As such, little vegetative cover remains for wildlife foraging or cover. However, during spring and early summer, rainwater can be trapped in areas for extended periods of time due to low soil permeability. These ephemeral wet areas can be used by a number of toad, frog and salamander species for breeding purposes.

Scrub-shrub wetlands occur on pastureland as well as along stream and river systems. These areas are often associated with both herbaceous and forested wetlands. Common shrub species observed include black willow (*Salix nigra*), buttonbush (*Cephalanthus occidentalis*), alder (*Alnus serrulata*) and elderberry.

Forested wetlands are located mainly along larger stream and river drainages. Several forested wetlands were also observed as isolated woodlots within pasture areas that had not previously been cleared due to drainage problems. Typical canopy species observed include willow oak (*Quercus phellos*), water oak, green ash, river birch, sycamore, eastern cottonwood and red and silver maple. The majority of forested wetlands within

the preferred corridor have been previously logged and now consist primarily of second or third growth trees ranging from approximately 25 to 65 centimeters (10 to 25 inches) in diameter.

Forested and scrub-shrub wetlands are generally diverse vegetative communities that provide habitat for a wide array of vertebrate species. Common mammalian species using these areas include the beaver (*Castor canadensis*), (*Ondatra zibethica*), mink (*Mustela vison*), white-tailed deer, turkey and raccoon. Birds associated with these habitats include warblers, vireos, thrushes, blackbirds wading birds, and waterfowl. These areas are also used by many species of frogs, turtles and salamanders.

### 3.9 TERRESTRIAL COMMUNITIES

Vegetative communities within the state of Arkansas range from swamp and bottomland hardwoods to upland oak-hickory-pine forests to grassland prairies. Over 2,500 species of plants contribute to the diversity of these community types (Smith, 1988). Vegetation within the study area can be divided into three broad forest types; Loblolly/Shortleaf Pine/Hardwood, Upland Hardwood, and Bottomland Hardwood (Exhibit 3-4).



Herbaceous Wetland (Grazed)



Herbaceous Wetland (Ungrazed)

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 3-3**  
**TYPICAL WETLANDS WITHIN**  
**THE PREFERRED CORRIDOR**

Baker

SHEET 1 OF 2



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Scrub-Shrub Wetland



Forested Wetland

U.S. 71 RELOCATION  
DeQueen to I-40

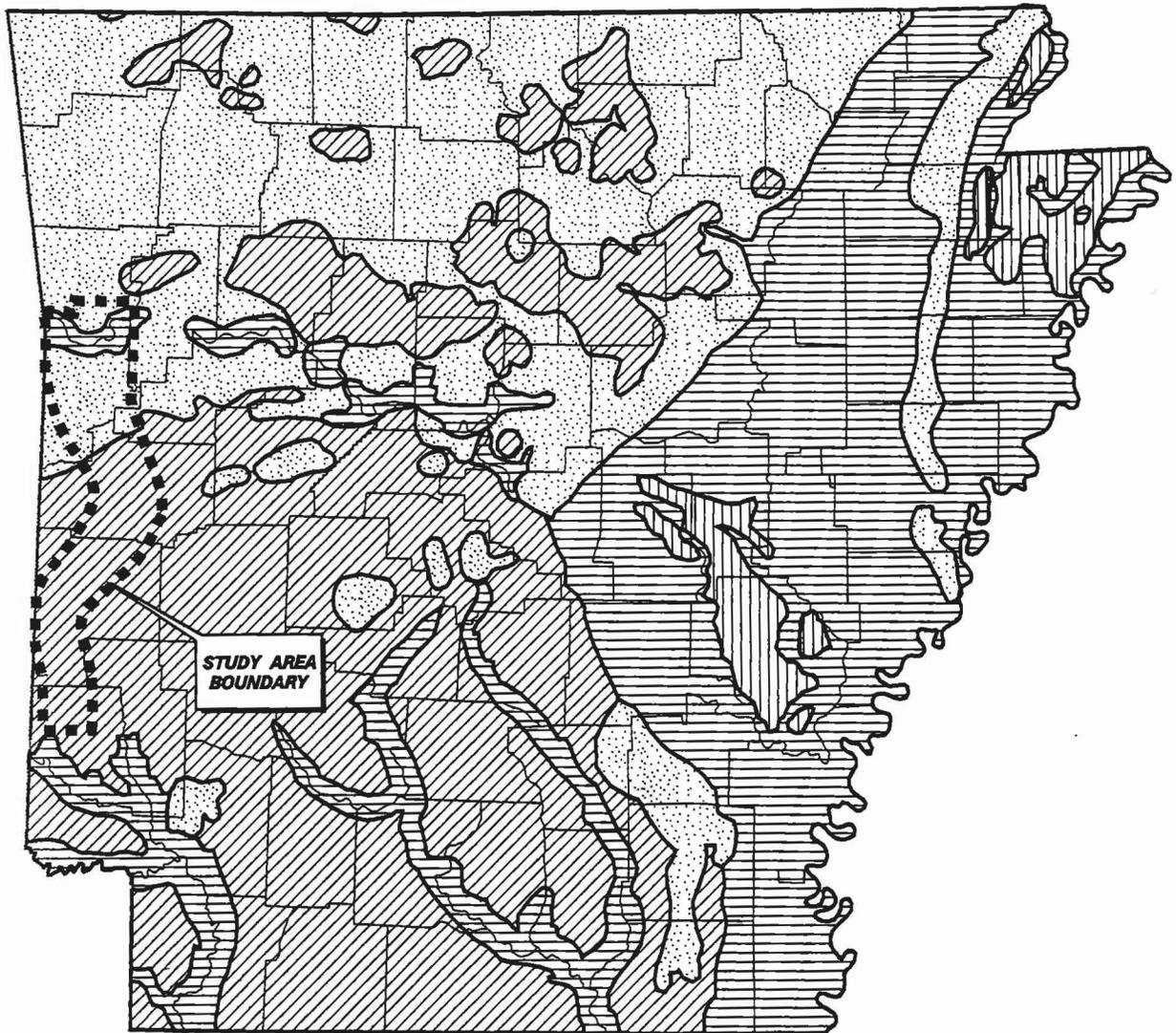
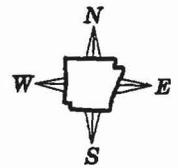
**Exhibit 3-3**  
**TYPICAL WETLANDS WITHIN**  
**THE PREFERRED CORRIDOR**

Baker

SHEET 2 OF 2



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LEGEND

-  LOBLOLLY-SHORTLEAF PINE-HARDWOOD
-  UPLAND HARDWOOD
-  BOTTOMLAND HARDWOOD
-  PRAIRIE OR NON-TYPED AREAS

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 3-4  
FOREST TYPES  
OF ARKANSAS**

Baker

NOT TO SCALE



In addition to these forest communities, several other distinct terrestrial community types occur within the study area; pasture-old field, timberlands and croplands.

Wildlife communities are an important ecological, economical, and recreational resource of Arkansas. A diverse array of wildlife species occur within the terrestrial habitats described above. Lists of mammals (Sealander and Heidt, 1990), birds (James and Neal, 1986), reptiles and amphibians (Conant and Collins, 1991) likely to occur within or near the preferred corridor are included in Appendix E.

### 3.9.1 Forests

The Loblolly-Shortleaf Pine-Hardwood forest type dominates the study area within Sevier, Polk and Scott counties. Within the Ouachita Mountains, the east-west orientation of the principal ridges results in greatly varying temperature and humidity conditions on the mountain slopes (Sealander and Heidt, 1990). The north facing slopes are typically cooler and moister and support more mesic upland oak-hickory forests, while the south facing slopes are warmer and drier and support pine dominated forests.

The Upland Hardwood forest type is found within Sebastian and Crawford counties. This forest type is dominated by a combination of oak and hickory species with pine present on drier sites. Actual

compositions of overstory and understory species vary with differing moisture regimes found throughout the study area.

With the exception of loblolly pine (*Pinus taeda*) which is found mainly south of the Ouachita Mountains, both forest types contain similar tree species. Shortleaf pine (*Pinus echinata*) is found in both forest types, but is predominant in Polk and Scott counties. Other important tree species within these areas include a variety of oaks and hickories such as white oak (*Quercus alba*), southern red oak (*Quercus falcata*), post oak, (*Quercus stellata*), blackjack oak (*Quercus marilandica*), black oak (*Quercus velutina*), black hickory (*Carya texana*), mockernut hickory (*Carya tomentosa*), and shagbark hickory (*Carya ovata*) as well as sassafras (*Sassafras albidum*), black gum (*Nyssa sylvatica*), and winged elm (*Ulmus alata*). Common understory species include flowering dogwood (*Cornus florida*), blueberries (*Vaccinium* spp.), serviceberry (*Amelanchier arborea*), yaupon (*Ilex vomitoria*), southern blackhaw (*Viburnum rufidulum*), poison ivy (*Toxicodendron radicans*), japanese honeysuckle (*Lonicera dioica*) and greenbrier (*Smilax* spp.).

Bottomland Hardwood forest is found along the Arkansas River and its tributaries in both Sebastian and Crawford counties. Common tree species in this area include eastern cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanica*),

river birch (*Betula nigra*), sugarberry (*Celtis laevigata*), silver maple (*Acer saccharinum*), red maple (*Acer rubrum* var *rubrum*), boxelder (*Acer negundo*), sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*) and American hornbeam (*Carpinus caroliniana*). Understory species include elderberry (*Sambuca canadensis*), elm (*Ulmus* spp.), poison ivy, rough-leaved dogwood (*Cornus drummondii*), rattan vine (*Berchemia scandens*) and greenbrier.

A wide range of wildlife species are present within the upland and bottomland forests which still dominate much of western Arkansas. Forest big game species include white-tailed deer (*Odocoileus virginianus*), eastern wild turkey (*Meleagris gallopavo*) and black bear (*Ursus americanus*). Important small game and furbearing mammals include the fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*), coyote (*Canis latrans*) and raccoon (*Procyon lotor*). Other common mammalian species include the nine-banded armadillo (*Dasypos novemcintus*) and opossum (*Didelphis virginiana*). Forest dwelling small mammals of mice, moles, and shrews provide a valuable food resource for larger forest predators such as the coyote, red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Felis rufus*), and mink (*Mustela vison*).

Forest birds include a variety of warblers, wrens, thrushes, vireos, flycatchers and woodpeckers.

Forest raptors include the great horned owl (*Bubo virginianus*), barred owl (*Stryx varia*), cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), and red-shouldered hawk (*Buteo lineatus*).

Amphibians and reptiles are also important members of the forest community and play a role in nutrient recycling, predator-prey relationships, and energy flow (Green and Pauley, 1987). The presence of forest floor litter such as decayed logs, flat rocks, fallen limbs, and leaf material is an important habitat component, providing foraging cover and daytime refugia for many of species including the box turtle (*Terrepena* spp.), and a number of woodland salamanders (*Plethodon* spp.).

### 3.9.2 Pasture-Old Fields

Previously forested portions of all counties within the preferred corridor have been cleared and now consist of pasture-old field communities. Pasture areas are primarily used for raising livestock and/or growing forage crops to feed livestock. Pasture lands generally consist of a variety of native and cultivated grasses and legumes such as little and big bluestem (*Andropogon scoparius* and *Andropogon gerardi*), indian grass (*Sorghastrum* spp.), bahagrass (*Paspalum notatum*), tall fescue (*Festuca arundinacea*), clover (*Trifolium* spp.), goldenrod (*Solidago* spp.), broomsedge (*Andropogon virginicus*) and lespedeza

(*Lespedeza* spp.). Old field communities contain similar herbaceous species with the addition of blackberry (*Rubus* spp.), japanese honeysuckle, and scattered pioneer shrub and tree species such as sumac (*Rhus* spp.), cedar (*Juniperus virginiana*), winged elm, persimmon (*Diospyros virginiana*), black locust (*Robinia psuedoacacia*) and sassafras.

Pasture-old field communities provide habitat for a number of wildlife species adapted to early successional vegetation. In addition, these communities can create surrounding edge environments where they intersect with one another or with other habitat types such as forests or wetlands. The resultant edge environment often provides greater habitat diversity and attracts a greater number of vertebrate species than the individual communities by themselves.

Vertebrate wildlife species are typically dominated by small mammals, primarily the cottontail rabbit (*Sylvilagus floridanus*) and a variety of mice, voles, moles, and shrews. Larger predators such as the coyote and fox frequently hunt for small mammals in these areas where multiple habitat types are interspersed and interconnected.

A variety of bird species forage in pasture-old field areas and use the shrubby edge habitat for nesting and cover. Typical species include the indigo bunting (*Passerina cyanea*), sparrows

(*Ammodramus savannum*, *Chondestes grammacus*, and *Spizella*, *Zonotrichia*, *Melospiza* spp.), eastern meadowlark (*Stumella magna*), cardinals (*Cardinalis cardinalis*), eastern bluebird (*Sialia sialis*), and blackbirds. In addition, these areas are utilized as foraging habitat by raptor species such as the red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*).

The relative open space and lack of adequate ground cover within these habitats generally results in poor species diversity and population numbers for most reptile and amphibian species. However, some snake species such as the black rat snake (*Elaphe obsoleta obsoleta*), garter snake (*Thamnophis sirtalis*) and hognose snake (*Heterodon platyrhinos*), prey on the resident small mammal and insect populations.

### 3.9.3 Timberland/Cropland

Within Arkansas, many native forest areas have been logged and replanted in pine plantations. Within the preferred corridor, extensive pine plantations exist in Sevier and southern Polk counties. These commercial forests typically contain improved strains of loblolly pine and short leaf pine. The majority of this timberland is owned and operated by the Weyerhaeuser Corporation. Current timberland management practices produce harvestable trees in approximately 25 years that

are used for sawlogs and pulpwood (Slayton, 1996).

Cropland within the preferred corridor is found primarily in Crawford County. Large commercial agricultural fields are located near the Arkansas River and are protected by a levee that prevents seasonal flooding. Main crops consist of soybeans and wheat with a variety of vegetables (green beans, corn, squash, kale, spinach, pumpkins) grown in smaller acreages (Goodman, 1996). Sod farms are also present in this area.

Wildlife diversity in timberlands is generally reduced due to monotypic stands of even age pine habitat. Diversity increases in clear cut areas, but would decline over time as planted pine and intensive management practices reduce and eliminate other vegetative species.

Cropland is similar to timberland habitat in that a monoculture of a particular crop dominates a large expanse of land. Wildlife use of these areas is largely dependent on the crop being grown and the season. Crops such as corn and wheat provide cover and food for a number of birds and small mammals. After harvest, waste material attracts many migrating and wintering waterfowl species, while spring flooded fields attract many species of shorebirds.

### 3.10 AQUATIC COMMUNITIES

Perennial streams support the majority of surface water functions in the study area, ranging from recreational, economic and aesthetic uses to fish and wildlife habitat. These include small headwater streams as well as large rivers such as the Arkansas River. Intermittent streams and farm ponds provide a number of these functions but to a lesser degree. Lake Mena and the Irons Fork reservoir are the only large lakes or impoundments that occur within or near the preferred corridor.

The diversity of aquatic communities within this area support eighty-five species of fish from nineteen families (Appendix E). Large river systems support species such as the channel catfish (*Ictalurus punctatus*), bigmouth buffalo (*Ictiobus bubalus*) and common carp (*Cyprinus carpio*) while small creeks and upland streams are inhabited by more species from the darter and minnow families. Farmponds, lakes and impoundments often contain a variety of fish species including sunfish, bass, catfish and crappie.

### 3.11 THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) of 1973 (16 USC §1531-1543) declares the intention of Congress to protect all federally listed threatened and endangered species and designated critical habitat of such species occurring both in the United

States and abroad. Section 7 of the ESA requires that federal agencies, such as FHWA, ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The USFWS is the primary regulatory agency responsible for ESA compliance. The USFWS maintains additional categories which are not legally protected, but should be considered during the planning process for any federal project. These additional categories are Proposed Threatened, Proposed Endangered and Candidate Species. The Candidate Species designation was recently revised on February 28, 1996 (61 FR 40:7595-7613) and an updated list of species regarded as candidates for possible listing under the ESA was obtained and reviewed.

The state of Arkansas relies upon federal legislation to protect vertebrate, invertebrate and plant resources. The Arkansas Natural Heritage Commission (ANHC) maintains a database with the known locations of federally listed threatened and endangered species as well as a list of state species of special concern. State species of special concern are not afforded special legal protection as are federally listed Threatened and Endangered species. However, a review of

potential impacts to these species was considered in the planning process.

The USFWS and the ANHC were contacted regarding sensitive species within the study area and information was obtained during the Corridor Feasibility Study. Based on this information, four federally listed species may occur within or near the preferred corridor; the American burying beetle (*Nicrophorus americanus*), the bald eagle (*Haliaeetus leucocephalus*), the red-cockaded woodpecker (*Picoides borealis*) and the Arkansas fatmucket mussel (*Lampsilis powellii*).

### 3.11.1 American Burying Beetle

The American burying beetle was listed as a Federally endangered species by the USFWS in July 1989 (54 FR 29652-29655). The American burying beetle is the largest beetle of its type in North America and has been found in a variety of habitat types including grasslands, lightly grazed pastures and oak-hickory forests with open understory and edge sites (Osborne, 1995). Adult beetles are primarily nocturnal with peak activity from May through September and depend on finding and burying vertebrate carcasses of 35 to 250 grams for reproductive purposes (Schnell et al., 1993).

Within Arkansas, the American burying beetle has been found in largest numbers on the Fort Chaffee Military Reservation in a variety of habitat types

(Osborne, 1995; Schnell et al., 1993). Beetles have also been found in several locations within the Ouachita National Forest although trapping efforts have revealed no extensive populations. Coordination with the U.S. Forest Service (USFS) identified known beetle capture sites within the study area.

### 3.11.2 Bald Eagle

The bald eagle was reclassified from an endangered to a threatened species by the USFWS in July 1994 (59 FR 35584-35595) within most of the lower 48 states, including Arkansas. This reclassification was prompted by the continued increase of the bald eagle population observed over the past twenty years throughout the majority of its range.

The bald eagle is a fairly common local migrant and winter resident on larger bodies of water within the state of Arkansas such as Lake Ouachita, Bull Shoals Lake, Millwood Lake and along the Arkansas River (James and Neal, 1986). These waterbodies provide an abundant winter food resource that attracts large numbers of these birds. Wintering eagles are also attracted to large scale poultry operations where dead chickens are disposed of in open pastures. Wintering eagles arrive as early as November and have usually departed from the state by late March.

In addition to winter resident eagles, during 1995, Arkansas had 18 active bald eagle nests with estimates of 20-21 for 1996 (Yaich, 1996). These nests are located primarily in the southeastern portions of the state along rivers, bayous and reservoirs. No active bald eagle nests have been reported within the study area.

In the fall of 1995, an eagle nest was identified within the study area (Berger 1995; Sturdy 1995). This nest was located within Springhill Park adjacent to Fort Chaffee. Sturdy (1995) reported that this nest was approximately two years old and that eagles had been observed in this area during that time. Eagle nests can be broadly categorized as active nests or practice nests. Active nest sites are used or have been used in the recent past during the breeding season to raise young. Practice nests are usually constructed by wintering bald eagles or immature birds that do not remain at the nest site through the nesting season and do not raise young at these sites.

Through coordination with the USFWS, a monitoring program was implemented to determine the status of this eagle nest. This program and the results are included with agency correspondence in Appendix C. During monitoring, several adult eagles were observed along the Arkansas River near the nest area from late December 1995 through March 1996 with no further sightings in April 1996. Based on survey results, this nest was

not used during the 1996 breeding season and appears to be a practice nest. The timing of adult bald eagle observations from December through March, followed by no observations in April, indicate that this area is being used by migratory eagles wintering in the Arkansas River area.

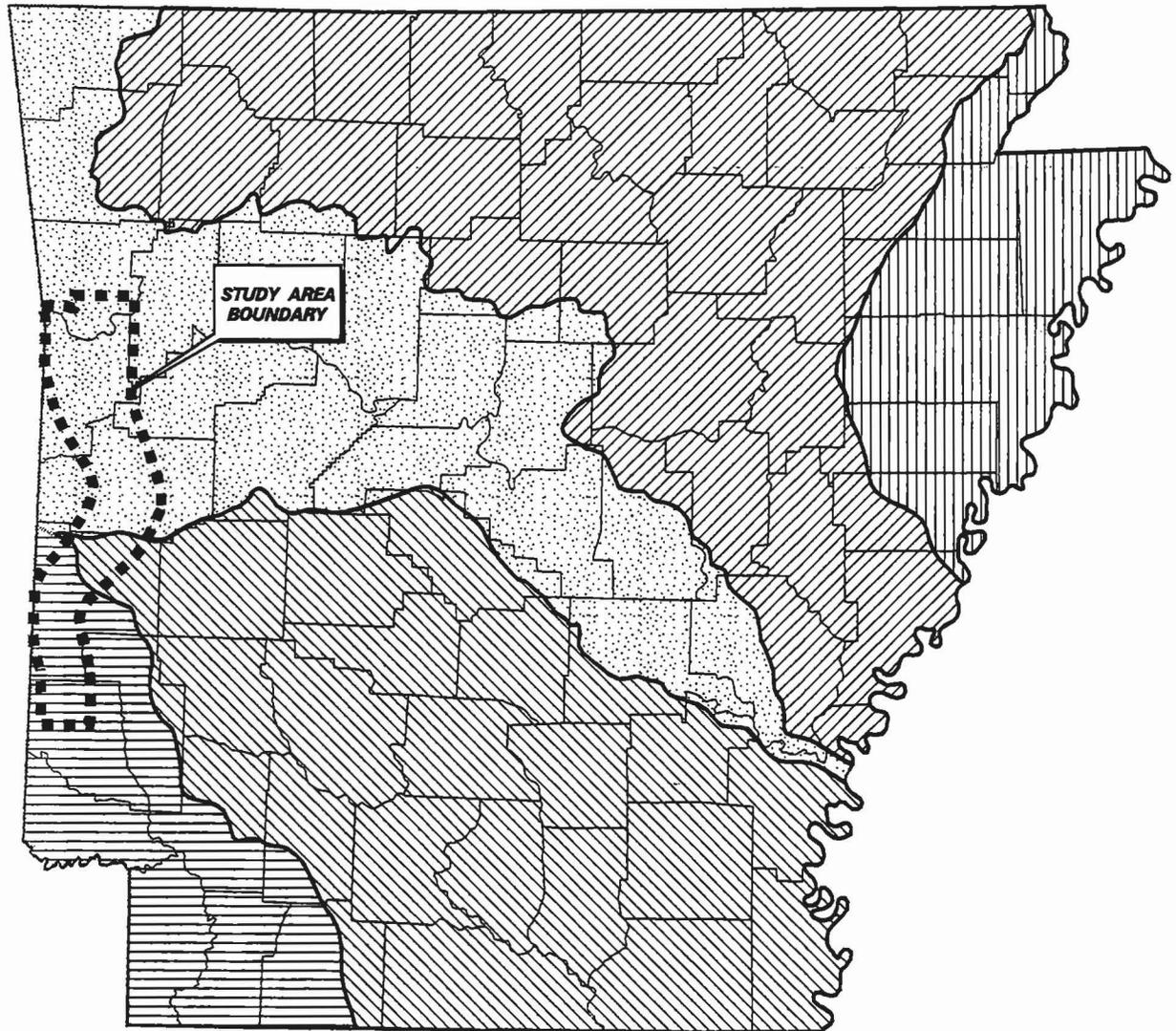
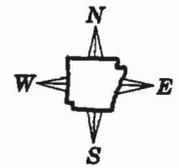
Aerial surveys were also conducted from Lock and Dam 13 to Vache Grasse Park to locate additional bald eagle nest sites within or near the preferred corridor as shown in Exhibit 3-5. Two surveys were conducted along and adjacent to the Arkansas River. No additional bald eagle nests were observed during these flights.

Additional ground monitoring of the bald eagle nest area near Springhill Park was conducted during the 1996-97 nesting season. On several occasions an adult eagle was observed near the nest site and along the Arkansas River near Lock and Dam 13. In late February, a barred owl was observed utilizing the eagle nest as a roosting site. During this monitoring session, a search beneath the tree showed no sign of prey remains or other signs of eagle use. Based on these monitoring results, this nest was not used during the 1997 breeding season.

During field investigations in the Mena area, a landowner identified a potential bald eagle nest near the preferred corridor. Bald eagles have been observed during winter months perched near a

farm pond adjacent to a poultry operation. Further investigation of this site revealed several large sticks placed in a pine tree approximately 10 meters (30 feet) above ground. At present, not enough stick material is in place to constitute an eagle nest. Typical bald eagle nests are very large, sometimes measuring up to six feet in width and weighing hundreds of pounds (Murphy 1989). Sticks placed in this tree are likely the work of wintering adult or immature eagles engaged in practice nest activity.

During the December 1996 public hearings, a landowner identified bald eagle activity south of Grannis near the Selected Alignment. Adult and immature bald eagles have been observed during winter months perched and soaring throughout the property. The landowners have a large poultry and swine operation and several farm ponds. This property is less than 8 km (5 miles) from Gillham Lake where wintering bald eagles are regularly observed. Field investigation of this site in March 1997 revealed a hardwood tree with several large sticks placed in it approximately 10 meters (30 feet) above ground. Eagles have been observed perched in this tree over the past several months. Similar to the Mena site, not enough stick material is in place to constitute an eagle nest. Eagles observed on this property are likely adult and immature birds wintering in this area.



LEGEND

-  RED RIVER BASIN
-  OUACHITA RIVER BASIN
-  ARKANSAS RIVER BASIN
-  WHITE RIVER BASIN
-  ST. FRANCIS RIVER BASIN

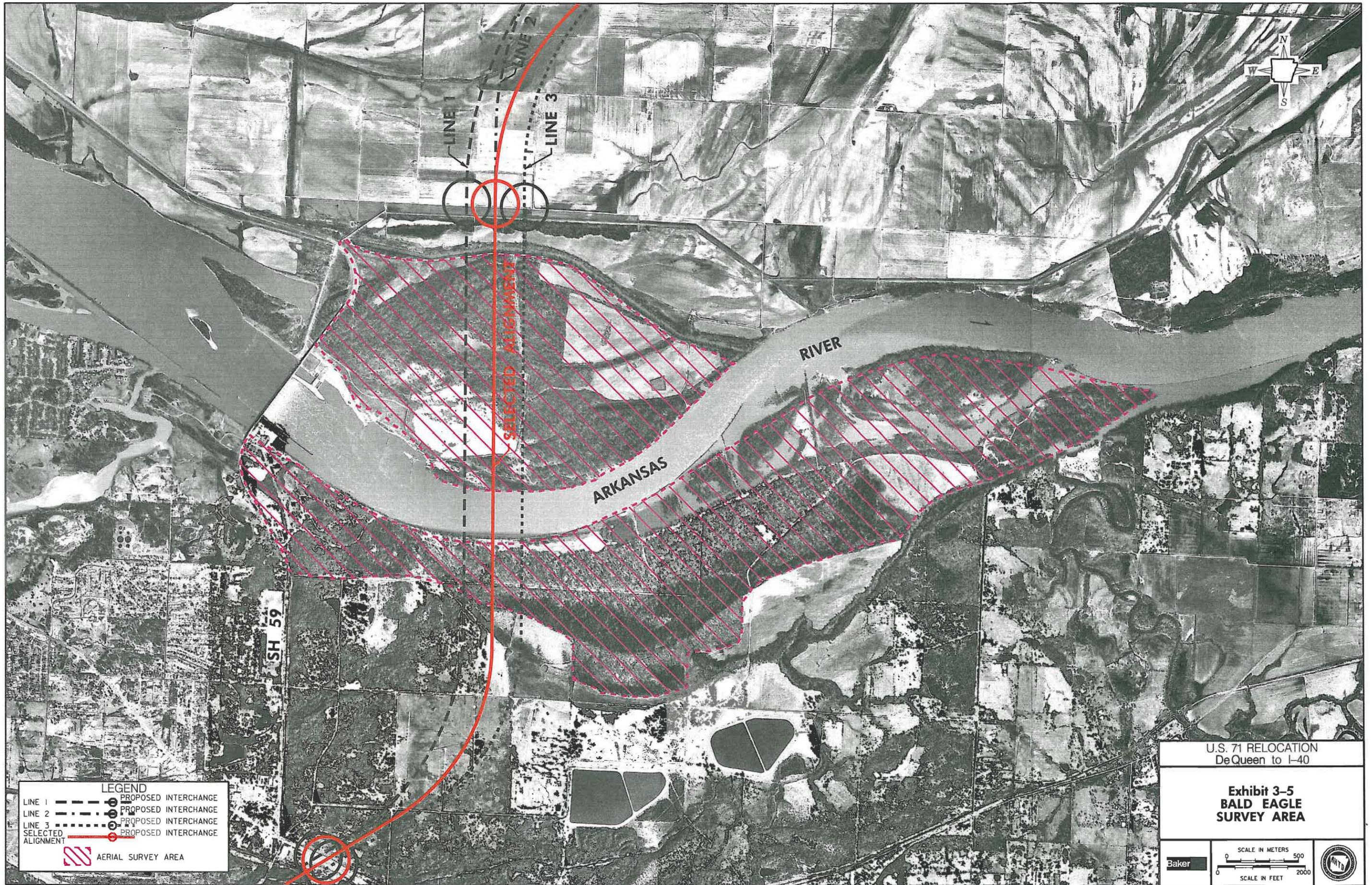
U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 3-2  
ARKANSAS RIVER BASINS**

Baker

NOT TO SCALE





**LEGEND**

- LINE 1 PROPOSED INTERCHANGE
- LINE 2 PROPOSED INTERCHANGE
- LINE 3 PROPOSED INTERCHANGE
- SELECTED ALIGNMENT PROPOSED INTERCHANGE
- AERIAL SURVEY AREA

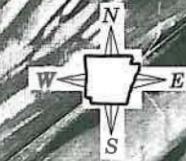
U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 3-5  
BALD EAGLE  
SURVEY AREA**

Baker

SCALE IN METERS  
0 500

SCALE IN FEET  
0 2000




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### 3.11.3 Red-cockaded Woodpecker

The red-cockaded woodpecker (RCW) was listed as an endangered species in October, 1970 (35 FR 16047). This bird's range is closely tied to the distribution of southern pine forests. Open stands of pine with a minimum age of 80 to 120 years provide suitable nesting habitat. Foraging habitat is provided in pine and pine/hardwood stands 30 years or older. Within western Arkansas, the RCW is found predominantly in the Ouachita National Forest. The U.S. Forest Service has prepared management guidelines for RCW habitat on national forests in the southern region (USDA, 1995a). More specifically the Ouachita National Forest has established a Habitat Management Area (HMA) of over 48,500 hectares (120,000 acres) and a management plan that involves the renewal of the shortleaf pine/bluestem grass ecosystem (USDA, 1995b).

Early coordination with the USFWS and the USFS identified all active and inactive RCW cluster sites in the Ouachita National Forest within the broad study area. The preferred corridor provided the greatest opportunity to avoid and/or minimize impacts to these cluster sites.

### 3.11.4 Arkansas Fatmucket Mussel

The Arkansas fatmucket mussel was listed as a Federally threatened species by the USFWS in

April, 1990 (55 FR 12797-12801). This mussel's current known range is limited to the Ouachita, Saline and Caddo River systems. Near the preferred corridor in Polk County, the mussel is limited to the Ouachita River upstream of Lake Ouachita.

The Arkansas Fatmucket prefers deep pools and backwater areas with a partly sandy bottom and sufficient flow to prevent detritus and other debris accumulation. It is frequently found in association with water willow (*Justica americana*) in water approximately 1 meter (3 feet) deep (Harris and Gordon, 1988).

### 3.11.5 Species of State Concern

Table 3-5 presents twelve species of state concern identified by the ANHC within or near the preferred corridor (Osborne, 1995, 1997). This list includes five vertebrate, one invertebrate, and nine plant species.

<b>Table 3-5 ARKANSAS DEPARTMENT OF NATURAL HERITAGE SPECIES OF SPECIAL CONCERN WITHIN THE PREFERRED CORRIDOR AND ALIGNMENT AREAS</b>	
<b>SPECIES</b>	<b>STATE STATUS</b>
<b>Vertebrates:</b>	
Goldeye ( <i>Hiodon alosoides</i> )	Very rare in Arkansas
Fourche Mountain Salamander ( <i>Plethodon fourchensis</i> )	Very rare in Arkansas
Yellow Warbler ( <i>Dendroica petechia</i> )	Rare to uncommon in Arkansas
Ouachita Mountain Shiner ( <i>Lythrus snelsoni</i> )	Undetermined status
Kiamichi Shiner ( <i>Notropis ortenburgeri</i> )	Very rare in Arkansas
<b>Invertebrates:</b>	
Crayfish ( <i>Procambarus reimeri</i> )	Extremely rare in Arkansas
<b>Plants:</b>	
Small's sanicle ( <i>Sanicula smallii</i> )	Rare to uncommon in Arkansas
A milk vetch ( <i>Astragalus distortus</i> var. <i>engelmannii</i> )	Extremely rare in Arkansas
A sedge ( <i>Carex willdenowii</i> )	Very rare in Arkansas
Ouachita blue star ( <i>Amsonia hubrichtii</i> )	Rare to uncommon in Arkansas
Sticky sedge-hyssop ( <i>Gratiola brevifolia</i> )	Very rare in Arkansas
Ouachita Hedyotis ( <i>Hedyotis ouachitana</i> )	Rare to uncommon in Arkansas
Soapwort gentian ( <i>Gentiana saponaria</i> )	Rare to uncommon in Arkansas
A blazing star ( <i>Liatris squarrosa</i> var. <i>compacta</i> )	Rare to uncommon in Arkansas
Prickly gooseberry ( <i>Ribes cynosbati</i> )	Vary rare to uncommon in Arkansas

Source: Osborne, 1995, 1997. Arkansas Natural Heritage Commission

### 3.12 NATURAL AREAS

The ANHC reviewed their data base for designated natural areas within the study area. Natural areas are state owned properties that protect a unique or important component of the natural diversity of Arkansas. Several natural areas were identified during the Corridor Feasibility Study and are listed in Section 2.

Within the preferred corridor, there are no designated natural areas. However, ANHC has identified two "potential natural areas"; limestone glades near DeQueen and the upper Fourche gap.

Limestone glades are plant communities dominated by grasses and forbs with scattered trees and shrubs that are found on outcrops of DeQueen or Dierks limestone. These areas typically have shallow black soil and a high pH. Three glade areas have been identified ranging from 10 to 32 hectares in size (25 to 80 acres). Two are located just north of U.S. 70 near DeQueen in the west and central portion of the preferred corridor and one is located just north of Pullman in the far western portion of the preferred corridor.

The upper Fourche gap describes an area along the Fourche LaFave River that flows through a gap at the southernmost tip of Key Mountain near Y-City. The scouring action of the river has exposed underlying sandstone material and has created numerous potholes where a number of sensitive plant species have become established. This area is approximately 36 hectares (90 acres) in size and is located in the extreme western portion of the preferred corridor.

### 3.13 PUBLIC LANDS

Information was obtained from the Arkansas Parks and Recreation Department, U.S. Army Corps of Engineers, and the U.S. Forest Service regarding the location of public lands within the broad study area. Numerous public land areas were identified during the Corridor Feasibility Study including city parks, state parks and National Forest recreation areas (see Section 2).

Within the preferred corridor, two areas of public land were identified; Springhill Park and the Ouachita National Forest. In addition, Lane Park in Grannis lies just outside the preferred corridor boundaries.

Springhill Park is operated by the U.S. Army Corps of Engineers and is located adjacent to J.W. Trimble Lock and Dam. This park provides a number of recreational opportunities and is discussed in detail in Section 5.

The Ouachita National Forest contains approximately 647,500 hectares (1.6 million acres) in twelve west-central Arkansas and two southeastern Oklahoma counties. The forest is supervised from the Hot Springs headquarters and is divided into twelve Ranger Districts. A detailed description of forest management goals and objectives as well as the forest standards and guidelines to meet these objectives are presented in the Land and Resource Management Plan for the Ouachita National Forest, March, 1990.

During the Corridor Feasibility Study two important forest resources were identified within the broad study area; the Poteau Mountain Wilderness Area and the Rich Mountain Recreation Area (see Section 2). However, only a small portion of the Poteau Mountain Wilderness Area lies within the extreme western portion of the preferred corridor. With the exception of this area, Ouachita National Forest land within the preferred corridor is managed as a multiple use area, combining timber management with a broad spectrum of recreational opportunities.

Lane Park is located on Frachiseur Road just east of Grannis. This park is approximately 4 hectares (10 acres) in size and provides a number of recreational resources to the community including a playground, picnic area, ballfield and a rodeo arena.

### 3.14 CULTURAL RESOURCES

#### 3.14.1 Prehistory and History of the Study Area

Western Arkansas has been occupied by human populations for at least 12,000 years. This span of time has been divided into five major prehistoric periods: Paleo-Indian (12,500-10,000 B.P.); Archaic- Early, Middle, and Late (10,000-3,000 B.P.); Woodland (3,000-1,200 B.P.); Mississippian (1,200-500 B.P.); and Protohistoric (500-300 B.P.). Throughout the length of the study area, the cultures within these periods are similar, but local and regional variations occur in the different physiographic provinces.

Beginning with the Paleo-Indian period, groups utilizing various strategies for settlement and subsistence adapted to the conditions and demands of their times. Due to the scarcity and antiquity of their cultural remains, little is known about some of these peoples, particularly those from earlier periods such as Paleo-Indian and Early Archaic. Material evidence of the Paleo-Indian period consists primarily of distinctive, finely made projectile points which are often fluted. These points have been recovered in association with extinct species of large animals (megafauna) at sites in states surrounding Arkansas. These animals were adapted to a vastly different environment from that of today. Many animals became extinct when environmental conditions changed, which also affected human populations.

By the beginning of the Archaic period, new strategies for survival had been developed which were adapted to an environment which is more similar to that of today except that conditions continued to fluctuate. The prehistoric people survived these fluctuations and developed a wide variety of tools to hunt and gather numerous plant and animal species. The data suggests that a high quality chert known as novaculite, which only outcrops on the rim of the Ouachita Mountains, was initially quarried in the Middle Archaic period. By the Late Archaic period, there was an increase in population.

In the study area, the end of the Archaic and beginning of the Woodland period is called the Fourche Maline period. It is marked by the beginning of horticulture and the first ceramic vessels. Fourche Maline was followed by the Mississippian period cultures in the Arkansas River Valley, southwest Arkansas, and adjacent regions. Mississippian culture is marked by the building of permanent villages which are affiliated with ceremonial centers containing ceremonial and burial mounds. Most of the sites dating to this period will be situated in the floodplains and on the first terraces of major rivers. Elaborately decorated ceramics are associated with these cultures and they are useful in dating the occupations. The subsistence base in the Mississippian period continued to be a mixture of cultivated plants, wild

plants, and wild animals. The Caddoan Culture represents the Mississippian occupation in the study area. The Caddo lived in small dispersed villages, called hamlets, and they remained in southwest Arkansas until the Historic period.

In the middle 16th Century, European explorers including De Soto traveled through western Arkansas. The explorers were followed by traders and, eventually, settlers. Their indirect and then direct contact with indigenous Caddo and other Native American populations caused both cultural disruptions and population decreases which intensified during the Protohistoric and Historic periods. By the end of the 18th and the beginning of the 19th centuries, disease, raiding, and trade considerations resulted in the Caddo abandoning western Arkansas and moving south. By 1828, the remaining groups who had been given reservations in Arkansas were relocated to Indian Territory, now Oklahoma.

Euro-Americans began to settle the area in the early and middle 19th Century. They subsisted by hunting the plentiful wild game or herding cattle which they allowed to range freely in the forested region. Later settlers continued hunting and herding to some degree but added gardening and cash cropping where possible. The earliest settlements were along major rivers such as the Arkansas. Later, the less desirable mountainous areas were occupied. Many of the upland

homesteads were of a short duration due to the difficult living conditions, isolation, and poor soils. There is also evidence to suggest that some later land claims were obtained solely for the purpose of harvesting or selling the timber. After the railroads connected more isolated upland areas to major transportation routes, such as major railroad lines and the steamboats on the Arkansas River, the area's natural resources began to be exploited. Two major industries, timber and coal, dominated western Arkansas by the end of the late 19th and the beginning of the 20th Centuries. These industries connected the area to the rapidly changing, industrialized world which demanded large quantities of raw materials.

#### **3.14.2 Archeological Sites and Historic Properties in the Study Area and the Preferred Corridor**

Known cultural resources within the study area were identified so that significant sites and properties would be avoided in the selection of the preferred corridor. The state's database of site information (AMASDA) was loaded into the project's GIS and used to identify all known sites in the study area, numbering over 1,800. Further analyses focused on the central portion of the study area which contained over 700 previously recorded archeological sites. Selected variables recorded in the state's site database were used to make a preliminary assessment of the potential significance of these archeological sites. In

addition, high probability areas for undiscovered archeological sites (areas such as floodplains and terraces), standing historic structures, and National Register properties were plotted on quadrangle maps and added to the database. In this manner, cultural resources were taken into consideration in the development of corridors and the selection of the preferred corridor.

The Alignment Study involved further analysis of cultural resources within the preferred corridor. All state site forms and records for sites within the preferred corridor were examined to more accurately estimate each site's significance and its potential eligibility for nomination to the National Register. In addition, cemetery records were examined and cemeteries were plotted on quadrangle maps and added to the data base. Other historic features such as fields, roads, and houses shown on the General Land Office maps dating to the middle 1800's or on other historic maps, were plotted and added to the GIS. Within the preferred corridor, there were 9 properties determined eligible or listed on the National Register, 23 recorded archeological sites which might be potentially eligible for nomination to the National Register, 85 sites in which significance was unknown, 32 sites which were not eligible, 205 possible historic sites, 41 cemeteries, 2 recorded historic structures, and many other historic features

such as roads shown on General Land Office maps.

Cultural resources within the preferred corridor were taken into consideration during the alignment study. The Selected Alignment minimizes impacts to known archeological sites and historic properties. The cultural resource information including archeological sites, historic properties, potential archeological sites or historic properties, and high probability areas were identified for each alignment. Further, potential historic structures (over 50 years of age) were photographed and mapped and reviewed by the Arkansas Historic Preservation Program. Based on this review, no additional historic structures were added to the project database. This data is presented in Section 4. The actual number of archeological sites within the Selected Alignment will not be known until the completion of the archeological field survey which is nearing completion. Each new archeological site found will be evaluated for its significance and eligibility for nomination to the National Register of Historic Places and a determination of effect will be made. Many of the archeological sites on record will require additional investigations to determine if they are potentially eligible for nomination to the National Register. All adverse effects of the project on significant sites will be mitigated prior to land disturbing activities.

### 3.15 AIR QUALITY

The Clean Air Act of 1970 directed the Environmental Protection Agency to establish standards for clean air via the National Ambient Air Quality Standards (NAAQS). The NAAQS are

shown in Table 3-6 and represent levels of these pollutants and exposure periods that pose no significant threat to human health or welfare. The state of Arkansas adheres to the same standards.

POLLUTANT	TIME OF AVERAGE	PRIMARY STANDARD	SECONDARY STANDARD
PM <sub>10</sub>	Ann. Geo. Mean	75 ug/m <sup>3</sup>	None
	24-Hour	260 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>
SO <sub>2</sub>	Ann. Arith. Mean	80 ug/m <sup>3</sup>	None
	24-Hour 3-Hour	365 ug/m <sup>3</sup> none	None 1300 ug/m <sup>3</sup>
NO <sub>2</sub>	Ann. Arith. Mean	100 ug/m <sup>3</sup>	100 ug/m <sup>3</sup>
CO	8-Hour	10 mg/m <sup>3</sup> 9 ppm	None
	1-Hour	40 mg/m <sup>3</sup> 35 ppm	None
O <sub>3</sub>	1-Hour	0.12 ppm	0.12 ppm
		235 ug/m <sup>3</sup>	235 ug/m <sup>3</sup>
Pb	Quarterly Arith. Mean	1.5 ppm	1.5 ppm

Source: United States Environmental Protection Agency

Note: All standards with averaging times of 24 hours or less are not to be exceeded more than once per year.

ug/m<sup>3</sup> = micrograms per cubic meter of air ; mg/m<sup>3</sup> = milligrams per cubic meter of air; ppm = parts per million  
Ann. Geo. Mean = Annual Geometric Mean; Ann. Arith. Mean = Annual Arithmetic Mean

Currently, air monitoring is conducted for these pollutants at various locations throughout Arkansas by the National Air Monitoring System (NAMS) and the State and Local Air Monitoring System (SLAMS) program. As a result of the Clean Air Act Amendments, all of the counties in the study area are designated as being in attainment for Carbon Monoxide (CO), Ozone (O<sub>3</sub>), Particulate Matter

(PM<sub>10</sub>), and Nitrogen Dioxide (NO<sub>2</sub>) based on historical monitoring data.

The term 'attainment' refers to the status of the various pollutants described in the above NAAQS table. If a pollutant does not exceed the standard more than once per year, then it is considered in attainment of the standard. If the pollutant exceeds the standard on average more than 1.0

times over a three year period, then it is considered in non-attainment of the standard. When a project is located in a non-attainment area, the project must be on an approved Transportation Improvement Plan (TIP) or meet a series of requirements in order for it to be approved. As mentioned, the U.S. 71 Relocation project is located in areas designated as being in attainment of the standard for CO, O<sub>3</sub>, PM<sub>10</sub> and NO<sub>2</sub>.

### 3.16 NOISE

Noise is often defined as unwanted sound. It is emitted from many sources including highway vehicles, airplanes, factories, railroad cars and power plants. Highway vehicle noise is composed of engine exhaust, drive train, tire-roadway interaction and the vehicles aerodynamics.

Sound is a very subjective concept. Degrees of sound disturbance depend on several things; the amount and nature of the intruding noise, the relationship between the background noise and intruding noise and the type of activity occurring where the noise is heard.

Time of day also enters into an individual's noise judgment. For example, a car horn is much more annoying at 2 a.m. than at 2 p.m., even though the car horn has the same decibel level at both times. This is because nighttime background levels are typically lower than daytime levels. Consequently, the person notices the greater difference at night.

Activity interference can also occur depending on what the person is doing. For certain sound levels, normal conversation may be possible but sleep may be difficult. Work that involves a high degree of concentration may be affected by noise while manual labor may not be interrupted to the same level by the same sound.

#### 3.16.1 Noise Sensitive Areas

Land use determines the sensitivity of an area to noise. Residential areas are sensitive to noise. Land uses which are less sensitive to noise include open land, wooded areas, commercial properties, and agricultural areas. Land use within the study area is predominantly forested and agricultural areas. The remainder of the study area is composed of varying amounts of residential, commercial, industrial, military, recreational, natural gas fields and transportation corridors.

#### 3.16.2 Measured Noise Levels

Forty-three short-term ambient measurements, 10 minutes in length, were taken using a Metrosonics dB-308 or Metrosonics dB-612 sound level meter at sensitive receptors throughout the preferred corridor. Exhibit 3-6 shows the noise measurement locations. The measured sound levels are presented and discussed in Section 4, along with the predicted future noise levels, with and without the proposed highway. Simultaneous traffic counts were recorded for nearby roadways,

as applicable. Vehicle classification counts were also taken during the measurement periods.

### 3.17 HAZARDOUS MATERIALS

An Initial Site Assessment (ISA) was conducted for the preferred corridor through contact with the Arkansas Department of Pollution Control and Ecology, U.S. Environmental Protection Agency, Region 6, the Environmental Division at the Fort Chaffee Military Reservation, and local county health department officials concerning the location of facilities regulated under the Resource Conservation and Recovery Act (RCRA), superfund sites, leaking and non-leaking underground storage tanks (UST), landfills, and illegal dump sites. The records search revealed that there are 22 RCRA, 1 Superfund, 17 UST, and 2 illegal dump sites located within the preferred corridor (Table 3-7).

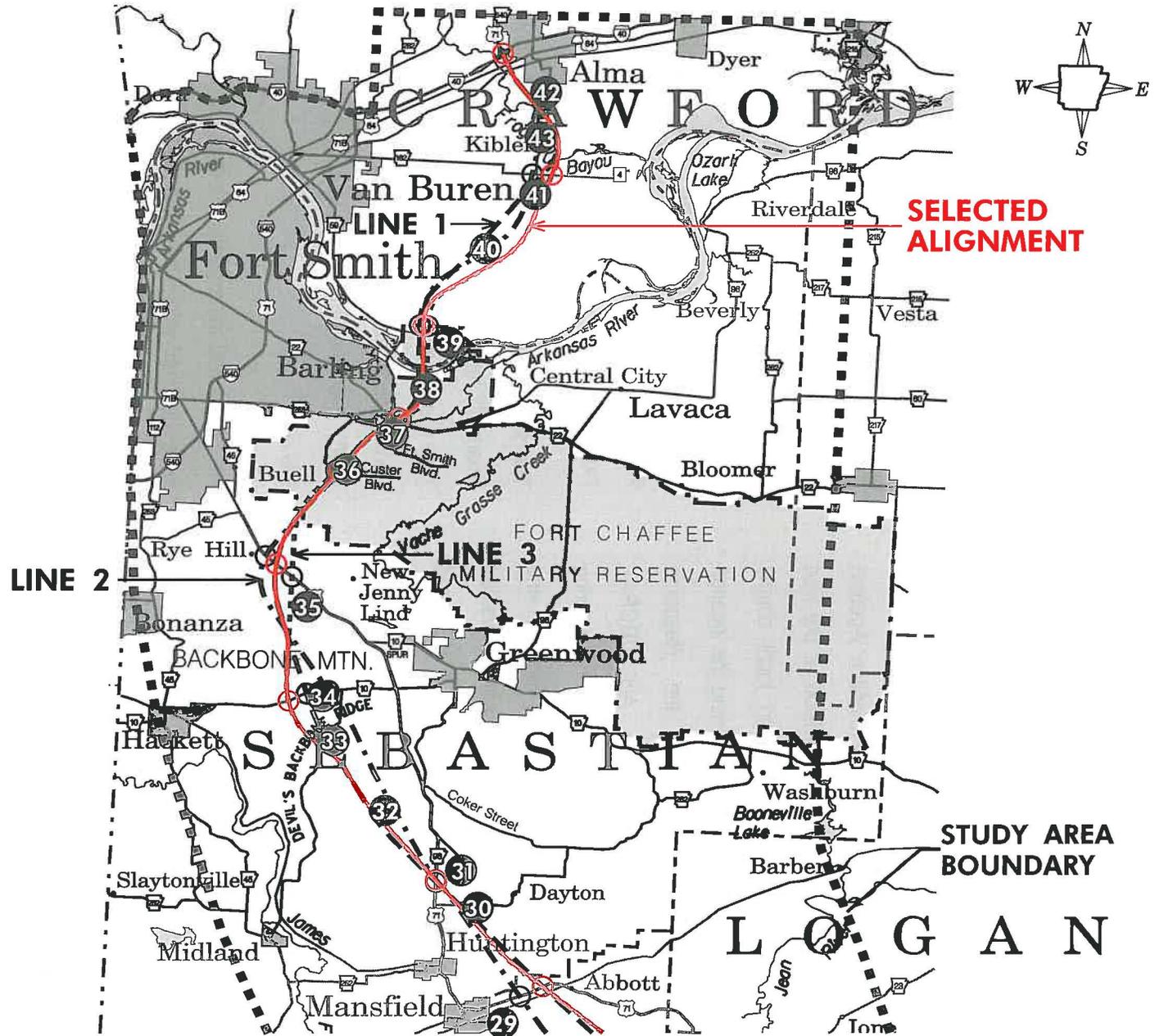
A field reconnaissance of the preferred corridor was also conducted for potential hazardous and non-hazardous materials sites. The field reconnaissance included a visual inspection of the preferred corridor area as well as interviewing local landowners when possible. In addition, public involvement meetings and comment forms were

structured to obtain information from local residents on any unrecorded dump sites.

Field investigations identified two additional dump sites within the preferred corridor. The first site is located southeast of the intersection of County Road 43 and S.H. 253 in Sebastian County south of Excelsior. This site is located in a ravine and is about 182 meters (600 ft) long. This dump site is also located along an old strip mine site of the Lower Hartshorne Coal. Mine spoil piles can be seen immediately to the south and east of the dump. Historic information about this site was not available.

The second dump site is located north of County Road 272 and east of Vandervoort in Polk County. This site is reported to be the old town dump of Vandervoort that closed in the 1970's (Peavy, 1996). No other information is available regarding this site.

No abandoned underground storage tanks (USTs) were identified within the preferred corridor during field investigations.





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**Table 3-7  
HAZARDOUS MATERIALS**

TYPE	SITE NAME	LOCATION
RCRA Facilities	Current Post Landfill	Fort Chaffee Military Reservation
	Abandoned Landfill #2	Fort Chaffee Military Reservation
	Haz. Waste Storage Area, Bldg. 262	Fort Chaffee Military Reservation
	Above Ground Storage Containers	Fort Chaffee Military Reservation
	Paint Shop Waste Storage, Bldg. 416	Fort Chaffee Military Reservation
	Medical Clinic Silver Recovery Unit	Fort Chaffee Military Reservation
	PCB Storage, Bldg 426	Fort Chaffee Military Reservation
	Vehicle Wash Rack Ditches	Fort Chaffee Military Reservation
	Waste Oil Storage Area, Bldg. 432	Fort Chaffee Military Reservation
	Paper Incinerator	Fort Chaffee Military Reservation
	Solid Waste Incinerators	Fort Chaffee Military Reservation
	Burnable Materials Site	Fort Chaffee Military Reservation
	Fire Training Pit	Fort Chaffee Military Reservation
	1960's Landfill	Fort Chaffee Military Reservation
	North Prisoner of War Landfill	Fort Chaffee Military Reservation
	Arkansas Army National Guard	Fort Chaffee Military Reservation
	Aspen Aviation	Mena Intermountain Municipal Airport
	Reebaire Aircraft, Inc.	Mena Intermountain Municipal Airport
	Rose Aircraft Interiors	Mena Intermountain Municipal Airport
	Ninth Ave Former UST Site	Fort Chaffee Military Installation
U.S. Army Reserve Center	101 Fort Street, Barling	
Building 339, HW Storage Facility	Fort Chaffee Military Reservation	
CERCLA Facility	Industrial Waste Control	Racetrack Road, Jenny Lind
Illegal Dumps	Green Acres Trailer Park	State Highway 8, Mena
	David's Recycling	State Highway 64, Alma
Open Dumps	County Road 43	Excelsior
	County Road 33	Vandervoort
Underground Storage Tanks	Walmart, Store #358	State Highway 64 Alma
	Alma High School	State Highway 162 Alma
	Alma Water Department	State Highway 162 Alma
	Aerdale Express	State Highway 162 Alma
	Kibler Country Store	State Highway 162 Kibler
	Barling Food Center	State Highway 22 Barling
	Barling City Hall	Barling
	Hunts Superette	State Highway 22 Barling
	Building 402	Fort Chaffee Military Reservation
	Building 403	Fort Chaffee Military Reservation
	Building 5830	Fort Chaffee Military Reservation
	Exxon Jif-e Mart	U.S.71 Bypass Waldron
	Texaco Town and County Station	U.S.71 Bypass Waldron
	Fina Country Express	U.S.71 Bypass Waldron
	Mena Intermountaine Municipal Airport	Mena
	Conoco Country Convenience Center	State Highway 8 Mena
Wickes School District	Wickes	

Source: Arkansas Pollution Control and Ecology Database, 1996  
Fort Chaffee Environmental Division Database, 1996

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## Section 4: ENVIRONMENTAL CONSEQUENCES

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### 4.1 SOCIAL IMPACTS

Due to the rural nature of this project, the anticipated social impacts are not dictated by the physical location of the proposed highway in a particular community. It is the presence of the proposed highway through the area that will result in community changes, regardless of the particular alignment location. With the exception of Lines 1 and 2 in Wickes, the alignment alternatives do not pass within the city limits of communities along the route. For these reasons, all alignments are expected to have similar social impacts. If a particular alignment is expected to have a higher degree of impact than the other alignments, this is discussed specifically below, with corresponding data provided if available.

#### 4.1.1 Social Services

Because the proposed highway would bridge nearly all existing U.S. highways, state highways and county roads, access to churches, schools and public facilities within communities would not be affected. Local travel patterns would change little as a result of the project. It is possible that travel time to these services within a community would improve, due to the diversion of through traffic and some local traffic to the proposed highway. This travel time savings would likely occur in Mena, which currently experiences heavy traffic and

delays along U.S. 71 at certain hours. Travel time for local trips within the city of Fort Smith using I-540 would also likely improve as 30% of the traffic is expected to divert to the proposed highway.

Most residents of communities along existing U.S. 71 travel long distances for medical and other professional services. Residents from Wickes and Vandervoort would experience improved access to services they frequently receive in Mena and would save approximately 15 minutes in their trip, from 39 minutes to 24 minutes. According to local officials, most study area residents travel to Fort Smith for specialized medical care, which would result in a maximum travel time savings of 50 minutes. Discussions at public meetings indicate that many people in the southern reaches of the study area do not travel north of Mena over Fourche Mountain unless absolutely necessary and they rarely do so at night. With the proposed highway in place, these people could travel at their convenience and at any time of day without concern. This is especially true of the elderly living within the study area. This social group expressed anxiety about night driving and truck traffic on the existing route. The elderly would also typically have a greater need for medical services offered in more distant locations.

Adequate police and fire protection are important for the safety of citizens in all communities. Forty-six percent (46%) of the communities in the study area receive these services from surrounding communities. Responsiveness of law enforcement and fire personnel would be positively impacted by reduced travel time to neighboring communities. Emergency trips that would have a shorter distance on the existing route would also likely experience a travel time savings due to the level of service improvement on existing U.S. 71.

The Selected Alignment offers the most benefit to Mena and Waldron residents for accessing social services and travel time savings due to its closer proximity to these communities than the other alignments.

The No-Action alternative would not result in improved social service accessibility within or outside of communities. Residents would continue to be apprehensive about long trips and night trips on the existing route and the elderly would continue to make social service decisions based on this concern. Emergency response time would degrade under the No-Action alternative as the level of service drops on the existing route in the next 25 years.

#### **4.1.2 Land Use Changes**

##### ***Land Cover Conversion***

Land directly taken by the proposed highway would be converted from its present use to highway use as shown in Table 4-1. For the majority of the route, the land would be converted from forest and pastureland, as discussed in Terrestrial and Aquatic Communities, later in this section.

##### ***Secondary Development***

The project would facilitate new development in the study area. This development could take several forms:

- commercial development at interchanges
- industrial development in existing industrial parks, or the formation of new industrial parks
- single site industrial developments by manufacturing enterprises that locate in the area due to increased access
- residential development that may result due to community growth and improved access to nearby job markets
- establishment of retirement communities due to improved access.

The potential for development in or near the preferred corridor is discussed below. The effects of such development can be social and economic and can also affect the natural environment and are discussed in appropriate sections below.

Land Use	Alignment	ha	ac
Bottomland Hardwood Forest	Line 1	5.8	14.3
	Line 2	5.2	12.8
	Line 3	6.8	16.8
	Selected	5.2	12.8
Mixed Pine/Hardwood Forest	Line 1	1,152.6	2,848.2
	Line 2	1,119.8	2,767.0
	Line 3	1,119.6	2,766.6
	Selected	1,078.5	2,665.4
Wetlands	Line 1	27.6	67.8
	Line 2	29.4	72.4
	Line 3	16.9	41.8
	Selected	21.0	51.9
Pasture/Old Field	Line 1	598.0	1,477.7
	Line 2	622.3	1,537.9
	Line 3	580.1	1,433.4
	Selected	551.7	1,363.3
Cropland	Line 1	57.5	142.0
	Line 2	68.3	168.7
	Line 3	89.8	221.8
	Selected	89.6	221.3
Timberland	Line 1	261.4	645.9
	Line 2	238.3	588.8
	Line 3	286.3	707.4
	Selected	286.3	707.4
Isolated Farm ponds	Line 1	8.6	21.2
	Line 2	8.7	21.5
	Line 3	5.2	12.8
	Selected	6.8	16.8
Suburban	Line 1	50.3	124.3
	Line 2	63.3	156.3
	Line 3	44.1	109.1
	Selected	46.7	115.7
Total	Line 1	2,162.3	5,343.3
	Line 2	2,154.6	5,324.1
	Line 3	2,149.0	5,310.2
	Selected	2,085.7	5,154.6

Source: Michael Baker Jr., Inc.

The extent and type of interchange development is influenced by the size of the nearby community, the services offered, and the distance to that community. The development would generally be proportional to the size of the community and inversely proportional to the distance from that community. That is, more development would be expected at larger communities with an interchange close by than for smaller communities with an interchange further away. The size and distance variables are not absolute and exceptions to these general trends can and often do occur. Precise predictions of type and extent of development are not possible.

It could be expected that interchanges located at the smaller, more rural communities would experience light commercial development that does not extend far beyond the interchange area. However, even a modest increase in the number of businesses in such a community would still be a positive economic influence. Communities of more moderate size such as DeQueen, Mena and Waldron could experience varying amounts of development that may extend into the established business districts of these cities and become an integral part of the local economy. Highways involved would be U.S. 71, S.H. 8 and S.H. 88 in Mena, S.H. 80 in Waldron and U.S. 71 in DeQueen. The possibility of this occurring would vary with the alignment. Interchanges with existing

U.S. 71 as it approaches Fort Smith and Van Buren would tend to have more development as the distance to the city lessens.

Several industrial parks exist within or near the preferred corridor. The most notable parks that may experience increased development are the newly established 32 hectare (80 acre) Mena-Polk County industrial park, the 160 hectare (400 acre) Mena Intermountain Municipal Airport industrial area, and the Crawford County industrial park in Van Buren.

In recent years, commercial development has grown on the west side of the City of Waldron, due to the construction of the U.S. 71 bypass. With the preferred corridor also traveling west of town, the city intends to continue this trend of development and establish additional industrial areas along highways connecting to the proposed highway.

The existing industrial development along U.S. 71 in south Fort Smith would be expected to continue. The Fort Chaffee redevelopment plan would set aside some land for industrial development that would be directly accessed by the proposed highway. S.H. 59 in Van Buren could develop from the existing industrial park south to the proposed interchange and connector road. This currently agricultural land along the Arkansas River could become attractive for other forms of riverfront development.

Additional residential development may occur in communities experiencing commercial or industrial development resulting from the proposed highway. Further, additional residential development could be expected in communities like Huntington, Mansfield and Waldron which could now serve as bedroom communities to Fort Smith as a result of the time savings in these commute trips.

The retirement industry is important to the state of Arkansas. Several retirement communities currently exist in the state, which contribute heavily to the retail sales and service providers because of the percentage of disposable income of this age group. Currently, Waldron and Mena are marketing their areas to developers of retirement communities. The proposed highway would enhance these cities' marketing position in this competitive industry. The improved accessibility of the medical centers of Fort Smith from both Mena and Waldron would further enhance their position. The improved access to Interstate-40 and ultimately Interstate-30 will reduce travel time to many communities throughout the state.

Secondary development would occur in varying degrees regardless of the particular alignment chosen. However, it would appear that the Selected Alignment would provide the best opportunity for integrated growth in Mena and Waldron.

The No-Action alternative would not result in any development beyond what the current development trends would indicate. S.H. 88 in Mena is currently developing in a commercial fashion at the crossing of the Selected Alignment. U.S. 71 north out of Mena is currently changing to commercial uses, particularly with the establishment of the Mena-Polk County industrial park, with a planned connector road to U.S. 71 in this reach. Commercial growth on the west side and residential growth on the east side of Waldron would likely continue. The Fort Chaffee land would develop but may not grow to the extent or with the type of development planned by the FCRA.

#### ***Consistency of Highway and Secondary Development with Land Use Plans***

Land use plans are in place or in progress for DeQueen, Mena, Waldron, Mansfield, Greenwood, Fort Chaffee and Alma. Of the above, only the Mena, Waldron and Fort Chaffee land use planning areas include the preferred corridor. Further, the Bi-state Transportation Study encompasses a portion of this project's study area surrounding the Fort Smith and Van Buren urbanized area. Communities within the Bi-State Study area relevant to this project include Alma, Kibler, Van Buren, Barling, Bonanza, Central City, Fort Smith and Greenwood.

The Future Land Use Plan for the city of Mena was released at a public hearing in April 1996 but has

not yet been approved. The city is currently reviewing this document that will guide Mena's growth into the next century. They anticipate a late 1996 approval of the plan. The city began the preparation of this plan at nearly the same time that the U.S. 71 Relocation project was initiated. As a result, the land use planning efforts for Mena and the Alignment Study for the proposed U.S. 71 Relocation were conducted in close coordination. Information was exchanged and numerous meetings and discussions were held to assure consistency of the results. The land use plan has provided for commercial development at proposed interchange locations and will finalize its master street plan based on the locations for the proposed highway.

Waldron established a planning commission in May 1996 and this group is in the earliest stages of preparing a comprehensive plan. The City of Waldron has been an active participant at all local officials and public meetings on the proposed highway. Their opinions and development desires have been an important component of the corridor and alignment studies. In this regard, the proposed highway has been located to assure consistency with this city's growth objectives and the future land use plan that they prepare.

The Fort Chaffee Redevelopment Authority (FCRA) is charged with the preparation of a future land use plan for approximately 2,430 hectares (6,000

acres) of former military land. This land transfer became law on September 28, 1995 by the approval of the Defense Base Realignment and Closure Commission's 1995 recommendations (BRAC 95). The makeup of the FCRA was approved by the Governor in November 1995. This authority has held public meetings, formed numerous committees for work on various aspects of the reuse plan which include the public, and has received numerous expressions of interest in the available land. The FCRA is currently preparing their land use plan which is scheduled to be completed in the spring of 1997.

Both the corridor and Alignment Study efforts were closely coordinated with the FCRA. Special meetings were held throughout this study to assist the FCRA with their work and to assure consistency of the plan. The proposed highway is an integral, critical element of the redevelopment effort. Access to the redeveloped land is of prime importance in order to support industrial and commercial development intended for some of this property. For this reason, the proposed alignments through Fort Chaffee skirt the eastern edge of the reuse land, thus maximizing the land available for other purposes and providing flexibility in the land use planning efforts. Due to the above conditions, the three alignments are in close proximity to one another through the Fort Chaffee redevelopment area.

The U.S. 71 Relocation project is included in the Year 2020 Transportation and Land Use Plan prepared by the Bi-State Transportation Study. The Bi-State Policy Committee is the governing body of the Bi-State study. This committee was heavily involved in the Major Investment Study for this project which is discussed in Section 2. Three meetings were held by this committee in order to approve the MIS Process, discuss the results, and ultimately act on the MIS Resolution. Further, nine members of the Bi-State Policy Committee (or the associated Technical Task Force for the 2020 plan) served on the MIS Working Group, and were also included in the local officials meetings conducted throughout the U.S. 71 Relocation study.

#### **4.1.3 Community Changes**

The proposed highway would result in changes to neighborhoods, property values, travel patterns and local traffic. These changes would be most evident in communities in or adjacent to the preferred corridor. Communities outside the preferred corridor could experience similar types of changes but typically to a lesser degree.

#### ***Neighborhoods***

Few established neighborhoods are crossed by the alignments, due to the efforts made to minimize residential relocations. However, Line 1 cuts diagonally across a rectangular shaped neighborhood north of S.H. 10 and Sand Ridge in south Sebastian County. Because of the close

distance between the two parallel streets, it is not possible to provide a bridge at each street. Residents living west of the proposed highway on the northern street would have to travel around the block, pass under the proposed highway to County Road 154 and turn west back into the neighborhood to reach neighbors living east of the highway on the northern street. Exhibit 4-1 depicts this neighborhood and its relationship to Line 1. Line 2 would not affect this neighborhood but would cut off County Road 154 just north of this neighborhood. However, a satisfactory alternate route exists that could be used to reach U.S. 71 or points west. This situation would be further evaluated during final design to fully assess loss of access to property in this area. Line 3 in this area is the Selected Alignment and does not cut through the neighborhood in question and does not cut off any county roads.

The community of King is situated along the Kansas City Southern Railroad in northern Sevier County (Exhibit 2-4, Sheet 1 of 9). Line 1 in King is located between existing U.S. 71 and County Road 249 through King. Although County Road 249 would remain continuous, the proposed highway could be perceived as bisecting the community because of its physical location. Line 2 and Line 3 (the Selected in this area) in this reach travel east of County Road 249 and would not impact King.

The residential areas on the southeast side of Mena, between S.H. 8 and S.H. 88 consist of newer, higher priced homes. Some have been constructed as part of two housing developments south of Mena Lake and others have been individually constructed. While outside the city limits and not necessarily densely populated, this area functions somewhat as a community. Line 1 (the Selected Alignment in segment E-F) takes 8 homes in this reach and while it does not bisect any one development, it runs between the Mena Lake development and the Country Club Estates development. Line 2 in this area takes 6 homes and skirts the east side of Country Club Estates. Although some houses would be taken, travel between neighborhoods and to the rest of the community would remain the same as at present under Line 1 (the Selected) or Line 2. Line 3 has no effect on these neighborhoods.

The No-Action alternative could impact Huntington and Mansfield should the existing route be widened through these communities. Businesses and homes that exist along the route could be taken and the remainder of the community could be disrupted by changed travel patterns, loss of business and construction inconveniences.

### ***Property Values***

Property values will generally increase along highways for which an interchange has been proposed. The distance along these roads for

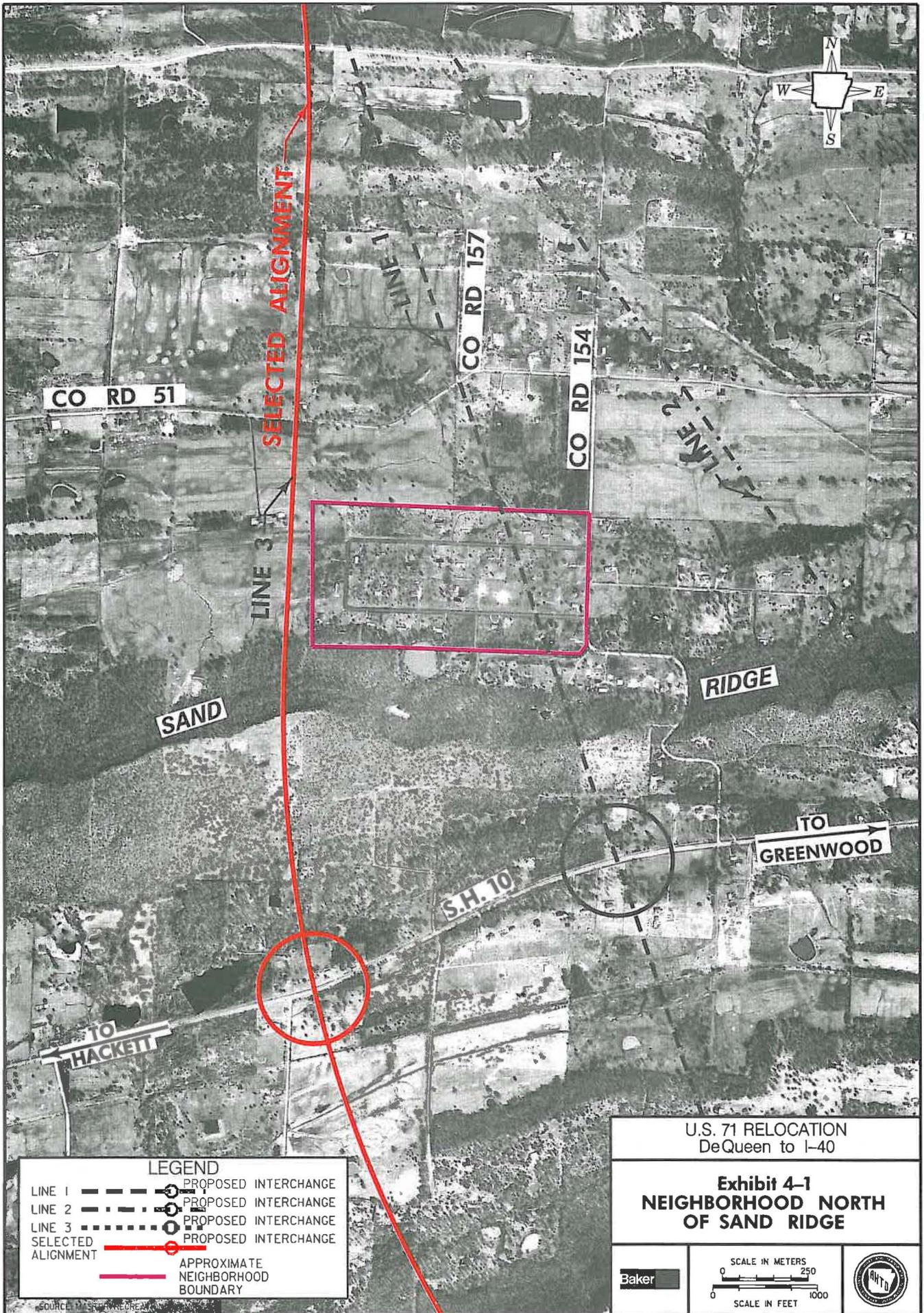
which property values will change would vary and is difficult to assess. For interchanges located close to a city, it is possible that property values may increase from the proposed interchange into the city, as this land may develop and become an integral part of the business and commercial area of the nearby city. For interchanges located a greater distance away, or located near smaller communities, property values may increase in the interchange area only.

Houses that would remain close to the proposed highway, but not near an interchange could decrease in value, because some potential buyers may perceive this as an undesirable residential location. However, in some situations, houses remaining close to the proposed highway could increase in value.

### ***Travel Patterns***

In some situations, smaller streets and roads may be relocated or carried along frontage roads to a larger street or road that is bridged by the proposed highway. As a result, current travel patterns for certain trips within a community would change and the time required to make these trips may increase.

In other cases, a trip from one side of a community to the other may be more easily made by utilizing the proposed highway. This situation could occur in Mena and Waldron and for certain trips in the



Fort Smith area. This would generally cause the trip duration to reduce.

Intercommunity travel patterns would also tend to change because residents would have a choice as to travel on existing U.S. 71 or on the proposed highway. Some residents may choose to take the proposed highway, which would generally have a shorter travel time, even though the distance traveled could be longer.

### ***Changes in Local Traffic***

Traffic volumes would tend to increase on highways for which interchanges have been proposed. These traffic increases would result from local residents accessing the proposed highway, from trips exiting the proposed highway and destined for the nearby community, and from through travelers exiting the proposed highway and traveling to the nearby community for additional services or recreational activities.

Residents living along these highways would experience the effects of this increased traffic as well as a different mix of trucks and cars. Truck traffic could increase on these highways. Travelers on streets that intersect with these highways near a proposed interchange may experience delays in turning onto these highways, particularly when crossing traffic. Driveways to businesses and houses along these highways may be similarly affected.

### ***Secondary Impacts***

Secondary development that could occur as a result of the proposed highway would affect the daily lives of residents in nearby communities. Residential areas may become more densely populated, demands on utilities and social services may increase, and farmlands may be converted to residential areas and other forms of land use.

Community change such as this can be perceived as positive or negative. New development often means new jobs, increased economic vitality and a higher population. To some this change is unwanted, to others it is desirable and vital.

Development that may occur at interchanges could indirectly affect the residents living along these highways. The land directly adjacent to the proposed interchange could change from solely residential and farm use to light commercial use such as restaurants and service stations. While nearby residents may enjoy the convenience of these services, the previous rural character of their residence would have changed. This situation appears more likely to occur at County Road 41 in Gillham, at County Road 242 in Grannis, at S.H. 246 east of Vandervoort, at the Line 2 crossing of County Road 32 near Cove, at the Line 3 crossing of S.H. 8 in Mena, at S.H. 28 in Waldron, at U.S. 71 near Abbott, at U.S. 71 north of Huntington, at S.H. 10, and at County Road 4 or S.H. 162 east of Kibler.

While the Selected Alignment may have differing effects on development potential in some areas, the difference between it and Lines 1, 2 and 3 is not distinguishable.

The No-Action alternative would not likely result in secondary development or associated change in communities beyond the current development trends.

#### **4.1.4 Community Access**

All communities of the study area will have access to the proposed highway, but particularly those located along existing U.S. 71. Lines 1, 2 and 3 would provide 22, 23 and 21 interchanges respectively, which are all located on well-traveled existing county roads and state highways. In most communities, residents will have to travel between 3 and 8 kilometers (2 and 5 miles) to reach the facility. The furthest distance would be from Needmore to the proposed Y-City interchange for a distance of 13 kilometers (8 miles). All alignments provide convenient access overall, though some areas are better served by one alignment than another. The Selected Alignment would provide 22 interchanges.

A portion of the project in which there are notable differences in access is the section between Cove and Mena. Line 1 provides an interchange near Potter on U.S. 71 and at S.H. 8 in Mena, but does not provide an interchange at Cove or near the

south side of Mena (See Exhibit 2-4). Line 2, however, provides an interchange at Cove on County Road 32 and at south Mena at a connector road to U.S. 71, as well as S.H. 8 and S.H. 88 in Mena. Line 3 provides no interchange at Cove nor south Mena but provides interchanges at S.H. 8 and S.H. 88. The Selected Alignment provides interchanges at U.S. 71 south, S.H. 8, and S.H. 88, but does not provide the interchange at Cove on County Road 32.

The No-Action alternative would not provide access to an Interstate-type highway without traveling as far as 160 kilometers (100 miles) along U.S. 71 to I-40 in Fort Smith or I-30 at Texarkana.

#### **4.1.5 Safety**

##### ***Highway Safety***

The discussions of project purpose and need in Section 1 discuss the current safety characteristics of existing U.S. 71. Recent studies (AHTD, 1988; Baker, 1995) have concluded that construction of the proposed highway would enhance overall traffic safety. Traffic on the proposed highway would encounter fewer access points than on the existing route, a factor that correlates to accident rates. The reduction in traffic volume due to diversion of traffic to the proposed highway can reduce the number of rear-end collisions on the existing route. Diversion of truck traffic to the proposed highway could reduce the need to pass, thereby reducing the number of head-on collisions on existing U.S.

71, which is currently higher on the existing route than statewide.

### ***Pedestrians and Bicyclists***

Increased traffic on crossroads connecting to the proposed highway could affect pedestrian safety in some localized areas of the project. Pedestrian and bicycle activity is rarely encountered along the rural portions of U.S. 71 and connecting state highways. Pedestrian and bicycle activity could be encountered in short reaches of U.S. 71 as it passes through communities and along some intersecting state highways close to these communities.

Installations of additional signals and crosswalks may be necessary in some locations on roads intersecting with the proposed highway.

#### **4.1.6 Relocations**

All alignments will displace residents, businesses and farming operations. Houses and other

structures were initially identified on new (1994) aerial photographic mapping and subsequently field verified and entered into the project's Geographic Information System for impact assessment. Several revisions during the Alignment Study were conducted in an attempt to minimize this overall impact, as discussed in Section 2.

The comparison of relocations for Lines 1, 2 and 3, as well as the Selected Alignment and the No-Action alternative is presented in Table 4-2.

The No-Action alternative could result in relocations in the reaches of existing U.S. 71 programmed for widening. These figures were estimated during the corridor study and represent the worst-case scenario because the count is based on the number of driveways located along existing U.S. 71.

**Table 4-2  
RELOCATION SUMMARY**

<b>Type</b>	<b>No-Action</b>	<b>Line 1</b>	<b>Line 2</b>	<b>Line 3</b>	<b>Selected</b>
Houses	90	109	105	72	81
Mobile Homes	unknown	16	15	9	12
Businesses	30	7	4	1	6
Community Facilities	unknown	1	2	0	1
Chicken houses	unknown	21	27	10	22
<b>Total</b>	<b>120</b>	<b>154</b>	<b>153</b>	<b>92</b>	<b>122</b>

Source: Michael Baker Jr., Inc., Grimes Consulting Engineers.

**Residential**

The majority of the residential relocations are isolated, one story, rural houses of brick or frame construction, or mobile homes. Average age of relocated homes is estimated at 20-30 years. The income level of relocatees is representative of the overall affected population. Most relocatees own their homes. No disproportionate amount of minorities, elderly, or low-income households would be relocated for any alignment.

Relocation can be more difficult for the elderly or for persons having lived in a location for a very long time, or on property owned by one family for many years. The location of the new home can also affect the degree of difficulty relocatees may experience. Moving within the same area may be less difficult than moving across town, which could involve other social changes.

**Farms**

Several farm operations would be affected by the proposed highway. Some farms would be bisected by an alignment and others would lose property along one boundary of the farm. Impacts to farms result from land lost that was in productive use or loss of access to acreage or pastureland. In some cases, access could be provided but the access may be indirect and less desirable. Chicken and hog farming operations are affected by loss of production houses or loss of required acreage to spread waste. Production houses can sometimes

be relocated on the same farm which would minimize the impact to a particular operation. Because the answers to many of these questions are based on details unavailable at this time, impacts to chicken and hog farm operations have been quantified by assessing the number of production houses directly affected. Final assessments of farm relocations and other property access issues are handled during the final design of the proposed highway.

**Businesses**

Business relocations would result from any of the alignments. Most businesses impacted are small, owner-operated establishments with a small number of employees or no employees other than the proprietor. The types of businesses relocated include storage garages, a convenience store, a furniture business, a glass company, a fabricating company, a solid waste transfer operation, an autobody garage, a heating and air conditioning repair business, a welding shop and a slaughterhouse. Because most of these businesses are located in residential or mixed use areas and do not involve large land area requirements, sites for relocation of these businesses should be available. However, Line 1 (the Selected in this area) and Line 2 affect a solid waste transfer operation in Mena which could require special permit requirements during the relocation process.

**Community Facilities**

Churches and other community facilities were identified early in the project, so that no relocation of churches would be required. However, Line 2 affects the Excelsior Community Center which is housed in an old church building. Line 1 and Line 3 (the Selected in segment K-L) avoid this building. Line 1 and Line 2 (the Selected in segment D-E) both affect the Elks Lodge in Mena. However, during the final design phase of the project, impacts to the Elks Lodge may be avoided. A final determination on the possible impacts to this building cannot be made until that time. The I-540 alignment, although not carried forward, would impact the Harvest Time Tabernacle Church located near the U.S. 71 / I-540 interchange.

**Replacement Housing**

An assessment was made of the available housing to determine its comparability with the relocatees' needs. Multilistings of all real property for sale, the usual source for such an assessment, were not available for the DeQueen and Waldron areas. This assessment was based on a combination of multilisting data, where available, and several individual contacts with real estate companies serving the preferred corridor and immediate area. The results are presented in Table 4-3. Local officials who have been directly involved in the project were also contacted for their general opinion and observation of housing availability in their locales.

The data collected indicates that both the type and cost of the available housing is comparable to the relocatees housing needs. The housing is available without discrimination as to race, color, national origin, age, sex or religion.

Because of the percentage of government owned land in Polk and Scott counties, land for replacement of farm operations may be difficult to locate. However, in the opinion of area realtors, sufficient land is available for sale for construction of new homes, in the event that replacement housing in a particular situation is not available.

The acquisition and relocation process will be conducted in accordance with the Uniform Relocation Assistance and Real Property Policies Act of 1970. Relocation assistance will be made available to all residential and business relocatees without discrimination. In all cases, decent, safe and sanitary housing will be provided for all relocatees. Although it does not appear necessary for this project, AHTD is committed to providing housing of last resort.

AREA	PRICE RANGE	NUMBER
DeQueen and North Sevier County	10,000-24,900	2
	24,901-39,900	7
	39,901-49,900	3
	49,901-69,900	3
	69,901-79,900	4
	79,901-99,900	2
	over 99,900	6
	Total	27
Mena Area	10,000-24,900	7
	24,901-39,900	28
	39,901-49,900	23
	49,901-69,900	19
	69,901-79,900	11
	79,901-99,900	6
	over 99,900	13
	Total	107
Waldron Area	10,000-24,900	2
	24,901-39,900	4
	39,901-49,900	3
	49,901-69,900	8
	69,901-79,900	1
	79,901-99,900	5
	over 99,900	9
	Total	32
Greenwood / Rye Hill Area	10,000-24,900	1
	24,901-39,900	7
	39,901-49,900	11
	49,901-69,900	20
	69,901-79,900	9
	79,901-99,900	26
	over 99,900	56
	Total	130
Huntington / Mansfield / Witcherville Area	10,000-24,900	2
	24,901-39,900	3
	39,901-49,900	6
	49,901-69,900	10
	69,901-79,900	6
	79,901-99,900	2
	over 99,900	4
	Total	33
Kibler / Alma Area	10,000-24,900	3
	24,901-39,900	13
	39,901-49,900	12
	49,901-69,900	19
	69,901-79,900	14
	79,901-99,900	21
	over 99,900	30
	Total	112

Source: Michael Baker Jr., Inc., Study Area Realtors, August 1996

## 4.2 ENVIRONMENTAL JUSTICE

The population potentially affected by the project was compared to the appropriate county figures to determine whether a disproportionate amount existed in any one minority category. A similar analysis was conducted for the percent of families living below the poverty level, as well as for the elderly. The results are presented in Table 4-4.

The data indicates that minority and low-income populations, as well as the elderly, are dispersed throughout the preferred corridor, and are in similar proportions to the county population.

A slightly higher percentage of low-income families exists in the Sevier County affected population, 15.6% in the townships crossed by the alignments, compared to 13.7% in the county. This area of the preferred corridor was examined. The residences located in the preferred corridor in these townships are few in number and indicative of moderate income families. Low-income families appear to reside in the Gillham area near existing U.S. 71, and west of the preferred corridor. Further, the displacements in this area are very few in number, 4 on Line 1, 1 on Line 2, and zero on Line 3, the Selected Alignment in Sevier County.

**Table 4-4**  
**MINORITY, LOW-INCOME AND ELDERLY POPULATION STATISTICS**

Zone	% Minority	% Hispanic	% Below Poverty	% Elderly
Sevier County Affected Population	1.7%	0.0%	15.6%	13.0%
Sevier County Total Population	11.6%	4.3%	13.7%	16.5%
Polk County Affected Population	1.8%	1.4%	10.5%	16.0%
Polk County Total Population	1.6%	2.1%	14.7%	19.3%
Scott County Affected Population	<1%	<1%	14.7%	13.1%
Scott County Total Population	1.8%	<1%	18.4%	16.8%
Sebastian County Affected Population	<1%	<1%	9.0%	8.8%
Sebastian County Total Population	11.0%	1.1%	10.0%	14.0%
Crawford County Affected Population	2.1%	1.8%	12.9%	7.9%
Crawford County Total Population	3.5%	1.0%	13.1%	11.9%
5 County Affected Population	1.3%	<1%	11.5%	12.7%
5 County Total Population	7.9%	1.3%	12.0%	14.3%
State of Arkansas	17.3%	<1%	14.9%	14.9%

Source: U.S. Department of Commerce - Bureau of the Census - 1980 & 1990, Census of Population and Housing - General Population Data, Arkansas State Data Center - Population

To confirm the indications of the census data, residential areas throughout the preferred corridor were assessed for the presence of low-income or minority enclaves during ongoing project field studies. Further, many of the potentially relocated families in the preferred corridor attended the public meetings and talked with the project team. There is no evidence of low-income or minority clusters within the preferred corridor; those affected are a representative cross section of the population. With respect to indirect impacts of minority or low-income populations, there is no evidence that the proposed highway would result in disproportionate amounts of noise to any one group. Community access has been a critical element in the location of the alignments and will offer positive social and economic benefits to all citizens equally.

### **4.3 ECONOMIC IMPACTS**

#### **4.3.1 Employment Opportunities and Increased Efficiency**

Economic impacts would be similar for all alignments, including the Selected Alignment. Construction of the proposed highway would positively impact the local economies of the study area communities. New employment opportunities would be generated by the construction activities, in addition to the services required to support the operation. Restaurants, motels and service stations would benefit as well as retail providers and local suppliers. Given the length of the

proposed highway, these economic impacts would continue for several years.

Other benefits would also be realized. The time savings of 50 minutes between DeQueen and I-40 would translate into a cost savings. Vehicle operating costs would also be reduced. Many trucking companies within the study area or with routes through the study area would benefit, in addition to all companies who require the transport of goods or services. The poultry industry (DeQueen, Grannis, Waldron and Fort Smith) and timber industries (DeQueen, Cove, Hatfield and Mansfield) rely heavily on trucking raw materials and products between individual operators and plants in the study area and would experience increased efficiency in their operations.

Access to existing service stations and convenience stores located near a proposed interchange would be improved which could benefit these businesses.

It is possible that some highway-related businesses along the existing route could suffer due to a reduction in traffic on the existing route. This would depend on the type of business, the traffic changes that occur, and the proximity to other traffic generators. Highway related businesses that depend in large part on local traffic would most likely be positively impacted. Locating

the proposed highway and interchanges close to communities would minimize this effect.

Due to the relatively few business relocations that would occur for any of the alignments, and the conclusion that these businesses could reestablish their operations, no significant negative economic impacts are expected. Minimal negative economic impacts are expected should a business not reestablish. The few business relocations involved will be compensated for their property and would receive relocation assistance.

The No-Action alternative could involve some negative economic impact associated with displaced businesses along existing U.S. 71 between Witcherville and Mansfield.

#### 4.3.2 Secondary Economic Impacts

The tourism industry in the study area could benefit from the increased accessibility offered by the proposed highway. Potential tourists would be able to reach the area in less time and on an Interstate-type highway. Providers of tourism opportunities (primarily recreational) would benefit from the increased business. Because vacationers typically set aside time and money during their trips for shopping, retail shops and antique stores catering to vacationer's needs would also benefit.

Other economic impacts that may be further removed in time are tied to potential secondary development, discussed earlier in this section. The

economic impacts of that development are summarized below.

- ❑ New and expanded industrial initiatives in new and existing industrial parks and Fort Chaffee would provide employment opportunities throughout the study area and provide additional corporate tax revenues. The highest potential for this benefit exists in the Fort Smith and Van Buren areas.
- ❑ Growth in residential areas would increase the demand for consumer services, including retail, banking, medical and recreational
- ❑ Establishment of retirement communities would infuse the local economy with additional disposable income, similar to other residential development
- ❑ Commercial development at interchanges would have varying economic effects on the local economy, depending on the extent of this development.

#### 4.4 VISUAL

Visual changes that are attributable to the proposed highway would take two forms: views of the proposed highway from various points within the preferred corridor and views from the proposed highway of the surrounding landscape.

##### 4.4.1 Views of the Proposed Highway

The proposed highway would alter the rural setting of portions of the preferred corridor characterized

by rolling agricultural terrain. The farms are typically large tracts of land with few residents that would be affected. Due to the flatter terrain in these areas, the extent of cut and fill would be limited, thereby minimizing the visual effect. Due to the length of the project, there is no appreciable difference in the visual impacts between the alignments. It can be stated generally that the alignments that are closer to nearby communities would have a lesser effect on the rural setting, though more residents may have a view of the highway. Alignments further from communities would result in a greater change in the visual environment but actually affect fewer residents.

Several locations within the preferred corridor were assessed as to whether or not the proposed highway would be seen from these points and the extent to which the highway would be seen. These include the Fourche Mountain region of the Ouachita National Forest and the Ouachita National Recreation Trail, Talimena Scenic Drive up Rich Mountain, the Poteau Mountain Wilderness Area and Springhill Park.

The proposed highway would traverse approximately 29 kilometers (18 miles) of the Ouachita National Forest across Fourche Mountain. This region of the forest is mountainous and remote and used for recreation and timber production. The Ouachita National Recreation Trail crosses existing U.S. 71 in this reach.

Construction of the proposed highway would impair the scenic quality of this part of the forest, particularly that seen from the trail. The amount of visual impact is directly related to the depth of cut. Lines 1 and 2 in this reach would result in cuts up to 74 meters (240 feet) into the mountain. Line 3 which reconstructs existing U.S. 71 would result in cuts of 6 meters (20 feet). The Selected Alignment (Line 3 in segment G-H) results in the least visual impact and also offers the best potential to minimize the visual impact during the design process.

Talimena Scenic Drive follows S.H. 88 up Rich Mountain and includes several overlooks along the 19 kilometer (12 mile) trip. Due to the topographic characteristics of the gap in Fourche Mountain, it is unlikely that any of the alignments would be seen from the scenic overlooks. The western ridge of Fourche Mountain at the gap would shield from view the cuts that would be made in the eastern ridge of Fourche Mountain. This is evident by the shape of the S-curve in the existing route through the gap. Line 3 (the Selected Alignment in this segment) which follows the existing route would be least likely of all lines to be visible from Talimena Scenic Drive. However, the proposed highway would be visible as it approaches the gap just east of Acom, but the earthwork involved in this area is much less intrusive.

Poteau Mountain Wilderness Area is located at the northern limit of the Ouachita National Forest. The majority of the wilderness area is outside the preferred corridor and not directly affected. Observations made from the area suggest that portions of the proposed highway may be seen from Poteau Mountain Road which travels along the southern boundary of the wilderness area. However, due to the dense vegetative cover in the wilderness area, these views would be limited to occasional openings in the forest canopy. There is no appreciable difference in the visual impact of the three alignments in the Poteau Mountain area.

Springhill Park spans the preferred corridor. A complete discussion of impacts to the park are provided in Section 5. The proposed highway would bridge Springhill Park in its entirety, partly to minimize impacts and partly in order to meet the navigation clearance requirements on the Arkansas River to its north. Due to the dense vegetative cover of most areas of the park, the bridge over the park (on any alignment) would not be visible from most park facilities and does not constitute use of the park in this regard. At the crossing location, the bridge would be approximately 15 meters (50 feet) above the existing ground of the park and hidden within the forest canopy. Further, clearing activities beyond the bridge would be minimized to reduce any visual effects. The main spans of the bridge over the

Arkansas River would be visible from the boat launching ramp and the overlook just as the lock and dam structure are currently visible from these locations (see Exhibit 5-1). Lines 1 and 2 crossing the park would be visible from the end of the roadway through the park although no park facilities are located in this area. Should the Corps find a solution to the recurrent flooding problems and further develop the eastern area of the park, the bridge would be visible as visitors pass under it and for some distance beyond. As in the case of the existing camping areas and other park facilities, it is expected that dense vegetation associated with the future developed areas would obstruct the view of the bridge.

#### **4.4.2 Views from the Proposed Highway**

The views of the surrounding landscape from the proposed highway could be dramatic and considered a beneficial impact. Many scenic vistas will be created as the proposed highway climbs the rugged mountains of the region, then descends into wide valleys. Some of the views identified are:

- Poteau Mountain as seen from the north as the proposed highway leaves Sebastian County and approaches the Ouachita National Forest
- the Mena valley with Rich Mountain as a backdrop as seen from the south as the proposed highway crests Dallas Mountain

- ❑ the Waldron area with Poteau Mountain as a backdrop as seen traveling north as the proposed highway descends Piney Mountain
- ❑ the rolling, rural landscape surrounding Backbone Mountain and Devil's Backbone Ridge
- ❑ the remote, mountainous and heavily forested region of southern Polk County
- ❑ the vistas of fall foliage in regions of the corridor dominated by hardwoods
- ❑ the rural setting that occurs along the route as it traverses wide valleys and some areas of rolling agricultural terrain.

**4.5 GEOLOGY**

All alignments would impact areas underlain by shales of the Atoka and McAlester Formations. These formations are found from Boles in Scott County north to Frog Bayou in Crawford County. Some shales within these formations contain the sulfide mineral pyrite which when exposed to air and water may generate acidic drainage. The potential formation of acidic drainage from these geologic formations could have an impact on local surface water quality. The potential for acidic drainage does not differ between Lines 1, 2, 3, or the Selected Alignment.

The No-Action alternative includes the future widening of U.S. 71 from Mansfield to Witcherville and could result in some surface water quality

impacts due to involvement with the Atoka and McAlester Formations.

**4.6 EARTH RESOURCES**

**4.6.1 Gas Wells**

Locations of producing, inactive, and abandoned gas wells were obtained from the Arkansas Oil and Gas Commission in Fort Smith. Gas well locations were entered into the GIS and impacts were determined for each alignment.

All alignments would impact gas well locations, as summarized in Table 4-5.

<b>Table 4-5 GAS WELL IMPACTS</b>			
Alignment	Producing	Inactive	Aband.
No-Action	0	0	0
Line 1	1	1	3
Line 2	5	0	3
Line 3	1	2	2
Selected	0	2	4

Source: Michael Baker Jr., Inc.

Line 2 would impact the greatest total number of well locations, including five producing wells. No producing gas wells would be impacted by the Selected Alignment.

The No-Action alternative could result in gas well impacts associated with widening activity, although the extent of these impacts is not known at this time.

Gas wells impacted by highway construction would be abandoned according to procedures established by the Arkansas Oil and Gas Commission. Economic impacts could occur due to the loss of inactive or producing gas wells. If geologic conditions permit, wells could be replaced in the same production zone at AHTD's expense. If this is not possible, the owners of gas rights would be compensated by AHTD for lost revenues based on estimates of reserves that are on file at the Arkansas Oil and Gas Commission.

During final design, individual gas well lines and collector lines would be identified. When possible, these lines would be avoided or relocated to continue service to these well sites.

#### **4.6.2 Coal**

All alignments would cross abandoned surface and underground mines within the preferred corridor from Huntington to Jenny Lind. Construction through strip-mined areas has the potential to cause acid drainage problems as mine spoil is disturbed and exposed to precipitation. Construction through undermined areas also has the potential to create acid drainage problems. In addition, undermined areas will be considered in the design process.

Line 1 would impact 4.5 hectares (11.0 acres) of abandoned strip mines at the S.H. 378 site and S.H. 10 site.

Line 2 would impact 4.0 hectares (10.0 acres) of abandoned strip mine sites. Impacted sites would include the S.H. 10, County Road 43, and S.H. 378 site. Line 2 would impact two areas that have undergone mine reclamation activities.

Line 3 would impact 4.0 hectares (10.0 acres) of strip mine sites. These sites include the County Road 43, County Road 54, S.H. 10, and the S.H. 378 site. Line 3 would impact one reclamation site.

The Selected Alignment would impact 3.4 hectares (8.3 acres) of strip mine sites including the S.H. 10 and County Road 43 sites. No reclamation areas would be impacted.

The No-Action alternative would not impact abandoned mining activities.

Deep mining of coal extends throughout the Lower Hartshome Coal bed which crosses the study area from west of Hackett to east of Greenwood and from Poteau Mountain to north of Alma. Most underground mining activity in the study area was conducted using room and pillar mining and has centered around the communities of Greenwood, Hackett, and Huntington. Within the preferred corridor, two bands of undermined areas have been identified, one extending west from New Jenny Lind along County Road 54, and the second extending west from Excelsior along S.H. 10. The depth to the coal seam varies between these two sites from a depth of approximately 240 meters

(800 feet) at Griffith Mountain to approximately 30 meters (100 feet) along S.H. 10 near the IWC Superfund site. All alignments cross the above mine locations, however, Line 3 (the Selected) has the shortest crossing distance. Conditions encountered through construction of any of the alignments through this area likely would not differ. Early in the design process, any available information on past mining activities would be obtained to determine the extent of undermining. Appropriate geotechnical investigations would then be conducted that could include borings to the mine level and camera surveys of the mine. Design measures could include using the coal as positive support (for structures), grouting, or excavating and backfilling in areas where depth of coal is relatively shallow.

## 4.7 WATER QUALITY

Water quality impacts were assessed for surface water, groundwater, and public water supplies. Water quality impacts would likely be confined to the temporary influx of sediment laden surface runoff. No long term adverse impacts would be expected. AHTD will comply with all requirements of the Clean Water Act, as amended, for the construction of this proposed highway including; Section 401 Water Quality Certification, Section 402 National Pollutant Discharge Elimination System (NPDES) Permit, and Section 404 Permits for Dredge and Fill Material. The NPDES Permit is

required from ADPC&E for stormwater discharge for any construction activity disturbing an area of 2 hectares (5 acres) or more. The NPDES permit process will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. AHTD will prepare and implement a SWPPP that will include all specifications and best management practices (BMPs) necessary for control of erosion and sedimentation and will file the requisite Notice of Intent with ADPC&E. The SWPPP will be prepared after the final highway design work has been completed in order to best integrate the BMPs with the design process.

### 4.7.1 Surface Water

#### *WQI Analysis*

Potential surface water quality impacts were assessed using a method developed by AHTD that examines the drainage areas crossed by each alignment. For each drainage area crossing, six parameters that influence water quality were quantified and used to calculate a crossing specific water quality index (WQI). This method and specific details of each drainage area crossing are presented in Appendix F.

Each drainage area crossing was placed in one of five potential impact categories based on the individual WQI score (Table 4-6).

<b>Impact Category</b>	<b>WQI Range</b>
Very Low	< 32.3
Low	32.3 - 37.0
Average	37.0 - 41.8
Moderate	41.8 - 46.5
High	> 46.5

Source: Michael Baker Jr., Inc.

Impact categories were based on the distribution of WQI scores calculated for 609 individual drainage area crossings. Scores above 46.5 correspond to the high potential impact category where features such as highly erodible soils, low soil permeability and steep topographic relief, could make construction in these drainage areas more likely to

impact stream water quality. Scores below 37.0 correspond to the low and very low potential impact categories where features such as stable soils, high soil permeability and gentle slope help minimize construction impacts to water quality. The linear distance of each drainage area crossing within the five impact categories is summarized for each alignment in Table 4-7. No appreciable difference was found in average WQI scores between the alignments or within the individual segments (Table S-1). This would indicate that overall, water quality impacts due to construction would be similar over the three alignments, as well as the Selected Alignment.

<b>WQI Group</b>		<b>No-Action</b>	<b>Line 1</b>	<b>Line 2</b>	<b>Line 3</b>	<b>Selected</b>
<b>Average WQI Score</b>		<b>N/A</b>	<b>39.7</b>	<b>39.6</b>	<b>38.9</b>	<b>38.8</b>
Very Low	Number of Crossings	N/A	11	8	21	18
	Meters	N/A	3,964	2,592	8,688	7,849
	Feet	N/A	13,000	8,500	28,500	25,750
Low	Number of Crossings	N/A	47	52	51	58
	Meters	N/A	30,329	31,775	25,453	31,626
	Feet	N/A	99,500	104,250	83,500	103,750
Average	Number of Crossings	N/A	69	67	79	74
	Meters	N/A	49,835	50,979	66,295	65,534
	Feet	N/A	163,500	167,250	217,500	215,000
Moderate	Number of Crossings	N/A	53	52	50	49
	Meters	N/A	52,731	64,621	55,320	61,417
	Feet	N/A	173,000	212,000	181,500	201,500
High	Number of Crossings	N/A	19	16	14	12
	Meters	N/A	43,510	37,034	39,778	31,091
	Feet	N/A	142,750	121,500	130,500	102,000

Source: Michael Baker Jr., Inc.

Line 1 would cross the greatest number and area of high impact drainages and would have the highest average WQI score (39.7). The largest individual drainage area crossing would occur along Frog Bayou in segment N-O.

Line 2 would cross the fewest individual drainage areas and would have the largest crossings in segment C-D in association with Sixmile and Mike Creeks.

Line 3 would have the largest number of individual drainage area crossings, but would cross the greatest distance of low and very low impact drainage areas. The largest crossing would occur in the Ouachita National Forest in segment G-H in association with Cedar Creek as it flows north through Fourche Gap.

The Selected Alignment would cross the fewest number and shortest distance of high impact drainages and would have the lowest average WQI score (38.8). The largest crossing would occur in the Ouachita National Forest in segment G-H in association with Cedar Creek as it flows north through Fourche Gap.

Potential water quality impacts during construction of any of the alignments would be temporary in nature and would be minimized through site specific erosion and sedimentation control measures at all creek and river crossings (see Appendix F). As discussed previously, AHTD will

comply with all requirements of the Clean Water Act for construction of the proposed highway. In some situations, additional right-of-way may be required to implement the required erosion and sedimentation control measures.

The WQI analysis provides valuable information for the identification of stream drainages more susceptible to construction runoff impacts. Drainage area crossings in moderate and high WQI groupings, would indicate a combination of slope, soil, and land use features that could affect the quantity and quality of stormwater runoff during and after construction. Concentrating erosion and sedimentation control measures at these points could reduce overall adverse water quality impacts.

The No-Action alternative would likely result in surface water quality impacts through widening activity, although the extent of these impacts is not known at this time.

### ***Secondary Impacts***

Secondary impacts to surface water could include degradation of water quality and aquatic habitat as a result of stormwater runoff carrying sediment and highway pollutants into streams; reduced light penetration resulting in lower net primary production and increased biological oxygen demand; and reduced or obstructed movement of aquatic organisms in streams due to enclosures.

Sedimentation of streams could occur from highway runoff and could adversely impact both aquatic invertebrates and fishes by altering the existing substrate, increasing turbidity, reducing light penetration, reducing dissolved oxygen, and increasing biological oxygen demand. Sedimentation can also have acute and chronic effects on aquatic invertebrates (aquatic insects, mussels, zooplankton) and fish. Elevated suspended sediment concentrations can cause mortality in adult fish by clogging the gill filaments and preventing normal water circulation and aeration of blood. In addition, sedimentation can disrupt normal reproduction and affect species productivity by smothering spawning areas, reducing egg viability, and preventing the emergence of fry.

During highway operation, sources of potential pollutants include vehicles and roadway maintenance practices such as sanding, deicing, and application of herbicides on right-of-way. The rate of deposition and subsequent magnitude of these pollutants in highway runoff are site-specific and are affected by traffic volumes, highway design, maintenance activities, surrounding land use, climate, and accidental spills.

The primary mechanism for removal of highway pollutants from the road surface is through stormwater runoff. The effects of highway runoff on streams are variable and dependent on the

length of time since the last storm event, the quantity of stormwater runoff delivered to the stream, volume of flow in the stream, the duration of the storm event, and traffic volume (Charbeneau et al., 1993). Highway runoff may adversely affect the water quality through short term loadings associated with storm events and through chronic effects as a result of long-term accumulation and exposure.

Research on rural highways similar to the proposed highway indicates few substantial effects from highway runoff are apparent for highways with an average daily traffic (ADT) of less than 30,000 vehicles per day and that toxic effects are limited to urban facilities with high ADTs, greater than 50,000 (Maestri et al., 1981). Based on the maximum volume of traffic predicted for the proposed highway, 29,800 vehicles per day, no measurable differences in stream water quality would be expected from highway runoff.

Hazardous or toxic material spills could occur during construction or operation of the proposed highway and could impact nearby streams and other natural resources. The reporting of hazardous and toxic materials spills is the responsibility of the AHTD District Engineer. Spills would be immediately reported to the AHTD Telecommunication's Operator and the State Emergency Operation's HAZMAT Hotline would be called for official notification and response. Clean-

up procedures for hazardous and toxic material spills related to construction are outlined in the AHTD's Section 110, Abatement of Water Pollution, Standard Specifications for Highway Construction.

#### **4.7.2 Groundwater**

All alignments will have a minimal impact on groundwater resources. The availability of public water supplies reduces the dependence on groundwater resources. The most vulnerable aquifer crossed would be the alluvium associated with the Arkansas River and associated floodplain. Vulnerability is greater in this area due to the nearly flat topography and sandy soils which allow for more rapid infiltration of surface water. However, residents within the river valley rely upon public water supplies for domestic purposes. This aquifer is mainly used for agricultural irrigation.

The No-Action alternative would not impact groundwater.

#### **4.7.3 Public Water Supply**

All alignments will cross Gap Creek, a perennial tributary that flows into Irons Fork Lake Reservoir. This reservoir is used as a public water supply for the city of Mena. Line 1 would cross Gap Creek approximately 2.4 kilometers (1.5 miles) upstream of the reservoir, Line 2 would cross 2.8 kilometers (1.7 miles), and Line 3 (the Selected in this

segment) would cross 3.9 kilometers (2.4 miles) upstream.

Secondary impacts associated with highway construction could include increased turbidity and sedimentation in the vicinity of the Gap Creek crossing. However, the implementation of proper erosion and sedimentation control techniques should minimize any potential impacts.

The No-Action alternative would not impact public water supplies.

### **4.8 WILD AND SCENIC RIVERS**

All alignments will bridge the upper reaches of the Ouachita River, a Nationwide Rivers Inventory stream, between U.S. 71 and S.H. 88. In this area, the Ouachita River is currently crossed by a number of highway bridges; U.S. 71, County Road 76, County Road 1444, S.H. 88, and County Road 647 (just south of S.H. 88). The land use between U.S. 71 and S.H. 88 is dominated by agricultural land, primarily pasture and hayland. Current recreational use of the Ouachita River in this area is limited to fishing and canoeing activities depending on the seasonal flow regime.

Bridge crossings of the Ouachita River by any of the alignments would not impede normal stream flow and construction impacts on water quality would be minimized through the adherence to a properly designed erosion and sedimentation

control plan. The duration of construction work within the river would be minimized as much as possible. The National Park Service has recommended bridge design features that will be considered during the final design process.

**4.9 FLOODPLAINS**

All alignments would cross 100 year floodplain areas as identified in Flood Insurance Rate Maps and Flood Hazard Boundary Maps. Table 4-8 and Exhibit 4-2 present floodplain impacts by alignment. Line 1 would have the least impact on floodplains, while Line 3 would have the greatest impact.

<b>Table 4-8 FLOODPLAIN IMPACTS</b>		
<b>Alignment</b>	<b>ha</b>	<b>ac</b>
No-Action	0	0
Line 1	109.8	271.4
Line 2	115.4	285.3
Line 3	121.5	300.0
Selected	105.3	260.5

Source: Michael Baker Jr., Inc.

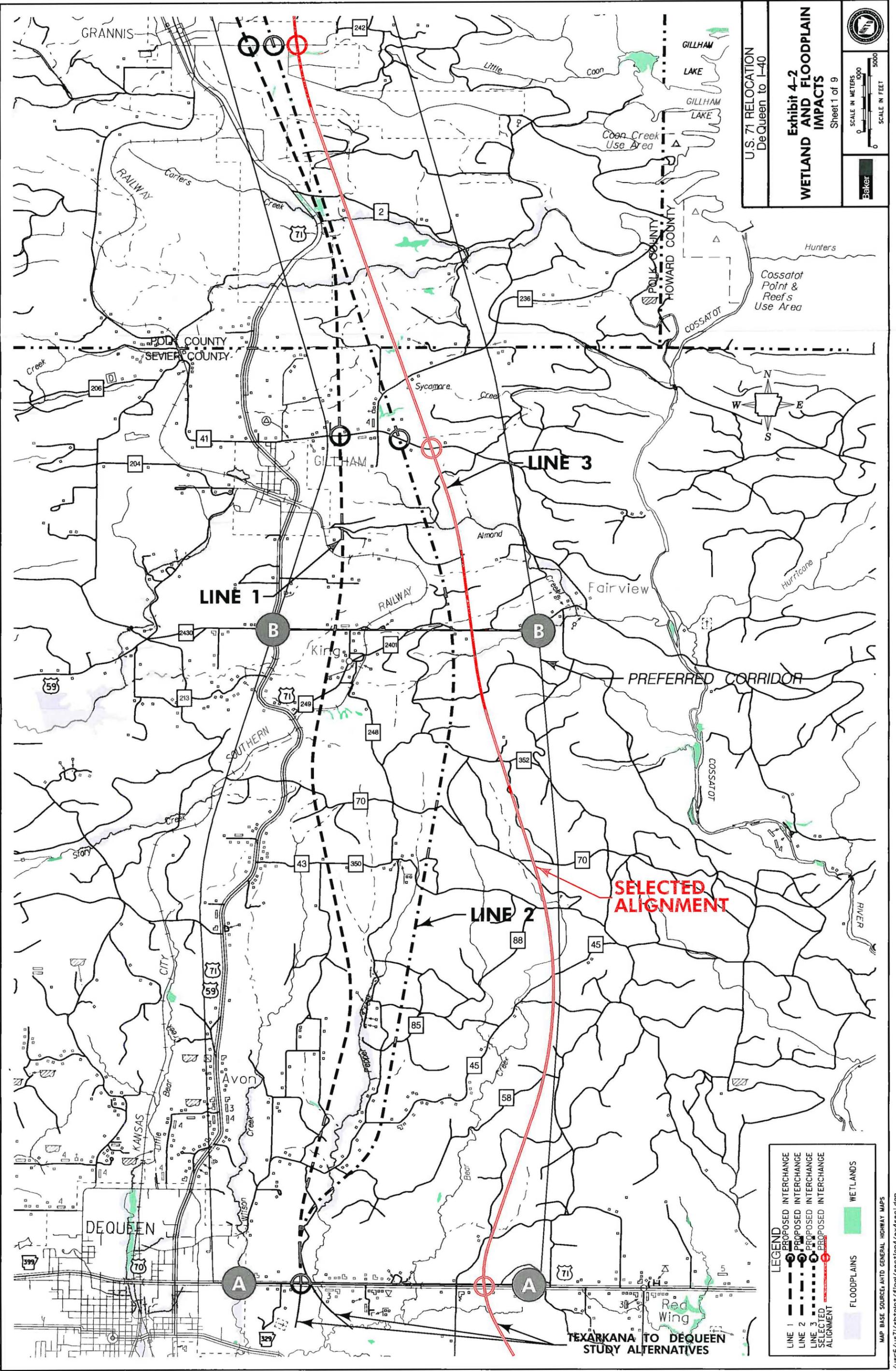
The majority of impacts for all alignments occurs along Frog Bayou in Crawford County and along the Arkansas River and its tributaries in Sebastian and Crawford Counties. The Frog Bayou floodplain is the largest in the preferred corridor and all three lines and the Selected Alignment would impact this area. Potential impacts to other floodplains within the preferred corridor have been largely confined to the Ouachita River and Prairie

Creek floodplains in the Mena area and the Sixmile Creek floodplain near Cove. All three lines and the Selected Alignment would impact the Ouachita River floodplain north of Mena. Line 1 and the Selected Alignment avoid major Prairie Creek floodplain impacts along S.H. 88 southeast of Mena, while Lines 1 and 2 avoid major involvement with the Sixmile Creek floodplain near Cove.

The No-Action alternative would likely result in floodplain impacts through widening activity, although the extent of these impacts is not known at this time.

Areas sensitive to local flooding will be identified during the design phase of the project. If areas of severe flooding are identified, imposed design criteria may be more restrictive than those specified in local floodplain ordinances.

Detailed hydraulic studies will be performed during the final design process to determine any changes in flood elevations due to highway construction. These studies will be reviewed to confirm that adequate measures have been taken to insure that floodplain encroachment does not increase the risk of flooding to adjacent property. When final design is completed, hydraulic data and construction plans will be available to local communities for review, approval, and permitting as specified by local floodplain ordinances.



U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 4-2  
WETLAND AND FLOODPLAIN  
IMPACTS**

Sheet 1 of 9

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SCALE IN FEET 0 1000 5000

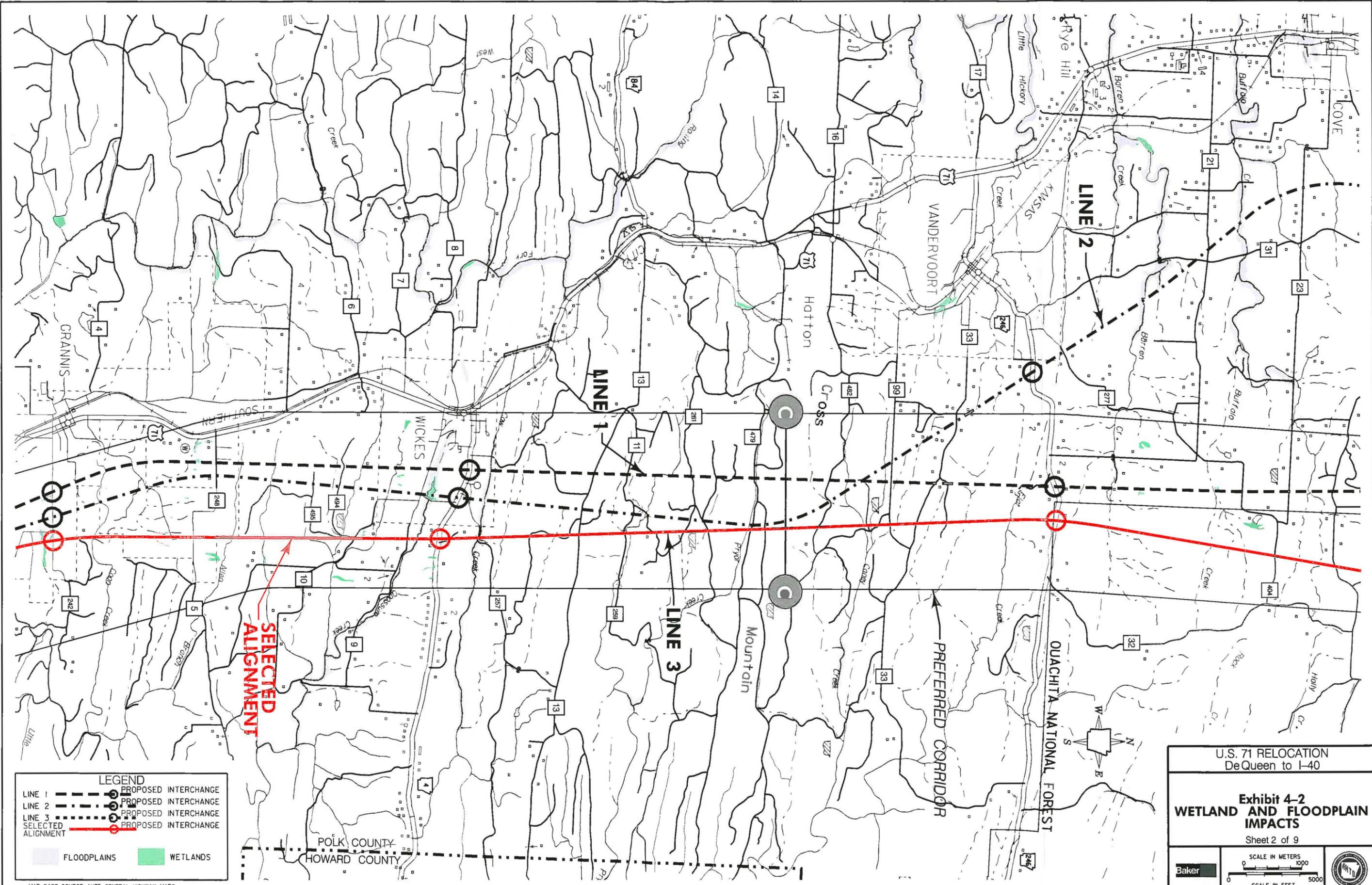
Baker

**LEGEND**

- LINE 1 PROPOSED INTERCHANGE
- LINE 2 PROPOSED INTERCHANGE
- LINE 3 PROPOSED INTERCHANGE
- SELECTED ALIGNMENT
- FLOODPLAINS
- WETLANDS

TEXARKANA TO DEQUEEN  
STUDY ALTERNATIVES

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**LEGEND**

- LINE 1 - - - - - PROPOSED INTERCHANGE
- LINE 2 - - - - - PROPOSED INTERCHANGE
- LINE 3 - - - - - PROPOSED INTERCHANGE
- SELECTED ALIGNMENT - - - - - PROPOSED INTERCHANGE
- FLOODPLAINS
- WETLANDS

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 4-2  
WETLAND AND FLOODPLAIN  
IMPACTS**

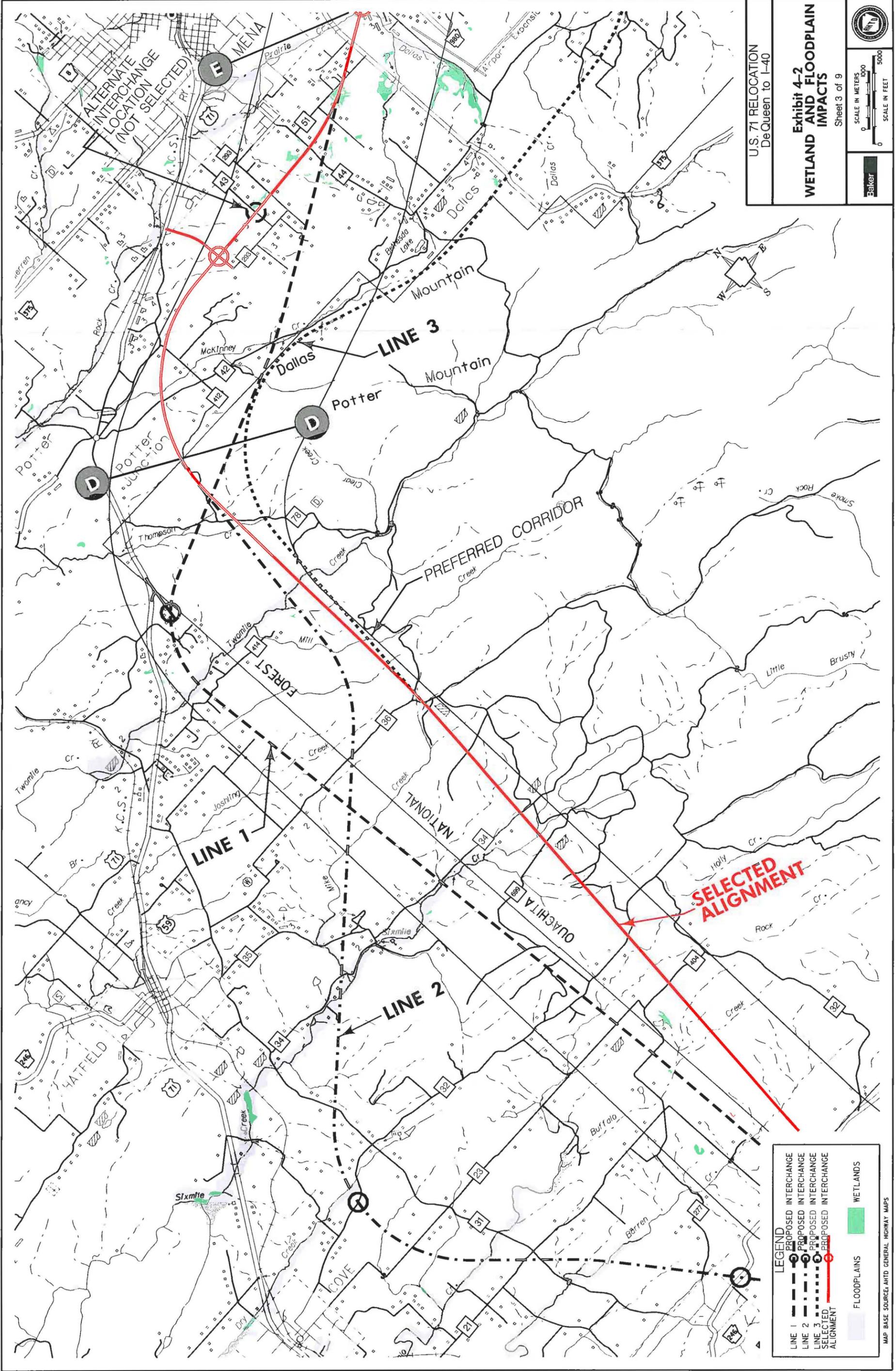
Sheet 2 of 9

Baker

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0 5000

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U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 4-2  
WETLAND  
AND FLOODPLAIN  
IMPACTS**

Sheet 3 of 9

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SCALE IN FEET 0 1000 5000

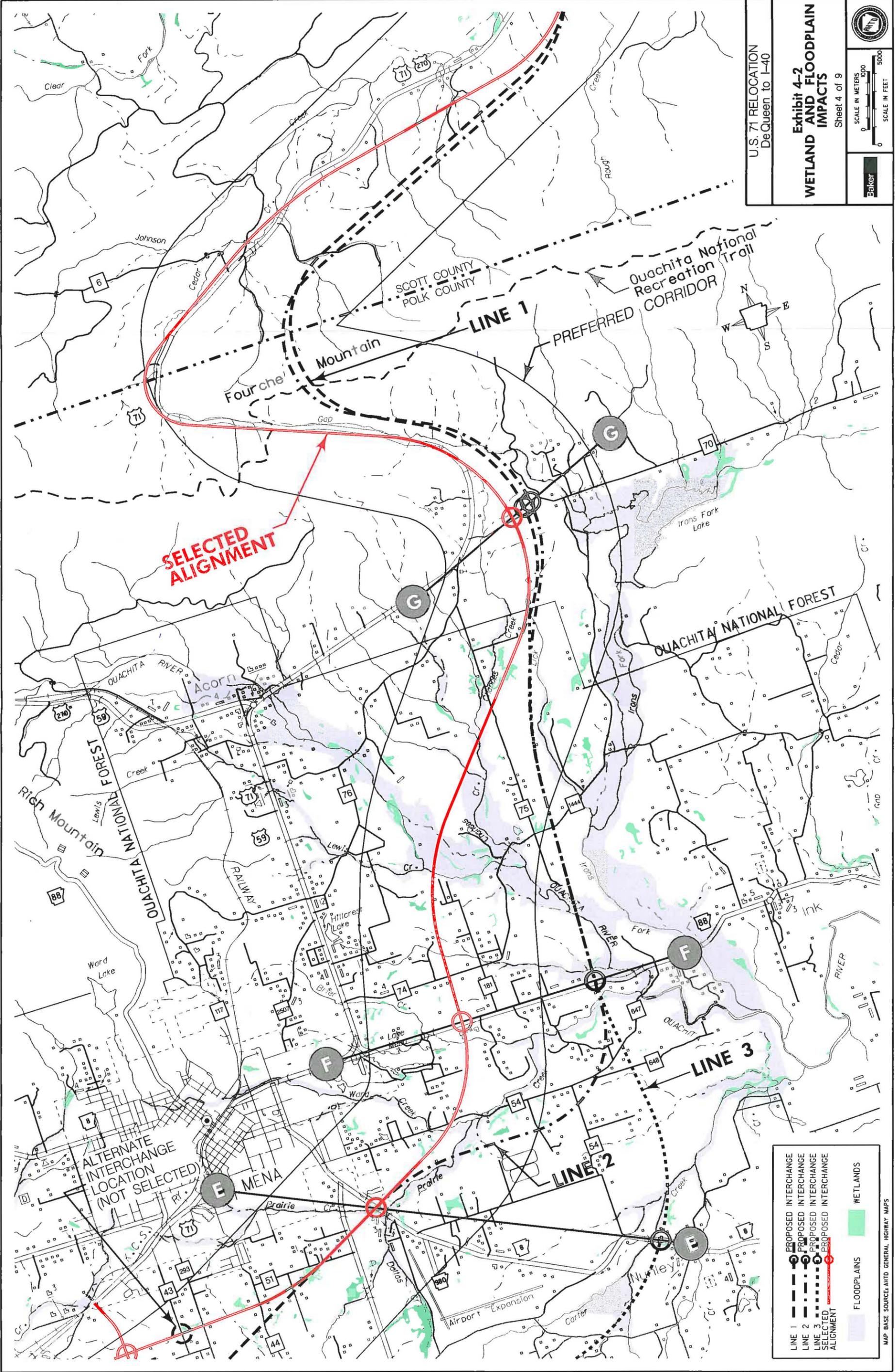
Baker

**LEGEND**

LINE 1 PROPOSED INTERCHANGE  
LINE 2 PROPOSED INTERCHANGE  
LINE 3 PROPOSED INTERCHANGE  
SELECTED ALIGNMENT PROPOSED INTERCHANGE

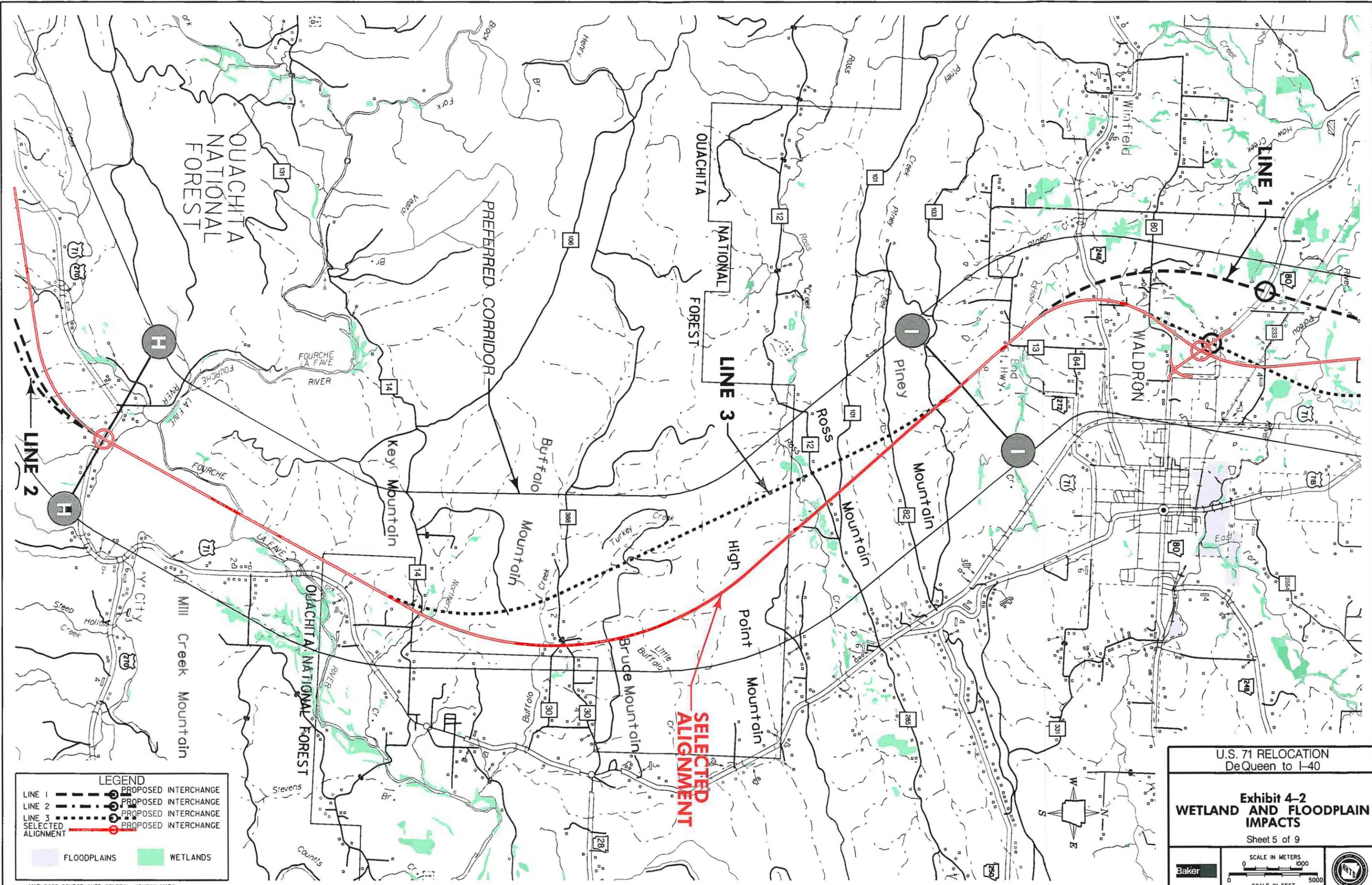
FLOODPLAINS WETLANDS

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- LINE 1 PROPOSED INTERCHANGE
- LINE 2 PROPOSED INTERCHANGE
- LINE 3 PROPOSED INTERCHANGE
- SELECTED INTERCHANGE
- ALIGNMENT
- FLOODPLAINS
- WETLANDS

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**LEGEND**

- LINE 1 PROPOSED INTERCHANGE
- LINE 2 PROPOSED INTERCHANGE
- LINE 3 PROPOSED INTERCHANGE
- SELECTED ALIGNMENT PROPOSED INTERCHANGE
- FLOODPLAINS
- WETLANDS

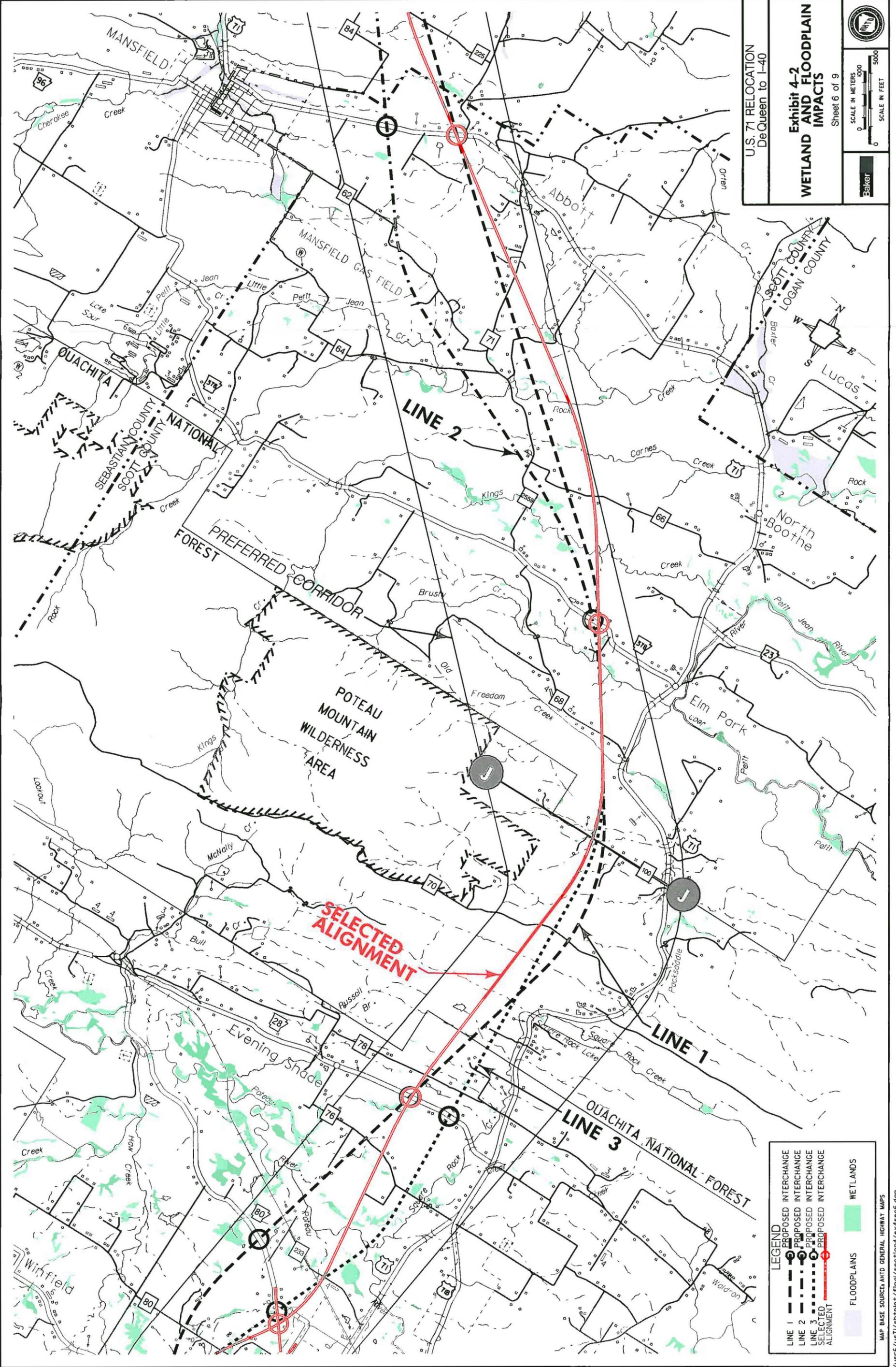
U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 4-2**  
**WETLAND AND FLOODPLAIN**  
**IMPACTS**

Sheet 5 of 9

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U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 4-2  
WETLAND AND FLOODPLAIN  
IMPACTS**

Sheet 6 of 9

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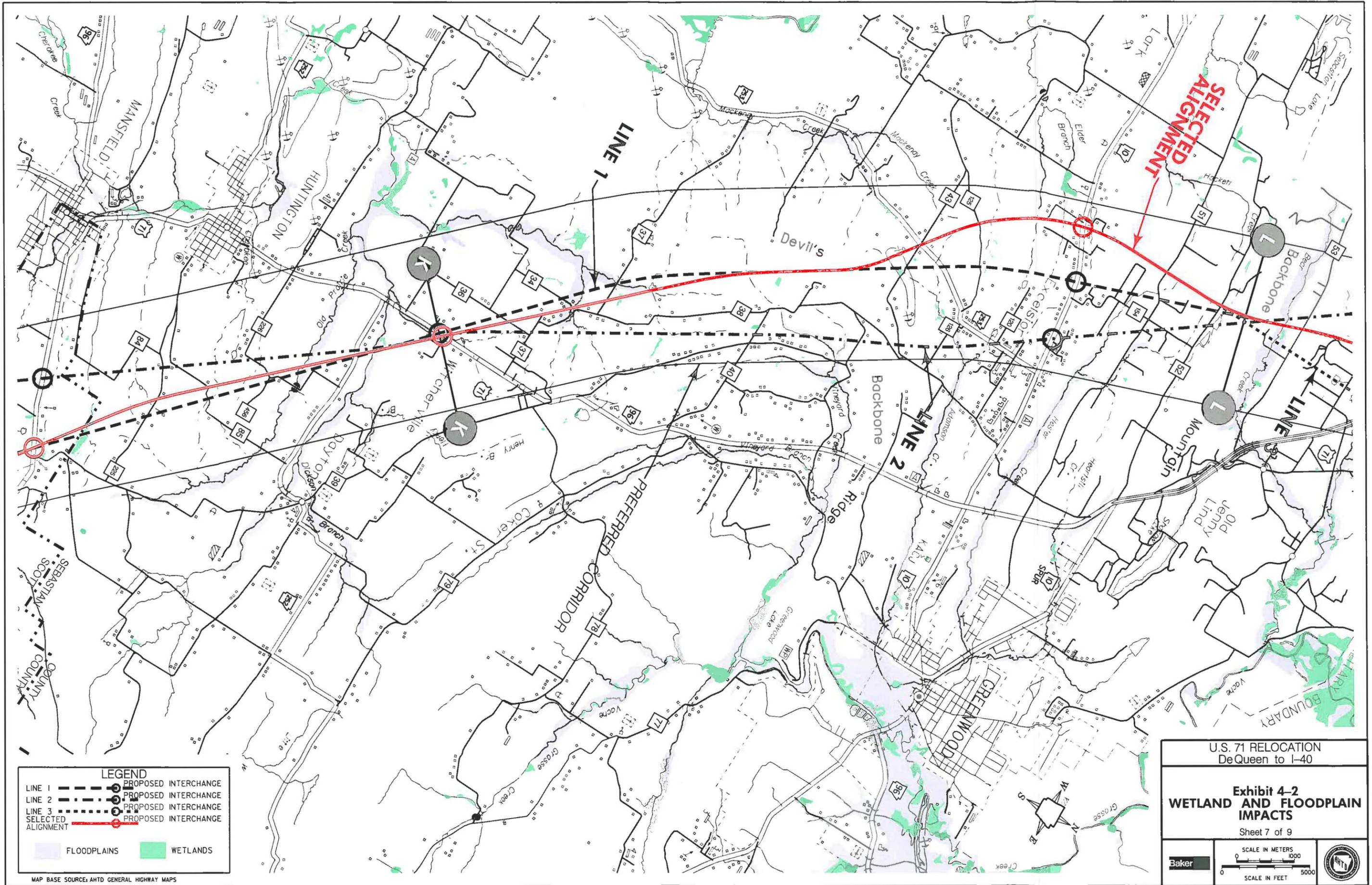
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**LEGEND**

- LINE 1 PROPOSED INTERCHANGE
- LINE 2 PROPOSED INTERCHANGE
- LINE 3 PROPOSED INTERCHANGE
- SELECTED ALIGNMENT
- FLOODPLAINS
- WETLANDS

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**LEGEND**

- LINE 1 - - - - - PROPOSED INTERCHANGE
- LINE 2 - - - - - PROPOSED INTERCHANGE
- LINE 3 - - - - - PROPOSED INTERCHANGE
- SELECTED ALIGNMENT - - - - - PROPOSED INTERCHANGE
- FLOODPLAINS (light blue box)
- WETLANDS (green box)

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 4-2**  
**WETLAND AND FLOODPLAIN**  
**IMPACTS**

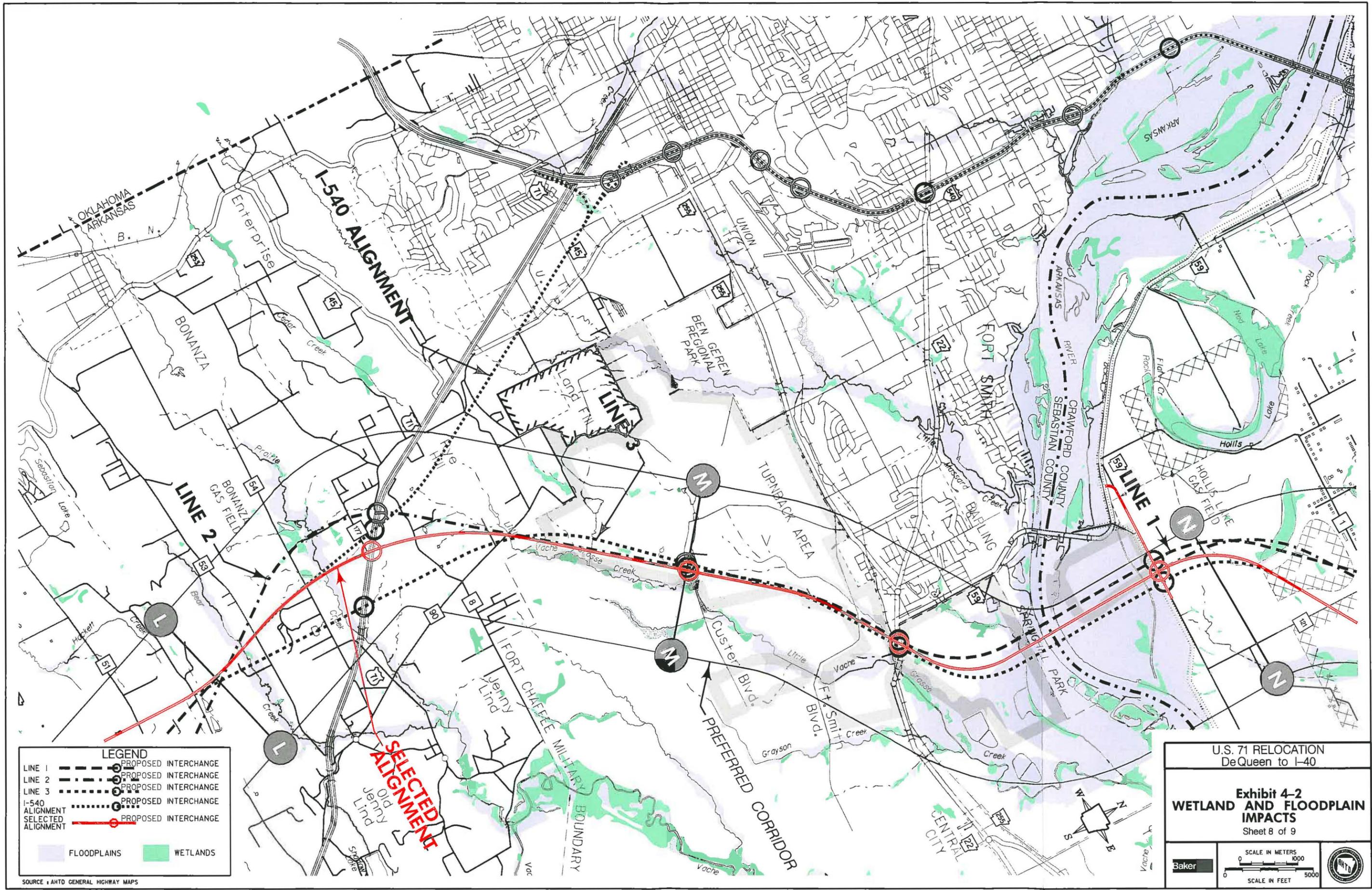
Sheet 7 of 9

Baker

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SCALE IN FEET  
0 1000 5000

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**LEGEND**

- LINE 1 --- PROPOSED INTERCHANGE
- LINE 2 - - - PROPOSED INTERCHANGE
- LINE 3 - · - · PROPOSED INTERCHANGE
- I-540 ALIGNMENT ····· PROPOSED INTERCHANGE
- SELECTED ALIGNMENT ——— PROPOSED INTERCHANGE

FLOODPLAINS
  WETLANDS

SOURCE: AHTD GENERAL HIGHWAY MAPS

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 4-2**  
**WETLAND AND FLOODPLAIN**  
**IMPACTS**  
Sheet 8 of 9

Baker

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SCALE IN FEET  
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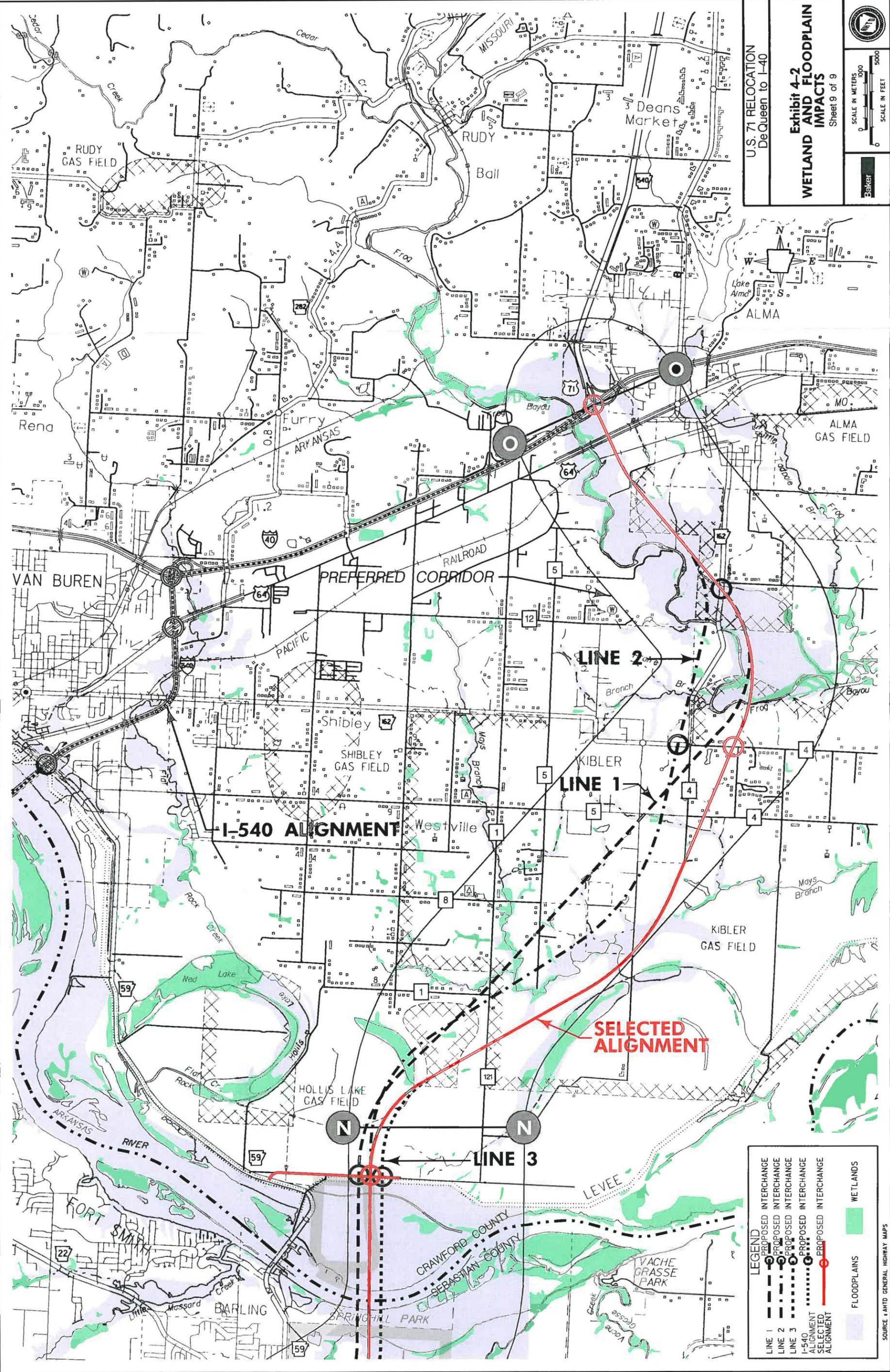


U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 4-2  
WETLAND  
AND FLOODPLAIN  
IMPACTS**  
Sheet 9 of 9

SCALE IN METERS 0 1000 5000  
SCALE IN FEET 0 1000 5000

Baker



**LEGEND**

- LINE 1 PROPOSED INTERCHANGE
- LINE 2 PROPOSED INTERCHANGE
- LINE 3 PROPOSED INTERCHANGE
- I-540 PROPOSED INTERCHANGE
- ALIGNMENT
- SELECTED ALIGNMENT
- FLOODPLAINS
- WETLANDS

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No secondary floodplain impacts are anticipated from operation of the proposed highway. Development associated with proposed interchange sites would be anticipated at three locations within or near floodplain areas. The Line 1 (Selected Alignment) interchange at S.H. 8 in Mena would involve the Prairie/Dallas Creek floodplain.

An analysis of land use adjacent to S.H. 8 in this area revealed that there would be sufficient land suitable for development outside of the floodplain and therefore, this interchange location would not promote incompatible floodplain development.

A proposed interchange for Lines 2 and 3 at S.H. 88 east of Mena would involve the Prairie Creek floodplain. This floodplain extends approximately 1,000 meters (3,280 feet) east of the interchange area along S.H. 88. Secondary impacts to floodplains due to interchange development could occur at this location. The Selected Alignment would not impact this floodplain area.

The proposed interchange for Line 1 at S.H. 162 north of Kibler would involve the Frog Bayou floodplain. This floodplain extends approximately 800 meters (2,625 feet) south of the interchange area along S.H. 162. Secondary impacts to floodplains due to interchange development could occur at this location. The Selected Alignment would not impact this floodplain area.

#### **4.9.1 Floodplain Finding**

The construction of sections of the Selected Alignment will occur in floodplain areas. Due to the length of the project in a north-south direction and the east-west direction of many stream drainages that must be crossed, total avoidance of floodplain impacts is not possible. Bridges and other structures will be sized to minimize impacts on natural and beneficial floodplain values. Design measures to minimize floodplain impacts include avoiding longitudinal encroachments, minimizing backwater effects through the sufficient sizing of structures, minimizing channel alterations, adherence to an approved erosion and sedimentation control plan, and adherence to standard stream construction practices that minimize 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 Selected Alignment will not support incompatible use and development of the floodplain. This project will not constitute a significant floodplain encroachment or have a significant risk to property and life.

In accordance with EO 11988 and 23 CFR 650, Subpart A, it has been determined that based on the above considerations, there is no practicable alternative to the proposed construction in floodplains, and the proposed action includes all

practicable measures to minimize harm to floodplains which may result from such use.

#### 4.10 WETLANDS

Wetlands within the preferred corridor were evaluated in accordance with Executive Order 11990 as described in Section 3.7. Wetland impacts were assessed using the GIS to determine total wetland size, wetland type, and the extent of wetland encroachment for each alignment. Impacts are based on the area within the alignment construction limits. Due to the relative number and spatial distribution patterns of wetland communities, as well as a thorough consideration of other environmental concerns including existing topography, residential communities, and important natural and cultural resources, a practicable alignment that avoids all wetlands is not possible within the preferred corridor. However, throughout the development of all alignments, wetland impacts were minimized to the greatest extent possible.

Continuing coordination between the Corps of Engineers and AHTD will assure that all regulatory concerns are adequately addressed. The Section 404 permit application has been prepared and submitted to the Corps of Engineers (see Appendix G).

##### 4.10.1 Wetland Impacts

All impacted wetlands were delineated in accordance with the Corps of Engineers *Wetlands*

*Delineation Manual* (COE Manual, January, 1987) if accessible. When property access was denied, wetland boundaries were based on photointerpretation of 1" = 300' scale mapping.

Ninety percent of the impacted wetlands were field delineated. Wetland impacts by alignment are presented in Table 4-9 and Exhibit 4-2. The majority of individual wetland impacts would be less than 1 hectare (2 acres) in size and no individual impact would be greater than 4 hectares (10 acres) (Table 4-10). Most impacts would be to herbaceous wetlands associated with pasture type communities, while scrub/shrub wetlands would be the least impacted.

The largest wetland impact common to all alignments occurs in segment M-N north of S.H. 22 in Fort Chaffee (Exhibit 4-3). Line 1 would impact 2.3 hectares (5.6 acres), while Line 2 (the Selected) and Line 3 would impact 3.6 hectares (8.8 acres). This forested wetland is comprised of a mixture of sweetgum, water oak, sugarberry and green ash. This depressional area contains soils with low permeability and the source of site hydrology appears to be a combination of a seasonal high water table and seasonal rainfall.

Table 4-9 WETLAND IMPACTS BY ALIGNMENT												
Alignment	Herbaceous			Scrub/Shrub			Forested			Total		
	#	ha	ac	#	ha	ac	#	ha	ac	#	ha	ac
No-Action	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Line 1	22	14.9	36.8	3	2.7	6.4	12	10.0	24.6	37	27.6	67.8
Line 2	27	17.1	42.2	4	2.8	6.8	10	9.5	23.4	41	29.4	72.4
Line 3	23	11.1	27.5	2	1.2	3.0	5	4.6	11.3	30	16.9	41.8
Selected	25	14.0	34.5	2	0.6	1.5	8	6.4	15.9	35	21.0	51.9

Source: Michael Baker Jr., Inc.

Table 4-10 SIZE DISTRIBUTION OF WETLAND IMPACTS BY ALIGNMENT								
Alignment	IMPACTS SIZE CATEGORIES							Total Wetlands
	0-0.4 ha (0-1.0 ac)	0.4-0.8 ha (1.0-2.0 ac)	0.8-1.2 ha (2.0-3.0 ac)	1.2-1.6 ha (3.0-4.0 ac)	1.6-2.4 ha (4.0-5.0 ac)	2.4-3.2 ha (5.0-6.0 ac)	> 3.2 ha (> 6.0 ac)	
No-Action	0	0	0	0	0	0	0	0
Line 1	19	7	4	3	2	2	0	37
Line 2	15	11	11	1	2	0	1	41
Line 3	16	7	6	0	0	0	1	30
Selected	18	9	6	0	0	1	1	35

Source: Michael Baker Jr., Inc.

Further minimization of impacts in this area would be constrained by numerous factors influencing alignment development in this area, including Barling residential development, facilities within Springhill Park, military constraints, and several engineering design issues.

A summary of wetland functions and values by wetland type is presented in Appendix D. FHWA's *Wetland Evaluation Technique* (WET) (Adamus et al., 1991) and the WET 2.1 computer model were used to provide an estimate of the likelihood that a particular function or value, such as groundwater recharge or sediment retention, would occur in a particular wetland type found within the preferred corridor.

In general, herbaceous wetlands received ratings of low to moderate, while forested wetlands received ratings of moderate to high. These results reflect the predominance of small, isolated wetlands with limited functions and values within the preferred corridor.

### **Line 1**

Line 1 would impact 37 individual wetlands comprising 27.6 hectares (67.8 acres). Nineteen wetland impacts would be less than 0.4 hectares (1.0 acre) in size and seven impacts would be greater than 1.2 hectares (3.0 acres). The greatest total impact by segment for Line 1 would occur north of the Arkansas River in segment N-O.

### **Line 2**

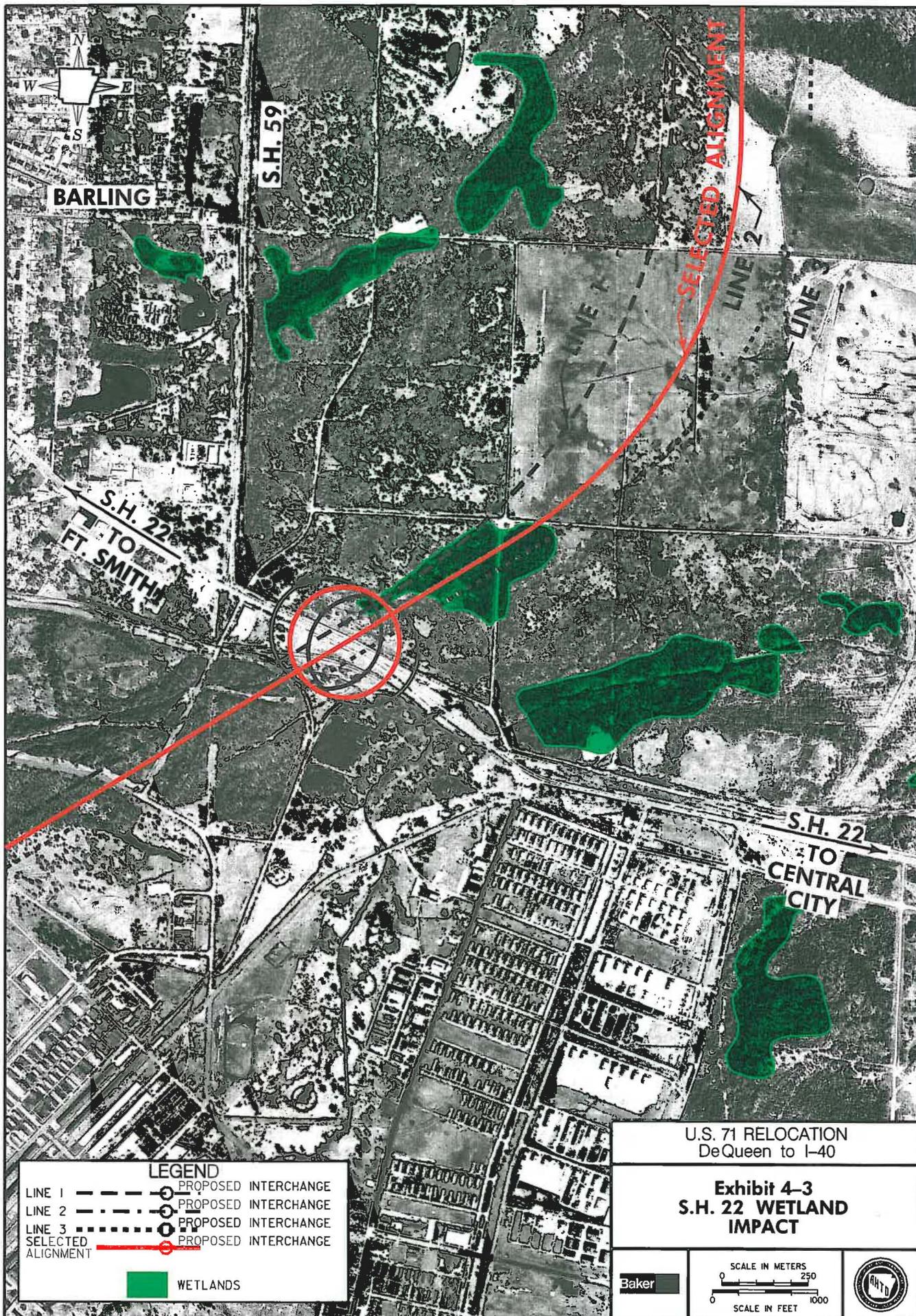
Line 2 would impact 41 individual wetlands comprising 29.4 hectares (72.4 acres). Fifteen wetland impacts would be less than 0.4 hectares (1.0 acre) in size and four impacts would be greater than 1.2 hectares (3.0 acres). The greatest total impact by segment for Line 2 would occur north of the Arkansas River in segment N-O.

### **Line 3**

Line 3 would impact 30 individual wetlands comprising 16.9 hectares (41.8 acres). Sixteen wetland impacts would be less than 0.4 hectares (1.0 acre) in size and one impact would be greater than 1.2 hectares (3.0 acres). The greatest total impact by segment for Line 3 would occur in segments I-J (Waldron area) and M-N (S.H. 22/Fort Chaffee).

### **I-540 Alignment**

The I-540 Alignment was compared to Lines 1, 2, 3, and the Selected Alignment from U.S. 71 at Rye Hill to the I-40 / S.H. 540 interchange. The results of this comparison of wetland impacts are presented in Table 4-11. Construction along I-540 would result in greater wetland impacts than Line 3 or the Selected Alignment in the comparative reach. Additional impact information for the I-540 Alignment versus the new location alignments is provided in Section 2.



Alignment	Herbaceous			Scrub/Shrub			Forested			Total		
	#	ha	ac	#	ha	ac	#	ha	ac	#	ha	ac
No-Action	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
I-540	1	2.6	6.5	1	1.7	4.3	4	2.0	4.7	6	6.3	15.5
Line 1	2	0.3	0.9	2	1.8	4.5	5	7.4	18.2	9	9.5	23.6
Line 2	4	1.8	4.5	1	1.8	4.5	7	8.1	20.0	12	11.7	29.0
Line 3	1	0.2	0.5	0	-	-	2	4.0	10.0	3	4.2	10.5
Selected	1	0.2	0.5	0	-	-	3	4.7	11.6	4	4.9	12.1

\*Impact figures for Lines 1, 2, 3 and the Selected are from U.S. 71 near Rye Hill to I-40.

**Selected Alignment**

The Selected Alignment would impact 35 individual wetlands comprising 21.0 hectares (51.9 acres). Eighteen wetland impacts would be less than 0.4 hectares (1.0 acre) in size and two impacts would be greater than 1.2 hectares (3.0 acres). The greatest total impact by segment for the Selected Alignment would occur in segments D-E (Mena area) and M-N (S.H. 22 / Fort Chaffee).

Table 4-12 presents a wetland impact comparison by segment that supports the selection of the Selected Alignment, in addition to the information presented in Tables S-1 and S-2. A rigorous comparison of all impacts, including wetlands, is required prior to issuance of a Section 404 permit by the Corps of Engineers for wetlands filled by the Selected Alignment. In addition, Table 2-13 provides impact comparisons between an I-540 alignment and Lines 1, 2, 3 and the Selected

Alignment from Rye Hill to Alma. The I-540 alignment would result in the filling of 6.3 hectares of wetlands, compared to 9.5 hectares on Line 1, 11.7 hectares on Line 2, 4.2 hectares on Line 3, and 4.9 hectares on the Selected Alignment (equivalent English units are provided in Table 2-13). The joint public notice for the Section 404 permit for the U.S. 71 Relocation is included in Appendix G.

**No-Action**

The No-Action alternative would avoid areas of larger wetlands, but would likely result in small wetland impacts through widening activity. The extent of these wetland impacts is not known at this time.

**4.10.2 Wetlands Finding**

Based on the above analysis, it is determined that there is no practicable alternative to the proposed

**Table 4-12  
ALTERNATIVES ANALYSIS  
SELECTED ALIGNMENT WETLAND IMPACT COMPARISON**

Segment	Alignment	Wetland Impacts		Comments
		ha	ac	
A-B	Line 1	0.0	0.0	No wetland impacts
	Line 2	0.0	0.0	
	Line 3	0.0	0.0	
B-C	Line 1	3.1	7.6	Line 3 minimizes wetland impacts
	Line 2	3.3	8.1	
	Line 3	1.3	3.2	
C-D	Line 1	0.2	0.6	No wetland impacts on the Selected Alignment, which is a combination of Line 2 and Line 3 in this segment
	Line 2	0.0	0.0	
	Line 3	0.0	0.0	
	Selected	0.0	0.0	
D-E	Line 1	3.4	8.4	Line 2 developed as a result of public involvement process to provide best community access
	Line 2	3.6	8.9	
	Line 3	1.2	2.9	
E-F	Line 1	0.8	1.9	Line 1 minimizes wetland impacts and avoids potential impact to Arkansas fatmucket mussel
	Line 2	0.9	2.2	
	Line 3	1.5	3.7	
F-G	Line 1	2.9	7.3	Line 1 provides best community access and avoids potential impact to Arkansas fatmucket mussel
	Line 2	1.2	2.9	
	Line 3	1.2	2.9	
G-H	Line 1	0.0	0.0	No wetland impacts
	Line 2	0.0	0.0	
	Line 3	0.0	0.0	
H-I	Line 1	2.7	6.6	Line 1 avoids red-cockaded woodpecker areas and best addresses terrain and earthwork concerns
	Line 2	2.7	6.6	
	Line 3	1.6	4.0	
I-J	Line 1	1.4	3.4	Line 2 developed as a result of public involvement process to provide best community access
	Line 2	2.6	6.5	
	Line 3	3.8	9.4	
J-K	Line 1	2.5	6.2	Line 3 minimizes wetland impacts
	Line 2	3.3	8.2	
	Line 3	1.6	4.0	
K-L	Line 1	0.8	1.9	Line 3 developed as result of public involvement process to minimize residential displacements
	Line 2	0.0	0.0	
	Line 3	0.4	1.1	
L-M	Line 1	0.9	2.1	Line 1 developed as result of public involvement process to minimize residential displacements
	Line 2	2.8	6.9	
	Line 3	0.1	0.3	
M-N	Line 1	2.3	5.6	Line 2 minimizes impacts to Springhill Park and military Water Obstacle Training areas
	Line 2	3.6	8.8	
	Line 3	3.6	8.8	
N-O	Line 1	6.6	16.2	Line 3 minimizes wetland impacts
	Line 2	5.4	13.3	
	Line 3	0.6	1.5	

Source: Michael Baker Jr., Inc.

NOTE: Shaded areas indicate the Selected Alignment in each segment.

construction of the Selected Alignment in wetlands. The location of the Selected Alignment includes all practicable measures to minimize harm to wetlands as specified in Executive Order 11990.

#### 4.10.3 Secondary Impacts

Secondary impacts to wetlands may be the immediate result of road construction, the result of the road's long-term operation, or the result of development-associated with interchange locations. Secondary impacts can affect wetlands through changing the vegetation communities, erosion and sediment deposition, or altering water regimes and water quality. The majority of these impacts are temporary in nature and their severity can be mitigated during construction through implementation of the following:

- Wetlands outside the construction limits will not be used for construction support activities (borrow sites, waste sites, storage, parking access, etc.)
- Clearing of wetland vegetation will be limited to the minimum required for job completion.
- AHTD will coordinate with the contractor to ensure that all appropriate measures will be taken to protect the water quality of adjacent wetlands through the use of straw bales, silt fencing, and seeding and mulching.

In addition to direct highway construction impacts, secondary impacts to wetlands could result from the relocation of utilities (electric, gas, water and

sewage transmission lines), oil and gas wells and roads. These issues were considered during the alignment development process. The proposed highway has been developed on new location and as such, involvement with major utilities has been minimized. Several crossings of electrical and gas transmission lines would occur in upland areas where relocation would not involve additional wetland impacts. Gas well impacts also occur in upland dominated landscapes where additional wetland impacts would be minimized.

A review of all proposed road relocations was conducted to determine potential wetland impacts. The majority of these relocations would occur in upland areas with no wetland involvement. Final design of road relocations would minimize wetland impacts to the extent possible.

#### 4.10.4 Wetland Mitigation Requirements

Wetland area lost due to construction of the proposed highway would be replaced through mitigation activities. Mitigation activities would include some combination of wetland enhancement, restoration, or creation. Replacement areas would be at a ratio of 1:1 for herbaceous wetlands and 2:1 for scrub-shrub and forested wetlands based on the wetland functions and values assessment as detailed in Appendix G. These ratios should ensure the replacement of lost wetland area as well as wetland functions and values.

Proposed mitigation activities for construction of the U.S. 71 Relocation along the Selected Alignment would include two or more wetland mitigation sites; one located in the northern portion of the project and one or more in the southern portion. Approximately 12.4 hectares (30.6 acres) of wetland impacts are located in the Arkansas River basin and would be mitigated for in the northern site at an approximate area of 17.6 hectares (43.6 acres). The remaining 8.6 hectares (21.3 acres) of wetland impacts occur in the Ouachita and Red River basins and would be mitigated for in one or more southern sites for a total replacement area of 10.4 hectares (25.8 acres). (Refer to AHTD/COE meeting minutes dated September 10, 1996.)

AHTD has requested approximately 80 hectares (200 acres) of surplus Fort Chaffee property through correspondence with the Fort Chaffee Redevelopment Authority to be used for a wetland mitigation site. If approved, this area would function to mitigate for wetland impacts in the northern portion of this project and as a possible mitigation bank for future highway projects in this area. Investigations are being conducted to locate specific mitigation areas within the surplus property based on vegetation, soils and hydrologic characteristics suitable for wetland development.

Assessment of potential wetland mitigation sites in the southern portion of the project is on-going.

Particular attention will be given to pasture or old field areas adjacent to alignment construction limits that may be severed from larger properties and deemed uneconomically viable by the current owner. In addition, availability of a viable source of site hydrology will be examined. Adequate site hydrology is one of the most important selection criteria when assessing potential wetland mitigation areas.

#### **4.11 TERRESTRIAL AND AQUATIC COMMUNITIES**

Impacts to terrestrial and aquatic communities would primarily result from the conversion of existing land to highway right-of-way. Land conversion impacts were assessed using the GIS to determine the extent of community impact for each alignment. Impacts are based on the area within the alignment construction limits.

Nine broad community types were evaluated within the preferred corridor and include bottomland hardwood forest, mixed pine/hardwood forests, pasture/old fields, cropland, timberland, farm ponds, and suburban land. With the exception of suburban land, these communities are described in Section 3. Pine-hardwood and upland hardwood forest types were combined under the mixed pine/hardwood classification for this analysis. Suburban land includes residential and commercial development. Table 4-1 presents land use impacts for each alignment. Wetland community impacts

(herbaceous, scrub-shrub and forested) are also included in this table for comparative purposes.

The mixed pine/hardwood forest would be the community most affected by all alignments followed by pasture/old field and timberland. This is consistent with the dominant land uses found throughout the counties in the preferred corridor (see Section 3).

Aquatic community impacts would be limited to the conversion and filling of several farm ponds used for cattle production, and increased levels of sedimentation at stream crossing areas during construction. As described previously, increased sedimentation could adversely impact both aquatic invertebrates and fishes and cause temporary habitat degradation for a number of species.

Line 1 would impact the greatest amount of mixed pine/hardwood forest, while the Selected Alignment would impact the least. Most impacts would occur in Scott and Polk Counties where forest cover accounts for over seventy-five percent of the land use. Mixed pine/hardwood impacts for all alignments represent less than one percent of the forested area in these counties.

Line 2 would impact the greatest amount of pasture/old field habitat, while Line 3 would impact the least. The greatest impacts for all alignments occur in Sebastian, Scott and Polk Counties.

Line 3 would impact the greatest amount of timberland, while Line 2 would impact the least. Timberland impacts for all alignments are restricted to Polk and Sevier Counties where the majority of commercial timber activity occurs.

No terrestrial or aquatic species populations would be eliminated due to construction of any of the alignments. Some individual species mortality would occur to less mobile species, such as reptiles and amphibians, during initial construction activities. Construction of the alignments would convert existing habitat communities to early successional grassy or shrubby vegetation commonly associated with highway right-of-way. Potential wildlife impacts would likely follow those observed on similar existing other highways. Construction and operation of highways does not adversely affect the distribution and abundance of the majority of bird and mammal species, including game species (Michael, 1975; Burke and Sherburne, 1982; Adams and Geis, 1982).

Many wildlife species would be able to utilize the new habitat created by the right-of-way and its associated edge. This area would be similar to the pasture/old field habitat described in Section 3, and would be used by a variety of wildlife species including cottontail rabbits, white-tailed deer, red fox, coyotes, a variety of small mammals, and a number of bird species. The above researchers found that while species composition changed

along the newly formed edge habitat, species adapted to more remote forested environments continued to use the adjacent forest community.

No community types would be extensively impacted based on their overall availability within the preferred corridor. For example, the greatest impacts would occur to mixed pine/hardwood forests, which are also the most available community types in the study area. As such, wildlife species that are unable to adapt to the limited right-of-way environment, could relocate to suitable surrounding habitats.

The No-Action alternative would have minimal impacts on terrestrial and aquatic communities.

### **Secondary Impacts**

The most direct visible effect of roads on wildlife is animal mortality resulting from collisions with motor vehicles. For most wildlife species, the death of a few individuals does not directly impact the overall survival of the species throughout its range. However, for some species whose overall population numbers are extremely low, such as the Florida panther (*Felis concolor coryi*) in south-central Florida, highway mortality has been identified as a serious threat to the continued existence of the entire species population. No wildlife species populations identified as occurring or potentially occurring within the preferred corridor would be impacted in this manner. Several

highway related wildlife mortality studies have concluded that roads appeared to act in a density-dependent manner. Species killed in greatest numbers were those with high population densities attracted to right-of-way habitat, such as edge associated birds and small/medium sized mammals (Adams and Geis, 1982; Michael, 1975).

## **4.12 THREATENED AND ENDANGERED SPECIES**

Based on information obtained from the USFWS and the ANHC, four federally listed species may occur within or near the preferred corridor; the American burying beetle (*Nicrophorus americanus*), the bald eagle (*Haliaeetus leucocephalus*), the red-cockaded woodpecker (*Picoides borealis*) and the Arkansas fatmucket mussel (*Lampsilis powellii*). Analyses were conducted for each alignment to determine potential involvement with any of these species.

### **4.12.1 American Burying Beetle**

Within the preferred corridor, the American burying beetle has been found on the Fort Chaffee Military Reservation in a variety of habitat types (Osborne, 1995; Schnell et al., 1993). The beetle has also been found in conjunction with AHTD projects south of Fort Chaffee in Sebastian County. Coordination with the U.S. Forest Service (USFS) revealed that no beetles have been found within the preferred corridor in the Ouachita National Forest.

Through coordination with the USFWS on past projects, AHTD has established accepted survey protocols to determine involvement with the American burying beetle. These surveys have involved extensive trapping and relocation efforts confined to areas of pasture and old field habitats. Pastures and old fields were identified within the preferred corridor as potential burying beetle habitat. The GIS was used to calculate alignment impacts to these habitats within Sebastian and northern Scott Counties (Table 4-13).

All alignments would impact potential burying beetle habitat with no appreciable difference between the lines.

<b>Alignment</b>	<b>ha</b>	<b>ac</b>
No-Action	0	0
Line 1	334.8	827.3
Line 2	320.1	791.0
Line 3	344.2	850.5
Selected	336.0	830.3

Source: Michael Baker Jr., Inc.

The No-Action alternative would likely impact suitable beetle habitat, but to a lesser extent than the proposed location of the new alignments.

Coordination and consultation in accordance with Section 7 of the Endangered Species Act with the USFWS will continue to insure that this issue is fully addressed during the final design process. If

required, burying beetle surveys and relocation efforts would be conducted prior to construction in areas of suitable habitat. Contractors would be required to coordinate activities such as borrow sites, waste sites, storage, and parking access with AHTD to insure that these areas have been surveyed and cleared of any burying beetles.

The USFWS has worked with AHTD during all stages of planning to develop the least environmentally damaging highway facility for this portion of the relocation of U.S. 71. The USFWS has indicated that the preferred alternative between DeQueen and I-40 is environmentally acceptable and the USFWS concurrence with this segment of the project was reflected in its comment letter on AHTD's application for a Department of the Army permit. (Refer to December 23, 1996 Dept. of Interior letter).

No secondary impacts to beetle habitat are anticipated from construction or use of the proposed highway. Development associated with proposed interchange sites would need to comply with Federal regulatory guidelines, including the Endangered Species Act.

Based on the above described mitigation and future development that complies with the Endangered Species Act, no direct or secondary impacts to the American Burying Beetle are anticipated.

#### 4.12.2 Bald Eagle

The bald eagle would not be impacted by any of the alignments. Based on the results of the bald eagle monitoring program and additional aerial surveys (see Section 3), no active eagle nests occur within the preferred corridor. The bald eagle nest site near Springhill Park has now been observed for the past 4 nesting seasons, 1994-97 with no indicators of nesting activity by adult eagles. The timing of adult bald eagle observations along the Arkansas River from December through March, followed by no observations in April, indicate that this area is being used by migratory eagles wintering in the Arkansas River area.

Additional analysis was conducted to determine the distance of the alignments from the identified practice nest (Table 4-14).

<b>Alignment</b>	<b>Meters</b>	<b>Feet</b>
No-Action	0	0
Line 1	1,100	3,600
Line 2	900	2,950
Line 3	700	2,298
Selected	900	2,950

Source: Michael Baker Jr., Inc.

All alignments would be greater than 700 meters (2,298 feet) from the eagle nest. If this nest site were to become active in the future, the distance from the alignments would be sufficient to minimize

any potential impacts from the proposed highway. In addition, habitat disturbance would be minimized through bridge spanning of this floodplain area and the limited amount of required right-of-way.

The Selected Alignment exceeds the buffer distances from the nest site for the primary zone, 250-460 meters (750-1,500 feet) protection as specified for an active bald eagle nest site in Habitat Management Guidelines for the Bald Eagle in the Southeast Region as part of the 1989 Southeastern States Bald Eagle Recovery Plan.

The No-Action alternative would also not impact this species.

No secondary impacts to the bald eagle would be anticipated from construction or continued operation of the proposed highway.

#### 4.12.3 Red-cockaded Woodpecker

Early coordination with the USFWS and the USFS identified all active and inactive red-cockaded woodpecker (RCW) cluster sites in the Ouachita National Forest within the preferred corridor. No active RCW clusters would be directly impacted by any of the alignments. The closest RCW active cluster is found west of Irons Fork Reservoir. This cluster is approximately 700 meters (2,300 feet) east of Line 2, 800 meters (2,625 feet) east of Line 1, and 1,000 meters (3,280 feet) east of Line 3 (the Selected Alignment). All other active cluster sites

are more than 2 kilometers (1.2 miles) from any alignment.

Line 3 would impact 0.2 hectares (0.5 acres) of an inactive cluster west of Bruce Mountain. Line 1 and Line 2 (Selected Alignment) are approximately 250 meters (820 feet) east of this site.

The Ouachita National Forest has established a RCW Habitat Management Area (HMA) of over 34,000 hectares (84,000 acres) and a management plan that involves the renewal of the shortleaf pine/bluestem grass ecosystem (USDA, 1996). Using the GIS, impacts to suitable RCW habitat within the HMA on Ouachita National Forest property were calculated for each alignment and are presented in Table 4-15.

No secondary impacts to red-cockaded woodpeckers would be anticipated from construction or continued use of the proposed highway.

To compensate for the land converted from RCW management to highway use, AHTD will acquire up to 177 ha (437 acres) of land from willing sellers that is suitable for RCW habitat management. The U.S. Forest Service will identify willing sellers of property near or adjacent to the existing HMA that could be acquired to increase the overall Forest Service ownership of lands in this area. Coordination with the U.S. Forest Service will continue to ensure that this compensation is addressed during the final design process (Refer to AHTD letter dated May 16, 1997).

<b>Alignment</b>	<b>ha</b>	<b>ac</b>	<b>% of HMA Impacted</b>
No-Action	0	0	0
Line 1	276	683	0.8
Line 2	295	728	0.9
Line 3	206	510	0.6
Selected	177	437	0.5

Source: Michael Baker Jr., Inc.

All alignments would impact less than one percent of the total 34,000 hectare HMA. Line 2 would have the greatest HMA impact, while the Selected Alignment would have the least.

The No-Action alternative would not impact this species.

**4.12.4 Arkansas Fatmucket Mussel**

Potential involvement with the Arkansas fatmucket mussel is limited to Lines 2 and 3 at the Ouachita River crossing east of Mena at S.H. 88. Extensive mussel surveys have been conducted in the Ouachita River above and below this crossing point. No mussels have been recorded upstream of this site, but several have been collected below the S.H. 88 bridge. If either Line 2 or Line 3 were selected for the highway location, a mussel survey would be conducted in the vicinity of this crossing. Any collection and movement of individuals at this site would be consistent with USFWS requirements for highway involvement with this mussel species.

Based on the present distribution of the Arkansas fatmucket mussel in the Ouachita River, Line 1 (the Selected Alignment) would not impact this species.

The No-Action alternative would not impact the Arkansas fatmucket mussel.

No secondary impacts to this mussel would be anticipated from construction or continued use of the proposed highway. No secondary impacts would be expected from potential development associated with the Line 2 or 3 interchange.

#### 4.12.5 Species of State Concern

Two locations of species of state concern identified by the ANHC would be impacted by the alignments. Line 2 (the Selected Alignment) would impact a documented occurrence of the soapwort gentian (*Gentiana saponaria*) found during a 1955 survey near Sixmile Creek south of Hatfield. Over the past forty years, land use changes could have occurred in this area creating conditions unfavorable for the continued survival of this species. Due to insufficient scientific information on the current population distribution and abundance of this species, it is difficult to make a quantitative impact assessment at this time. Smith (An Atlas and Annotated List of the Vascular Plants of Arkansas, 1988), lists this species as occurring in at least fourteen other Arkansas Counties.

Line 3 (the Selected Alignment) would impact one documented occurrence of the Fourche Mountain

salamander (*Plethodon fourchensis*) within the Ouachita National Forest found during a 1982 survey near U.S. 71 on Fourche Mountain. Other potential salamander habitat would be impacted by Lines 1 and 2 as they cross Fourche Mountain through the Ouachita National Forest. Line 3 would follow existing U.S. 71 through Fourche Mountain Gap, minimizing potential habitat loss in this area.

The No-Action alternative would not impact state species of special concern.

No secondary impacts to state species of special concern would be anticipated from construction or continued use of the proposed highway.

#### 4.13 NATURAL AREAS

A review of database information provided by the ANHC revealed no designated natural areas within the preferred corridor (Section 2). In addition, none of the alignments impact either of the two "potential natural areas" (limestone glades and upper Fourche Gap) as described in Section 3.9.

Lines 1 and 2 are approximately 400 meters (1,310 feet) from the westernmost limestone glade north of U.S. 70 near DeQueen and over 1,500 meters (4,900 feet) from the second glade in this area. Line 3 and the preferred line are greater than 1,500 meters from both of these sites. All lines are over

1,000 meters (3,280 feet) east of the glade located north of Pullman.

In addition to known sites, geologic mapping was obtained that showed the formations containing limestone in this area where additional glade sites could occur. This information was entered into the GIS and was overlaid on 1994 black and white aerial photography to determine dominant vegetative cover in this area. Photointerpretation of this area found that within the preferred corridor, Sevier County is dominated by extensive pine plantations of various age classes. These pine plantations are intensively managed by the Weyerhaeuser Corporation for timber production. Active timber harvesting is ongoing in portions of this area. No additional glade areas were found within or near the alignments.

The upper Fourche gap potential natural area is located in the extreme western portion of the preferred corridor near Y-City. In this area, all alignments are approximately 1,000 meters (3,280 feet) east of this site.

The No-Action alternative would not impact any designated natural areas or "potential natural areas".

**4.14 FARMLANDS**

The Farmlands Protection Policy Act (FPPA) of 1984 requires a farmland impact evaluation for applicable, federally funded projects. Coordination

with the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) is required through completion of a Farmland Conversion Impact Rating Form (Form AD-1006) for each county impacted. This form is used to evaluate the impact to soils the NRCS has designated as either prime, unique, statewide, or locally important.

The location of soils determined to be prime, unique, statewide, or locally important were obtained from the published Soil Surveys of Sebastian and Crawford Counties and from unpublished information obtained directly from NRCS offices for Scott, Polk and Sevier Counties. The locations of these soils were entered into the GIS to facilitate impact calculations. Form AD-1006 has been completed for each county (see Appendix H).

Table 4-16 presents farmland impacts within each alignment for prime and statewide important soils. No unique or locally important soils were identified by any of the NRCS offices.

Alignment	Prime		Statewide Important	
	ha	ac	ha	ac
No-Action	0	0	0	0
Line 1	499.0	1,233.0	332.3	820.8
Line 2	472.2	1,166.1	346.6	856.6
Line 3	513.1	1,267.8	327.1	808.5
Selected	482.0	1,190.8	355.7	879.3

Source: Michael Baker Jr., Inc.

Line 3 would impact the greatest area of prime farmland soils, while the Selected Alignment would have the greatest impact on statewide important soils. On a county-wide basis, Sevier County had the least involvement with both prime and statewide important soils for all alignments, while Sebastian County had the greatest.

The No-Action alternative would result in limited farmland impacts.

Limited secondary impacts to farmland soils would be anticipated from construction or continued use of the proposed highway. Development-associated with interchange locations would likely occur along existing roadways and in previously developed areas.

Based on the above analysis, it is determined that there is no practicable alternative to the proposed construction of the Selected Alignment in farmlands of prime or statewide importance. The location of the Selected Alignment includes measures to minimize impacts to farmlands where possible.

#### **4.15 PUBLIC LANDS**

Springhill Park and the Ouachita National Recreation Trail are impacted by all of the alignments, including the Selected Alignment and are discussed in detail in Section 5.

Although the I-540 alternative was eliminated from further consideration during the Alignment Study, it is appropriate to note that this alternative would impact a ball field located at Harvest Time Tabernacle Church near the existing interchange of U.S. 71 and I-540.

All alignments were developed to avoid important forest resources identified during the Corridor Feasibility Study. No alignments would directly impact either the Poteau Mountain Wilderness Area or Rich Mountain Recreation Area. In general, forest land impacted by all alignments is managed for multiple uses, combining timber management with a broad spectrum of recreational opportunities.

Coordination with the USFS has identified concerns regarding continued access to forest roads within the preferred corridor. This issue will be fully evaluated during the final design phase of this highway.

The USFS has also identified wildlife ponds that would be impacted by the alignments. During final design, wildlife ponds directly impacted by the Selected Alignment would be replaced on the Ouachita National Forest at locations agreeable to AHTD and the USFS.

Lines 1 and 2 would impact the RARE II Blue Mountain Roadless Area. This 3,845 hectare (9,500 acre) area begins at U.S. 71 at Foran Gap

and extends east approximately 19 kilometers (12 miles) using the east-west ridge of Fourche Mountain as its southern boundary. The Land and Resource Management Plan for the Ouachita National Forest, March, 1990, Vol. II states that this area has been heavily impacted by Forest Service roads and is similar to the rest of the forest with no special attractions other than Blue Mountain. Line 3 (the Selected Alignment in this area) avoids impacts to the roadless area.

The No-Action alternative would not likely impact public lands.

No secondary impacts to public lands would be anticipated from construction or continued use of the proposed highway.

#### **4.16 CULTURAL RESOURCES**

The cultural resources assessment for the Draft EIS was based on a literature search, a review of known cultural resources sites on file at the AHPP, and an assessment of potential cultural resources within the alignment alternatives studied. Following the identification of the Draft EIS Preferred Alignment, an intensive cultural resources survey was initiated. The following sections present the findings and conclusions of the Draft EIS assessment as well as the findings of the intensive cultural resources survey, and a summary of future cultural resources efforts for this project.

##### **4.16.1 Cultural Resources Efforts for Draft EIS**

Recorded cultural resources were compiled for each alignment and are presented in Table 4-17. Each of these resources is further described in *A Cultural Resource Assessment of the U.S. 71 Relocation Project between DeQueen and Interstate 40 in Sevier, Polk, Scott, Sebastian, and Crawford Counties, Arkansas* (Cooper and Spears, 1996). Cultural resources were evaluated for their potential eligibility for nomination to the National Register of Historic Places. This evaluation was based upon existing information on sites and properties within the alignments. Many of the archeological sites on record required additional investigations during the intensive cultural resources survey to determine if they are potentially eligible for nomination to the National Register.

Table 4-18 presents information from a variety of sources which indicates the potential for other cultural resources within the alignments. These potential sites are based upon information from General Land Office Maps, 1903 Plat maps, and old or current USGS quadrangle maps.

During the intensive cultural resources survey, it is likely that cultural resources belonging to all cultural periods will be found within each of the alignments. Terraces, floodplains, and stream crossings are high probability locations for these cultural resources.

<b>Table 4-17</b>				
<b>SUMMARY OF RECORDED ARCHEOLOGICAL SITES AND HISTORIC PROPERTIES</b>				
<b>WITHIN LINES 1, 2, 3, AND THE PREFERRED ALIGNMENT OF THE DRAFT EIS</b>				
<b>ALIGNMENT</b>	<b>SITE NO.</b>	<b>SITE TYPE / CULTURAL AFFILIATION</b>	<b>NRHP STATUS</b>	<b>RECOMMENDATION</b>
<b>ARCHEOLOGICAL SITES:</b>				
Line 1	3SC859	Prehistoric / Unknown	NE	NFW
	3SC860	Historic Still / Mid 20 <sup>th</sup> Century	NE	NFW
	3PL760	Prehistoric / Unknown	NE	NFW
	3SC266	Prehistoric / Unknown	NE	NFW
	3CW650	Prehistoric / Woodland	NE	NFW
	3CW17	Prehistoric / Archaic-Woodland	PE	REVISIT
	3CW651	Prehistoric / Woodland	NE	NFW
	3PL34	Historic / Mid-Late 19 <sup>th</sup> Century	UN	REVISIT
	3SB196	Prehistoric / Late Archaic-Woodland	UN	REVISIT
	3SB600	Historic / Late 19 <sup>th</sup> -Mid 20 <sup>th</sup> Century	UN	REVISIT
	3SB815	Prehistoric / Unknown	UN	REVISIT
Line 2	3CW651	Prehistoric / Woodland	NE	NFW
	3CW17	Prehistoric / Archaic-Woodland	PE	REVISIT
	3SB600	Historic / Late 19 <sup>th</sup> -Mid 20 <sup>th</sup> Century	UN	REVISIT
	3SC859	Prehistoric / Unknown	NE	NFW
	3SC860	Historic Still / Mid 20 <sup>th</sup> Century	NE	NFW
	3CW650	Prehistoric / Woodland	NE	NFW
	3PL802	Historic / Unknown	NE	NFW
Line 3	3PL762	Historic Farmstead/Late 19 <sup>th</sup> -Mid 20 <sup>th</sup> C	PE	REVISIT
	3PL760	Prehistoric / Unknown	NE	NFW
	3CW650	Prehistoric / Woodland	NE	NFW
	3CW651	Prehistoric / Woodland	NE	NFW
	3CW17	Prehistoric / Archaic-Woodland	PE	REVISIT
	3SC576	Historic / Unknown	UN	REVISIT
	3PL205	Historic Farmstead / Mid 19 <sup>th</sup> Century	UN	REVISIT
	3PL37	Prehistoric / Unknown	UN	REVISIT
	3SB751	Prehistoric / Unknown	UN	REVISIT
	3SB788	Historic / Unknown	UN	REVISIT
	3SB59	Historic / Late 19 <sup>th</sup> -Mid 20 <sup>th</sup> Century	UN	REVISIT
Preferred	3PL37	Prehistoric / Unknown	UN	REVISIT
	3PL760	Prehistoric / Unknown	NE	NFW
	3SB600	Historic / Late 19 <sup>th</sup> -Mid 20 <sup>th</sup> Century	UN	REVISIT
	3CW17	Prehistoric / Archaic-Woodland	PE	REVISIT
	3CW651	Prehistoric / Woodland	NE	NFW
	3CW650	Prehistoric / Woodland	NE	NFW
<b>RECORDED STRUCTURES: (No Recorded Structures on Lines 1 and 2)</b>				
Line 3	SV0033	Historic House (Luttrell) / Unknown	NE	NFW
Preferred	SV0033	Historic House (Luttrell) / Unknown	NE	NFW
<b>HISTORIC SITES:</b>				
Line 1	SB0461	Civil War Skirmish (Peripheral Area)	DE	NFW
Line 2	SB0461	Civil War Skirmish (Engagement Area)	DE	AVOID
Line 3	SB0461	Civil War Skirmish (Peripheral Area)	DE	NFW
Preferred	SB0461	Civil War Skirmish (Peripheral Area)	DE	NFW

Source: SPEARS, Inc.

Abbreviations used: C=Century; NE=Not Eligible; PE=Potentially Eligible; UN=Unknown; DE=Determined Eligible; NFW= No further Work

Table 4-18 POTENTIAL CULTURAL RESOURCES IDENTIFIED DURING DRAFT EIS				
	LINE 1	LINE 2	LINE 3	PREFERRED
GLO Road	11	13	13	15
GLO Path	1	1	1	1
GLO Field	4	3	6	5
GLO Improvement	1	0	1	0
GLO Feature *	1	2	1	1
GLO Orchard	0	0	1	1
GLO Landmark	0	0	1	0
1887 Structure	14	9	12	12
1903 Road	2	2	2	2
1903 Orchard	1	1	1	1
1903 Structure	17	11	11	14
Railroad (Current)	4	2	2	2
Railroad (Old Grade)	3	4	3	3
Church	1	0	0	1
Old Mine (1951 Quad)	1	0	1	1
Strip Mine (1951 Quad)	0	1	0	0
Cemetery **	1	0	1	1
<b>TOTAL</b>	<b>62</b>	<b>49</b>	<b>57</b>	<b>60</b>

Source: SPEARS, Inc.  
 Abbreviations Used: GLO=General Land Office Maps (Mid 1800s)  
 \* Illegible GLO Feature  
 \*\* Unknown Location, Near Alignment

The most significant cultural resources belonging to all periods, particularly Woodland and Mississippian, will probably be found in the Arkansas River Valley including the Frog Bayou floodplain.

The other major drainages likely to contain intact prehistoric deposits and buried sites which are crossed or paralleled by the alignments include the Poteau, the Fourche LaFave and the Ouachita Rivers, as well as, Vache Grasse, Little Vache Grasse and Cedar Creeks. Additionally, upland areas such as the novaculite uplift contain raw material extraction sites (quarries) which extend

the entire length of some mountains. Due to the high research potential for sites of this type, a thematic National Register nomination for novaculite quarries is currently under consideration. Usually at the base of the mountain below the quarry areas, there is a high density of prehistoric campsites which contain lithic manufacturing debris. Many of these sites also have a high research potential and are eligible for nomination to the National Register.

For the Draft EIS assessment, it was predicted that one archeological site would be found at each

	LINE 1	LINE 2	LINE 3	PREFERRED
National Register Properties	0	0	0	0
Historic Sites Determined Eligible	1	1	1	1
Recorded Structures	0	0	1	1
Recorded Archeological Sites	11	7	11	6
Potential Cultural Resources	62	49	57	60
Linear km (mi) of Floodplains and Terraces	68.4 (42.5)	75.5 (46.9)	78.0 (48.4)	84.0 (52.3)
Linear km (mi) Novaculite High Probability	1.8 (1.2)	1.1 (0.8)	1.2 (0.8)	0.9 (0.6)
Number of Stream Crossings	87	86	88	90

Source: SPEARS, Inc., Michael Baker Jr., Inc.

perennial river crossing, in each linear mile of floodplains/terraces and in each linear mile of novaculite outcrops. A summary of the results of the Draft EIS cultural resources assessment is presented in Table 4-19.

The one known historic site that has been determined eligible to the National Register of Historic Places is the Devil's Backbone Ridge Civil War Skirmish site (SB0461). The AHPP has determined that Line 2 would adversely affect this resource, while Line 1 and Line 3 (the Preferred and Selected Alignment in this area) would have no effect on this site. One recorded structure (SV0033) would be impacted by Line 3 (the Preferred and Selected Alignment) in Sevier County. Lines 1 and 2 do not affect this structure. The AHPP has determined that structure SV0033 is not eligible for listing on the National Register.

The cultural resources assessment was considered in the identification of the Draft EIS Preferred Alignment, along with other impact information presented in the Draft EIS. As discussed in detail in Section 2.6, the Selected Alignment in segment C-D is a combination of Lines 2 and 3 in this segment. The cultural resources assessment information associated with the Selected Alignment in segment C-D is presented in Table S-1.

#### ***Effects of the No-Action Alternative***

The No-Action alternative could have some effects upon the cultural resources of the area in the reaches of U.S. 71 programmed for widening. The extent of these effects is not known at this time. Indirect effects such as vandalism, looting, and nonscientific collecting would continue at the same rate as at present.

### **General Effects of Alignment Alternatives**

The direct effects of the proposed highway would involve the disturbance and potential destruction of cultural resources through clearing, grading, blasting, and construction activities in any of the alignments. Direct effects of the project on cultural resources would also occur outside the alignments in areas used for borrow materials, roads built for construction access, and equipment staging areas. Any design changes would be subject to an archeological survey and would be handled in accordance with the Programmatic Agreement discussed later in this section.

There may also be indirect effects on cultural resources related to the proposed highway. Indirect effects could be caused by an increase in accessibility to the archeological sites and a possible increase in population and development near the alignments. As access is increased due to improved roads, the sites become vulnerable to nonscientific collection, looting, and vandalism. Increased population and development, particularly growth around interchanges which do not involve federal permits or public funding (hotels, restaurants, gas stations, etc.) and are not subject to environmental review, can lead to site destruction.

### **4.16.2 Cultural Resources Efforts for Final EIS**

Intensive cultural resources surveys of the Preferred Alignment were initiated in October 1996 and are being conducted in four reaches: segments A-D, segments D-J, segments J-O, and U.S. Forest Service land in all segments. These surveys have been conducted only where land owner access was granted and where vegetation permitted. Management summaries have been prepared and submitted to the AHPP. Results of the survey are found in Tables 4-19.1 through 4-19.4. Sites found on segment C-D of the Preferred Alignment were excluded from Tables 4-19.1 and 4-19.2 due to the change from the Preferred to the Selected Alignment.

Within segments A-D, 29 archeological sites and 3 standing structures were identified and recorded. Eight of the archeologic sites will require additional investigations to determine if they are significant and potentially eligible for nomination to the National Register. Three prehistoric sites (3SV294, 3PL824, and 3PL852), are potentially eligible for nomination to the National Register. The National Register eligibility for five sites is undetermined. Two of these sites (3SV304 and 3PL823) are historic, one site (3PL844) is a multi-component site containing both historic and prehistoric deposits, and two sites (3PL837 and 3PL854) are prehistoric sites.

<b>SITE NO.</b>	<b>SITE TYPE / CULTURAL AFFILIATION</b>	<b>NRHP STATUS</b>	<b>RECOMMENDATION</b>
3SV295	Prehistoric / Unknown	NE	NFW
3SV294	Prehistoric / Late Woodland and Mississippian	PE	TEST, BACKHOE
3SV297	Historic / Unknown	NE	NFW
3SV299	Historic / Early 20th Century	NE	NFW
3SV298	Historic / Early to Mid 20th Century	NE	NFW
3SV296	Prehistoric / Unknown	NE	NFW
3SV304	Historic / Late 19th to Early 20th Century	UN	AI
3PL849	Prehistoric / Unknown	NE	NFW
3PL824	Prehistoric / Late Paleo-Indian to Late Archaic; Historic / Unknown	PE	TEST
3PL818	Prehistoric / Unknown	NE	NFW
3PL841	Prehistoric / Unknown	NE	NFW
3PL821	Historic / Early to Late 20th Century	NE	NFW
3PL822	Prehistoric / Late Archaic to Fourche Maline	NE	NFW
3PL843	Historic / Late 19th Century	NE	NFW
3PL819	Prehistoric / Unknown	NE	NFW
3PL837	Prehistoric / Unknown	UN	RECOMM. PENDING
3PL844	Prehistoric / Unknown; Historic / Unknown	UN	BACKHOE, POSS. TEST
3PL823	Historic / Mid 20th Century (1937)	UN	AI
3PL847	Prehistoric / Late Archaic to Fourche Maline	NE	NFW
3PL848	Prehistoric / Unknown	NE	NFW
3SV303	Prehistoric / Unknown	NE	NFW
3SV300	Historic (SV0033) / Unknown	NE	NFW
3SV301	Historic / Mid 20th Century	NE	NFW
3SV302	Prehistoric / Late Archaic to Archaic Fourche Maline	NE	NFW
3PL852	Prehistoric / Unknown	PE	TEST
3PL853	Prehistoric / Unknown	NE	NFW
3PL854	Prehistoric / Unknown	UN	BACKHOE, POSS. TEST
3PL855	Historic / Late 19th to Early 20th Century	NE	NFW
3PL856	Prehistoric / Unknown	NE	NFW
<b>Structures</b>			
3SV301	Historic (SV0033) / Unknown	NE	NFW
3SV299	Historic / Late 19th to Early 20th Century	NE	NFW
3PL823	Historic / Early 20th Century (1937)	NE	NFW

Source: SPEARS, Inc.

Abbreviations Used: NE=Not eligible; PE=Potentially eligible; UN=Unknown; NFW=No further work; TEST=Archeological testing; AI= Archival investigation; BACKHOE=Backhoe trenches

**Table 4-19.2  
A SUMMARY OF SITES WITHIN SEGMENTS D-J OF THE PREFERRED ALIGNMENT**

SITE NO.	SITE TYPE / CULTURAL AFFILIATION	NRHP STATUS	RECOMMENDATION
3PL866	Prehistoric / Unknown	NE	NFW
3PL867	Prehistoric / Unknown; Historic / 20th Century	NE	NFW
3PL868	Prehistoric / Unknown	NE	NFW
3PL869	Prehistoric / Unknown	NE	NFW
3PL870	Prehistoric / Unknown; Historic / 20th Century	NE	OUT OF ROW*
3PL871	Prehistoric / Unknown	NE	NFW
126-612	Historic / 20th Century	NE	NFW
3PL872	Prehistoric / Unknown	UN	TEST
125-610	Historic / 20th Century	NE	NFW
3PL873	Historic / Mid 19th to Early 20th Century	UN	AI
3PL874	Prehistoric / Late Archaic to Early Woodland; Historic / Unknown	PE	TEST
		NE	NFW
3PL875	Historic / Late 19th to Mid 20th Century	UN	AI
3PL876	Prehistoric / Unknown; Historic / 20th Century	UN	FURTHER SURVEY
3PL877	Prehistoric / Unknown Historic / Early to Mid 20th Century	NE	NFW
		UN	AI
3PL878	Prehistoric / Archaic; Historic / Late 19th to Late 20th Century	UN	TEST
		UN	AI
3PL879	Prehistoric / Unknown	NE	NFW
3PL880	Prehistoric / Unknown; Historic / Unknown	NE	NFW
3PL881	Prehistoric / Archaic to Late Mississippian-Caddo	PE	TEST
3PL882	Prehistoric / Mississippian-Caddo	PE	TEST
3PL883	Prehistoric / Unknown	NE	OUT OF ROW*
3PL884	Prehistoric / Unknown	NE	NFW
3PL885	Prehistoric / Unknown	UN	TEST
3PL886	Prehistoric / Unknown; Historic / Late 19th Century	UN	TEST
		UN	AI
3PL887	Historic / Early to Mid 20th Century	UN	AI
3PL888	Prehistoric / Unknown	NE	NFW
125-509	Historic / Mid to Late 20th Century	NE	NFW
3PL889	Historic / Early to Mid 20th Century	UN	OUT OF ROW*
3PL890	Prehistoric / Late Archaic	NE	NFW
3PL891	Prehistoric / Unknown	NE	NFW
3PL892	Historic / Early to Mid 20th Century	NE	NFW
3SC1463	Prehistoric / Unknown; Historic / Unknown	NE	NFW
3SC1464	Prehistoric / Unknown	NE	NFW
3SC1465	Prehistoric / Unknown	NE	NFW
3SC1466	Prehistoric / Unknown	UN	BACKHOE

<b>SITE NO.</b>	<b>SITE TYPE / CULTURAL AFFILIATION</b>	<b>NRHP STATUS</b>	<b>RECOMMENDATION</b>
3SC1467	Prehistoric / Unknown	UN	BACKHOE
3SC1468	Prehistoric / Unknown	PE	TEST
3SC1469	Prehistoric / Unknown	NE	NFW
3SC1470	Prehistoric / Unknown	UN	OUT OF ROW*
3SC1471	Historic / Late 19th to Mid 20th Century	NE	NFW
3SC1472	Prehistoric / Unknown	NE	NFW
3SC1473	Prehistoric / Unknown;	NE	NFW
	Historic / Late 19th to Mid 20th Century	UN	AI
3SC1474	Prehistoric / Unknown; Historic / Unknown	UN	FURTHER SURVEY
3SC1475	Historic / Early to Mid 20th Century	UN	FURTHER SURVEY
3SC1476	Prehistoric / Unknown	UN	BACKHOE
3SC1477	Historic / 20th Century	NE	NFW
3SC1478	Prehistoric / Unknown;	NE	NFW
	Historic / Late 19th to Early 20th Century	UN	AI
3SC1479	Historic / Late 19th to Early 20th Century	UN	FURTHER SURVEY
3SC1480	Prehistoric / Unknown	NE	NFW
3SC1481	Prehistoric / Unknown	NE	NFW
3SC1482	Prehistoric / Unknown	NE	NFW
3SC1483	Prehistoric / Mississippian-Caddo;	UN	TEST
	Historic / Early to Mid 20th Century	UN	AI
3SC1484	Prehistoric / Unknown	NE	NFW
3SC1485	Prehistoric / Mississippian-Caddo	PE	TEST
3SC1486	Historic / Early to Mid 20th Century	UN	OUT OF ROW*
3SC1487	Historic / Early to Mid 20th Century	UN	AI, FURTHER SURVEY
3SC1488	Historic / Early to Late 20th Century	UN	AI
3SC1489	Historic / Mid 20th Century	NE	NFW
3SC1490	Historic / Early to Mid 20th Century	NE	NFW
3SC1491	Historic / Unknown	UN	AI
3SC1492	Historic / Early to Mid 20th Century	NE	NFW
<b>Structures</b>			
2-12-1	Early 20th Century Frame	NE	NFW
2-12-2	Mid 20th Century Frame	NE	NFW
2-11-1	Mid 20th Century Frame	NE	NFW
2-G-1	Early to Mid 20th Century Frame	NE	NFW
2-D-1	Mid 20th Century Frame; House	NE	NFW
2-D-2	Mid 20th Century Frame; Barn	NE	NFW
2-D-3	Mid 20th Century Frame; Outbuilding	NE	NFW
2-D-4	Mid 20th Century Frame; Outbuilding	NE	NFW
2-F-1	20th Century Frame House w/ Cupola	NE	NFW

Source: SPEARS, Inc.

Abbreviations Used: NE=Not eligible; PE=Potentially eligible; UN=Unknown; NFW=No further work; TEST=Archeological testing; AI=Archival investigation; ROW=Right of way; AHPP=Arkansas Historic Preservation Program; EVAL=Evaluation.

\*Site location is outside of the current construction limits; information provided for final design considerations.

**Table 4-19.3  
A SUMMARY OF SITES WITHIN SEGMENTS J-O OF THE PREFERRED ALIGNMENT**

SITE NO.	SITE TYPE / CULTURAL AFFILIATION	NRHP STATUS	RECOMMENDATION
3SC1511	Historic / Early - Mid 20th Century	NE	NFW
3SC1512	Historic / Early - Mid 20th Century	NE	NFW
3SC1513	Prehistoric / Unknown	NE	NFW
3SC1514	Prehistoric / Unknown	UN	OUT OF ROW*
3SC1515	Prehistoric / Late Archaic - Woodland	PE	TEST
3SC1516	Historic / Early - Mid 20th Century	NE	NFW
3SC1517	Historic / Early - Mid 20th Century	NE	NFW
3SC1518	Historic / Unknown	UN	FURTHER SURVEY
3SB1025	Historic / Early - Mid 20th Century	UN	AI
	Prehistoric / Unknown	NE	NFW
3SB1026	Historic / Early - Mid 20th Century	UN	AI
3SB1027	Historic / Late 19th - 20th Century	NE	NFW
3SB1028	Historic / Late 19th - Early 20th Century	UN	AHPP EVAL/AI
3SB1029	Historic / Late 19th - Early 20th Century	NE	NFW
3SB1030	Historic / Early - Mid 20th Century	PE	OUT OF ROW*
3SB1031	Prehistoric / Unknown	UN	OUT OF ROW*
	Historic / Late 19th - Mid 20th Century		
3SB1032	Historic / Late 19th - Early 20th Century	NE	NFW
3SB1033	Historic / Early - Mid 20th Century	NE	NFW
3SB1034	Historic / Late 19th - Mid 20th Century	PE	TEST
3SB1035	Historic / Early - Mid 20th Century	NE	NFW
3SB1036	Prehistoric / Unknown	UN	FURTHER SURVEY
	Historic / Late 19th - Mid 20th Century		
3SB1037	Historic / Late 19th - Mid 20th Century	UN	AHPP EVAL
3SB1038	Prehistoric / Unknown	PE	TEST
	Historic / Late 19th - Mid 20th Century	NE	NFW
3SB1039	Historic / Early - Mid 20th Century	NE	NFW
3SB1040	Historic / Late 19th - Mid 20th Century	UN	AI
3SB1041	Historic / Mid 20th Century	NE	NFW
3SB1042	Historic / Early - Mid 20th Century	NE	NFW
3SB1043	Historic / Early - Mid 20th Century	UN	AI
3SB1044	Historic / Early - Mid 20th Century	UN	OUT OF ROW*
3SB1045	Historic / Late 19th - Mid 20th Century	UN	AI
3SB1046	Historic / Early - Mid 20th Century	UN	AI
	Prehistoric / Unknown	NE	NFW
3SB1047	Historic / Early 20th Century	UN	AI
3SB1048	Historic / Late 19th - Mid 20th Century	UN	AI
3SB1049	Historic / Mid 20th Century	NE	NFW
3SB1050	Prehistoric / Unknown	UN	OUT OF ROW*
3SB1051	Prehistoric / Unknown	NE	NFW
	Historic / Mid 20th Century		
3SB1052	Prehistoric / Mid Archaic - Late Woodland	PE	TEST
	Historic / Late 19th - Early 20th Century	NE	NFW
3SB1053	Historic / Early - Mid 20th Century	NE	NFW
3SB1054	Historic / Early - Mid 20th Century	UN	AI

Table 4-19.3 (cont.) A SUMMARY OF SITES WITHIN SEGMENTS J-O OF THE PREFERRED ALIGNMENT			
SITE NO.	SITE TYPE / CULTURAL AFFILIATION	NRHP STATUS	RECOMMENDATION
3SB1055	Historic / Mid 20th Century	NE	NFW
3SB1056	Historic / Mid 20th Century	PE	AHPP EVAL/TEST
	Prehistoric / Unknown	NE	NFW
3CW864/3CW865	Prehistoric / Late Archaic - Woodland	UN	BACKHOE
	Historic / Late 19th - Early 20th Century	NE	NFW
3CW867	Prehistoric / Late Archaic - Woodland	UN	OUT OF ROW*
3CW868	Prehistoric / Mississippian	UN	GEOM EVAL
3CW869	Prehistoric / Unknown	UN	GEOM EVAL
	Historic / Early - Mid 20th Century	NE	NFW
3CW870	Prehistoric / Unknown	UN	GEOM-EVAL
3CW871	Prehistoric / Unknown	UN	GEOM EVAL
3CW872	Prehistoric / Unknown	NE	NFW
3CW873	Prehistoric / Unknown	NE	NFW
3CW874	Prehistoric / Unknown	NE	NFW
3CW875	Historic / Early - Mid 20th Century	UN	AI
3CW876	Prehistoric / Unknown	NE	NFW
	Historic / Late 19th - Early 20th Century		
3CW877	Prehistoric / Unknown	NE	NFW
3CW878	Prehistoric / Unknown	NE	NFW
3CW879	Prehistoric / Unknown	UN	OUT OF ROW*
3CW880	Prehistoric / Unknown	UN	GEOM EVAL
3CW881	Prehistoric / Unknown	UN	GEOM EVAL
3CW882	Prehistoric / Late Archaic	PE	TEST
	Historic / Early 20th Century	NE	NFW
3CW883	Prehistoric / Late Archaic - Woodland	PE	TEST
	Historic / Early - Mid 20th Century	NE	NFW
3CW884	Prehistoric / Unknown	NE	NFW
	Historic / Late 19th - Early 20th Century		
3CW885	Prehistoric / Unknown	PE	TEST
3CW886	Prehistoric / Unknown	PE	GEOM EVAL
	Historic / Late 19th - Early 20th Century	NE	NFW
3CW17	Prehistoric / Woodland - Mississippian	PE	TEST
	Historic / Late 19th - Early 20th Century	NE	NFW
Structures			
4-23-1	Late 19th - Early 20th Century possible log house with addition and rock-lined well	UN	AHPP EVAL
2055	Early - Mid 20th Century frame house	NE	NFW
4-24-1	3 x 3 m concrete railroad service structure	UN	AHPP EVAL
1382	Mid 20th Century rock house and associated service structures	NE	NFW
4-27-1	Mid 20th Century rock stairs (WPA)	PE	AHPP EVAL

Source: SPEARS, Inc.

Abbreviations Used: NE=Not eligible; PE=Potentially eligible; UN=Undetermined; NFW=No further work; TEST=Archeological testing; AI=Archival investigation; ROW=Right of way; AHPP=Arkansas Historic Preservation Program; GEOM=Geomorphological study being conducted in vicinity; EVAL=Evaluation; WPA=Works Progress Administration.

\*Site location is outside of the current construction limits; information provided for final design considerations.

**TABLE 4-19.4  
A SUMMARY OF SITES  
WITHIN THE PREFERRED ALIGNMENT THROUGH U.S. FOREST SERVICE LAND**

SITE NO.	SITE TYPE / CULTURAL AFFILIATION	NRHP STATUS	RECOMMENDATION
3PL760	Prehistoric / Unknown	NE	NFW
3PL762	Historic / Late 19th - Early 20th Century	UN	TEST, AI
3PL858	Historic / Unknown	NE	NFW
3PL859	Historic / Early 20th Century	NE	NFW
3PL860	Prehistoric / Unknown; Historic / Early to Mid 20th Century	NE	NFW
3PL861	Prehistoric / Unknown	NE	NFW
3PL862	Prehistoric / Unknown	PE	TEST
3PL863	Prehistoric / Unknown	NE	NFW
3PL864	Prehistoric / Unknown	NE	NFW
3PL865	Prehistoric / Unknown	NE	NFW
3SC1450	Prehistoric / Late Woodland	NE	OUTSIDE OF ROW*
3SC1451	Prehistoric / Unknown	NE	NFW
3SC1452	Prehistoric / Unknown	PE	TEST
3SC1453	Prehistoric / Unknown	NE	NFW
3SC1454	Prehistoric / Unknown	NE	NFW
3SC1455	Prehistoric / Unknown	NE	NFW
3SC1456	Prehistoric / Unknown; Historic / Early to Mid 20th Century	NE	NFW
3SC1457	Prehistoric / Unknown; Historic / Early to Mid 20th Century	NE	NFW
3SC1458	Prehistoric / Unknown	PE	OUTSIDE OF ROW*
3SC1459	Prehistoric / Unknown	NE	NFW
3SC1460	Prehistoric / Unknown	PE	TEST
3SC1461	Prehistoric / Unknown	NE	NFW
3SC415	Prehistoric / Unknown; Historic / Late 19th-Early 20th Century Farmstead	NE	NFW
		PE	OUTSIDE OF ROW*
3SC1462	Prehistoric / Late Archaic	NE	NFW

Source: SPEARS, Inc.

Abbreviations Used: NE=Not eligible; PE=Potentially eligible; UN=Unknown; NFW=No further work; TEST=Archeological testing; AI= Archival investigation; ROW=Right-of-way

\*Site location is outside of the current construction limits; information provided for final design considerations.

Within Segments A-D, three historic structures were recorded within the construction limits (3SV299, 3SV301, and 3PL823). These structures have been evaluated for their architectural significance by AHPP and found not eligible for nomination to the National Register.

Within segments D-J, 60 archeological sites and 9 standing structures, were identified and recorded. Twenty-nine of the archeological sites will require additional investigations to determine if they are significant and potentially eligible for nomination to the National Register. Five sites (3PL881, 3PL882, 3SC1468, 3SC1485, and 3PL874) are potentially eligible for nomination to the National Register. The National Register eligibility for 3 sites (3SC1470, 3PL889, and 3SC1486) is undetermined because they are outside the present construction limits. The National Register eligibility for 21 sites within the construction limits is undetermined. Five sites (3PL876, 3SC1474, 3SC1475, 3SC1479, and 3SC1487) may extend into unsurveyed areas where landowners access was denied. These areas will be addressed in accordance with the Programmatic Agreement provided in Appendix J. Eight sites are historic or multi-component sites (3PL873, 3PL875, 3PL877, 3PL887, 3SC1473, 3SC1478, 3SC1488 and 3SC1491), three are multi-component sites containing both prehistoric and historic deposits (3PL878, 3PL886, and 3SC1483), and five are prehistoric sites (3PL872, 3PL885, 3SC1466,

3SC1467, and 3SC1476). Nine historic standing structures were recorded within the construction limits. These structures have been evaluated for their architectural significance by AHPP and found not eligible for nomination to the National Register.

Within segments J-O, 62 archeological sites and 5 standing structures were identified and recorded. Thirty-seven of the archeological sites will require additional investigations to determine if they are significant and potentially eligible for nomination to the National Register. Ten sites (3SC1515, 3SB1034, 3SB1038, 3SB1052, 3SB1056, 3CW882, 3CW883, 3CW885, 3CW886, and 3CW17) are potentially eligible for nomination to the National Register. Seven sites, six undetermined (3SC1514, 3SB1031, 3SB1044, 3SB1050, 3CW867, and 3CW879) and one potentially eligible (3SB1030) are outside the present construction limits. The National Register eligibility for 20 sites within the construction limits is undetermined. Two sites (3SC1518 and 3SB1036) may extend into unsurveyed areas where landowners access was denied. These areas will be addressed in accordance with the Programmatic Agreement provided in Appendix J. Eleven sites are historic or multi-component sites (3SB1025, 3SB1026, 3SB1028, 3SB1040, 3SB1043, 3SB1045, 3SB1046, 3SB1047, 3SB1048, 3SB1054, and 3CW875), and 7 are prehistoric sites (3CW864/3CW865, 3CW868,

3CW870, 3CW869, 3CW871, 3CW880, and 3CW881). Five historic standing structures were recorded within the construction limits. Two structures (2055 and 1382) have been evaluated by AHPP and found not eligible for nomination to the National Register. The remaining three structures are being evaluated for their architectural significance by AHPP.

Within U.S. Forest Service land, 24 archeological sites were identified and recorded. Four of these sites will require additional investigations to determine if they are significant and potentially eligible for nomination to the National Register. Three prehistoric sites (3PL862, 3SC1452, and 3SC1460) are potentially eligible for nomination to the National Register. One prehistoric site (3SC1458) and one multi-component site (3SC415), which are potentially eligible for nomination to the National Register, are currently outside the Selected Alignment construction limits. If during final design these sites become affected, additional archeological investigations will be conducted. The National Register eligibility for one historic site (3PL762) is undetermined.

#### **4.16.3 Future Cultural Resources Efforts**

A Programmatic Agreement (PA) has been signed by FHWA, SHPO, and the Advisory Council on Historic Preservation (ACHP) to guide the completion of the cultural resources efforts for this project. The PA ensures that additional research

and investigations as necessary to determine the eligibility of all identified cultural resources to the National Register will be conducted. National Register eligibility will be determined through consultation with the SHPO. A treatment plan will be developed for any properties determined eligible for the National Register and adversely affected by the project. When possible, avoidance will be the preferred treatment of adversely effected sites. The treatment plan will consider measures to avoid or mitigate for adverse effects on cultural resources including but not limited to design adjustments, buffer zone establishment, protective fencing, construction monitoring and education of construction personnel and will also take into account engineering feasibility, cost and other factors considered appropriate by FHWA. All archeological sites that warrant preservation in place will be avoided, provided that a prudent and feasible alternative for highway construction can be identified. All data recovery plans will be developed in consultation with the SHPO, the ACHP, and the Caddo Tribe, if appropriate. The complete PA is provided in Appendix J.

#### **4.17 AIR QUALITY**

Under the Clean Air Act of 1970, the Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for the protection of public health and welfare. The NAAQS addresses six major pollutants: Carbon

Monoxide (CO), Ozone (O<sub>3</sub>), Nitrogen Dioxide (NO<sub>2</sub>), Sulfur Dioxide (SO<sub>2</sub>), Particulate Matter (PM<sub>10</sub>) and lead (Pb). Of these six pollutants, FHWA requires an evaluation of Carbon Monoxide (CO) and Ozone (O<sub>3</sub>) for highway projects.

The counties of Sevier, Polk, Scott, Sebastian, and Crawford are designated as being in attainment for CO and O<sub>3</sub>, based on historical monitoring data in the study area and Clean Air Act Amendments.

The primary source of air pollution emissions associated with this project are those caused by motor vehicles using the existing and future roadway system. An air quality assessment was performed following the guidelines established by the Arkansas Highway and Transportation Department, the Federal Highway Administration (FHWA) and the EPA.

This analysis discusses the assessment methodology, the existing mobile source (traffic-related) air quality in the study area, and the predicted impacts to the local air quality from construction of the proposed highway. Construction mitigation measures and other mitigation measures are also addressed.

#### **4.17.1 Methodology**

A microscale analysis was performed to predict the effects of CO changes to local air quality from the construction of the proposed highway. The microscale analysis predicts the generation and

transportation of CO in the immediate area. The years 2005 (anticipated opening year) and 2020 (design year) were analyzed and compared to the NAAQS.

Motor vehicle emission rates were computed using EPA's MOBILE 5.0a emissions model (March, 1993). The emission factors were developed with conservative model inputs to provide a worst-case scenario. Carbon monoxide concentrations from highway vehicles were calculated by using CAL3QHC, a Gaussian dispersion model and hybrid of the CALINE 3 model.

A worst-case approach was taken for nearly all meteorological conditions. Three-hundred and sixty wind directions were analyzed at 1 degree intervals to determine the maximum CO concentrations. Other factors included a wind speed of one meter per second, a neutral atmospheric condition (D), a mixing height of 1,000 meters (3,280 feet), and worst case minimum and maximum temperatures for January of -1 to -9°C (29 to 49°F).

Modeling was done for the peak 1-hour traffic condition. A background concentration of 2.0 parts per million (ppm) for the 1-hour concentration was used to account for CO sources outside the preferred corridor. Speeds for the existing roadways and the proposed highway were based

on the functional type and location of the particular road.

Receptor sites along the roadway were chosen at locations where the highest CO concentrations could be expected and where the general public would have access during the analysis periods. These were placed at representative points along the proposed right-of-way lines where human activity may occur. The CO concentrations were

compiled to include the proposed highway, cross-streets, and background concentrations as necessary.

A mesoscale or "regional" analysis was not performed for the project because the study area is in attainment for O<sub>3</sub> and the project is included in the Bi-State 2020 Long Range Transportation Plan for the Fort Smith / Van Buren urbanized area.

RECEPTOR LINKS	EXISTING YEAR 1995	OPENING YEAR 2005		DESIGN YEAR 2020	
		No-Action	Lines 1, 2, 3, or Selected	No-Action	Lines 1, 2, 3, or Selected
Worst-Case Existing Route: I-540 between S.H. 255 and S.H. 22	6.7 ppm	5.6 ppm	4.7 ppm	7.1 ppm	5.8 ppm
Worst-Case Intersection: U.S. 70 / 71	5.7 ppm	5.5 ppm	3.8 ppm	6.8 ppm	6.7 ppm
Worst-Case Proposed Highway: between S.H. 22 and S.H. 162	N / A	N / A	4.2 ppm	N / A	4.8 ppm

Source: Michael Baker Jr., Inc. Note: 1-hour standard is 35 ppm; 8-hour standard is 9 ppm

**4.17.2 Impacts**

Table 4-20 shows the predicted highest 1-hour CO receptor concentrations for existing year 1995, opening year 2005 and design year 2020. The highest concentrations (which include a conservative 1-hour background level of 2.0 ppm) would be located in areas where the greatest traffic volumes are moving at their slowest probable speed. These locations are:

1. Between the S.H. 255 and S.H. 22 interchanges on I-540 in Fort Smith - the highest traffic volume link on the existing route
2. At the 4-way blinking signalized intersection of U.S. 70 and U.S. 71 in DeQueen - the greatest potential stop condition on the existing route
3. Between the proposed S.H. 22 and S.H. 162 interchanges on the proposed highway - the highest traffic volume link on the proposed highway.

For the existing year, there are no exceedances of either the 1-hour or 8-hour criteria for any receptor. Construction of the proposed highway along any alignment would also not result in a 1-hour or 8-hour exceedance for any receptor. The No-Action alternative would similarly result in no exceedances.

None of the 1-hour analysis sites are predicted to exceed the 1-hour criteria of 35 ppm. The predicted concentrations also did not exceed the 8-hour concentration criteria of 9 ppm. As a result, an 8-hour analysis was not performed because 8-hour concentrations are typically 60-70 percent of the 1-hour concentrations.

Based on the above microscale analysis results, no mitigation measures are required for the proposed highway. Further, the project is in an area where the State Implementation Plan does not contain any transportation control measures. Therefore, conformity procedures do not apply because the area is in attainment for the pertinent pollutants.

Construction activities can have a short-term impact on local air quality during periods of site preparation with particulate matter, also known as fugitive dust, having the greatest impact. This impact would occur in association with excavation and earth moving, asphalt aggregate handling, heavy equipment operation, use of haul roads and wind erosion of exposed areas and material

storage piles. The effect of fugitive dust would be temporary and would vary in scale depending on local weather conditions, the degree of construction activity and the nature of the construction activity.

Where fugitive dust is likely to be a problem, effective dust control measures could be implemented following standard roadway construction procedures including: minimization of exposed erodible earth area to the extent possible, stabilization of exposed earth, periodic application of stabilizing agents (e.g. water), covering or stabilizing of stockpiled material as necessary, and the use of covered haul trucks.

#### **4.18 NOISE IMPACTS**

The noise analysis was prepared in accordance with 23 CFR 772 that establishes a requirement for a noise study for any proposed federal or federal-aid project. It presents a description of the methods used for analysis, applicable noise standards and criteria, an assessment of the existing noise environment, the predicted impact assessment of future noise levels, and a discussion of mitigation measures. Construction mitigation measures are also discussed.

##### **4.18.1 Methodology**

Traffic noise calculations were performed using the FHWA approved STAMINA 2.0; a computer model derived from the FHWA Highway Traffic Noise

Prediction Model, FHWA-RD 77-108, December 1978. The modeling accounted for soft/hard sites, traffic speed and design hour volumes for autos, medium trucks (2-axle, 6-tire) and heavy trucks (3 or more axles).

Noise prediction analyses were performed for the existing year 1995 and the design year 2020 scenarios using the traffic forecasts presented in Section 1. The design hourly volumes (DHV) were used in the analysis, representing the loudest period of the day. A 105 kilometers per hour (65 mph) speed was used for the proposed highway. The vehicle mix for the proposed highway varies throughout the study area. The split of the total truck percentages was 90 percent heavy trucks and 10 percent medium trucks.

Sound intensity is normally presented as a sound level using the unit "decibel" (dB). The decibel is used to measure either sound power or sound pressure levels. These sound pressure levels are shown as dBA  $L_{eq}(h)$ . The term dBA refers to decibels on the A-weighted scale that represents the way the human ear perceives sound. The term  $L_{eq}(h)$  refers to an equivalent of an average sound level over an hour's time period.

Table 4-21 shows the Federal Highway Administration (FHWA) Noise Abatement Criteria (NAC) for various land use activity categories. Activity category B, representative of residences,

schools, churches and parks, was used as the criteria for sensitive receptors identified in this analysis. In situations where the NAC is approached or exceeded at any receptor location, noise abatement must be considered for that site. The Approach Criteria is defined as 1 dBA less than the NAC.

The state of Arkansas also has a substantial increase criteria, based on one of the recommended standards established by FHWA. Abatement must be considered if the noise level at a particular site increases by 10 or more decibels over the existing condition due to the proposed highway.

Forty-three (43) short-term ambient measurements, 10 minutes in length, were taken using a Metrosonics dB-308 or Metrosonics dB-612 sound level meter at sensitive receptors along the alternative routes. These noise locations (see Exhibit 3-6) were representative of the various land uses and vehicle type and volume characteristics of the area. Simultaneous traffic counts and vehicle classification counts were recorded for nearby roadways. Nearly 1,400 locations were modeled to account for areas most likely affected as a result of the proposed action.

ACTIVITY CATEGORY	Leq (h)	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, 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.

Source: *Federal-Aid Highway Program Manual Transmittal 348*, August 9, 1982; Vol. 7, Ch. 7; Sec 3, Attachment.

As a guide for understanding how loud or quiet certain sound levels are, Table 4-22 shows outdoor and indoor noise levels that are commonly known by most people. Please note that each 10 decibel increment represents a doubling or halving of perceived loudness.

#### 4.18.2 Impacts

Noise impacts are determined based on the degree to which the projected noise levels approach or exceed the established noise level activity category criteria and by how much the levels increase over the existing condition as a result of the proposed

highway. Results of the noise analysis for each receptor under all conditions modeled are presented in Table 4-23.

#### ***FHWA Criteria Impacts***

The noise analysis results are summarized in Table 4-24. There are 28 receptors that currently approach or exceed the FHWA NAC for the existing 1995 condition. In design year 2020, the predicted NAC would be exceeded at 345 receptors under the No-Action alternative, at 117 receptors for Line 1, at 118 receptors for Line 2, at 95 receptors for Line 3 and at 89 receptors for the Selected Alignment.

Table 4-22 COMMON INDOOR & OUTDOOR NOISE LEVELS		
Common Outdoor Noise Levels	Noise Level	Common Indoor Noise Levels
Jet Flyover at 1000 feet	110	Rock Band
Gas Lawn Mower at 3 feet	100	Inside Subway Train (New York)
Diesel Truck at 50 feet, Noisy Urban Daytime	90	Food Blender at 3 feet
Gas Lawn Mower at 100 feet	80	Garbage Disposal at 3 feet
Commercial Area	70	Vacuum Cleaner at 10 feet
Quiet Urban Daytime	60	Large Business Office
Quiet Urban Nighttime	50	Dishwasher In Next Room
	40	Small Theater, Lg. Conference Room (Background), Library
Quiet Suburban Nighttime	30	Bedroom at Night, Concert Hall (Background)
Quiet Rural Nighttime	20	Broadcast & Recording Studio
	10	
	0	

Source: Michael Baker Jr., Inc.

**Noise Change:**

- 3 dBA ± - Not Perceptible
- 5-6 dBA ± - Perceptible
- 10 dBA ± - Generally considered as doubling (or halving) of sound.

**Table 4-23  
EXISTING AND PREDICTED NOISE LEVELS**

Site	Receptor Description	1995 Sound Levels (dBA Leq)	2020 Sound Levels (dBA Leq)	2020 Sound Levels (dBA Leq)			
				No-Action	Line 1	Line 2	Line 3
1	5 residences, DeQueen Country Club	73	75	75	75	75	75
2	32 residences, 1 cemetery	43	45	55	57	48	48
3	4 residences, 1 arts center	49	51	51	56	64	64
4	32 residences, 1 cemetery	53	55	60	58	57	57
5	21 residences	71	73	70	70	69	69
6	52 residences, Lane Park	55	57	63	64	59	59
7	50 residences, 1 church	58	60	63	66	61	61
8	29 residences, Wickes School	50	52	55	54	51	51
9	18 residences, Ouachita National Forest	51	53	61	54	61	61
10	29 residences, 1 church, 1 cemetery	46	48	63	48	52	52
11	35 residences, 1 cemetery	43	45	47	61	47	47
12	49 residences	48	50	65	56	54	54
13	80 residences	54	56	64	59	56	59
14	15 residences	62	64	64	64	65	64
15	60 residences	65	67	73	73	67	73
16	43 residences, 1 church	65	67	69	67	67	69
17	40 residences	49	51	56	53	53	56
18	41 residences, Iron Forks Lake recreation	46	48	55	55	54	55
19	Ouachita National Recreation Trail at U.S. 71	64	66	62	62	71	71
20	Ouachita National Recreation Trail within forest east of U.S. 71	46	48	70	70	56	56

**Table 4-23 (Cont.)  
EXISTING AND PREDICTED NOISE LEVELS**

Site	Receptor Description	1995 Sound Levels (dBA Leg)	2020 Sound Levels (dBA Leg)				
			No-Action	Line 1	Line 2	Line 3	Selected
21	1 church	70	72	68	68	68	68
22	1 residence, 1 church	65	67	63	63	63	63
23	11 residences	43	45	60	60	54	60
24	29 residences, 1 church	59	61	62	63	63	63
25	27 residences, 1 church, Waldron Schools	58	60	56	60	58	60
26	21 residences	63	65	65	65	66	65
27	Poteau Mountain Wilderness Area	45	47	48	48	47	48
28	23 residences	56	58	60	62	60	60
29	35 residences, 1 cemetery	65	67	63	65	63	63
30	52 residences	56	59	63	63	63	63
31	11 residences	47	50	58	69	60	60
32	47 residences, 1 church, 1 cemetery	47	50	55	61	55	55
33	33 residences, community center	65	68	68	69	68	68
34	141 residences, 1 church	65	68	68	68	68	68
35	65 residences, 1 cemetery	53	56	57	56	62	62
36	63 residences, 1 cemetery	51	54	64	64	57	64
37	1 cemetery, Fort Chaffee (west area)	50	50	63	63	63	63
38	SpringHill Park	45	45	59	56	55	56
39	1 residence	47	47	50	50	51	51
40	9 residences	45	46	67	67	58	58
41	107 residences, 1 church	52	54	60	64	57	57
42	40 residences, Alma High School	51	53	56	56	56	56
43	12 residences	58	60	63	62	63	63

Source: Michael Baker Jr., Inc.

	1995 EXISTING	2020 DESIGN YEAR NO-ACTION	2020 DESIGN YEAR LINE 1	2020 DESIGN YEAR LINE 2	2020 DESIGN YEAR LINE 3	2020 DESIGN YEAR SELECTED
Total Number of Sensitive Receptors	1394 (study area)	1394 (study area)	800	868	563	581
Sensitive Receptors Approaching or Exceeding the 67 dBA Noise Abatement Criteria *	28	345	117	118	95	89
Sensitive Receptors with Substantial Noise Increase Criteria **	not applicable	0	309	324	57	122
Sensitive Receptors Exceeding Both Criteria	0	0	10	21	0	0
Sensitive Receptors with No Substantial Increases or Exceedances	1366	1049	374	425	411	370
Total Receptors Impacted	28	345	426	443	152	211

Source: Michael Baker Jr., Inc.

\* Approach Criteria is 66 dBA.

\*\* An increase of 10 or more dBA.

**Substantial Increase Criteria Impacts**

The Substantial Increase Criteria does not apply for the existing condition. In design year 2020, the number of predicted exceedances would be zero under the No-Action alternative, 309 receptors for Line 1, 324 receptors for Line 2, 57 receptors for Line 3 and 122 receptors for the Selected Alignment.

**Exceedance of Both Criteria**

In 2020, the number of predicted exceedances for both criteria would be zero under the No-Action alternative, 10 receptors for Line 1, 21 receptors for

Line 2, zero receptors for Line 3 and zero receptors for the Selected Alignment.

**Natural Areas of Concern**

In addition to the residences, schools, churches and parks that were modeled, other sensitive receptor locations were identified including the Ouachita National Forest, Iron Forks Lake, the Fourche Mountain, the Ouachita National Recreation Trail, Springhill Park and the Poteau Mountain Wilderness Area. The predicted impacts to these areas are provided in Table 4-23.

### 4.18.3 Mitigation Measures

Noise impacts are defined as the total number of receptors that approach or exceed the FHWA NAC and/or that experience a substantial increase. Table 4-24 shows the total impacted receptors ranging from a low of 152 receptors for Line 3 to a high of 443 receptors for Line 2. Line 1 had 426 total receptors impacted and the Selected Alignment had 211 total impacted receptors. Line 3 and the Selected Alignment have fewer impacts than the other alignments due to their greater distance from populated areas. The No-Action alternative would likely involve noise impacts, some substantial, in the Mansfield and Witcherville areas, though these cannot be quantified at this time.

Noise abatement must be considered for sites when the NAC is approached or exceeded at any receptor location and if the substantial increase criteria is exceeded. In Arkansas, the approach criteria is 66 dBA for Category B receptors and the substantial increase criteria of 10 or more dBA are used.

Mitigation measures are not required for the existing conditions because mitigation measures are only analyzed for Type I highway noise impacts. Type I projects involve the construction of a new highway, new interchange or lane additions. The Alignment Study included efforts to avoid or minimize noise impacts to sensitive receptors

through alignment shifts and overall avoidance of residential areas.

#### **General Noise Reduction Measures**

There are several types of noise reduction measures that could be considered to mitigate noise impacts of the proposed highway: existing vegetation, existing or proposed structures (buildings), and earth berm/solid structure barrier walls.

Existing dense highway vegetation can, under certain conditions, reduce traffic sound levels up to 5 dBA. This would require a vegetative cover of a minimum 30 meters (100 feet) in depth, 4.5 meters (14 feet) in height, and of sufficient density that no visual path through it exists between the highway and the adjacent land use area. Much of the study area is currently in wooded areas and may provide this benefit. A narrow width of vegetation would not provide any degree of effective sound level reduction. The use of highway plantings and existing vegetation alone would not be an effective solution for substantial noise reduction. However, where desirable vegetation exists between the proposed highway and the adjacent land use areas, efforts would be made to preserve and encourage its propagation.

Intervening buildings themselves may be used as noise barriers, providing up to 15 dBA of sound level attenuation. This amount would only occur

when the buildings are continuous and there is no direct line-of-sight between the source and the observer. A row of houses, depending on their spacing, can typically reduce sound levels by 3 to 5 dBA. This shielding is most prevalent in the more populated areas where residential, neighborhood, institutional, commercial, and/or industrial buildings exist. Given the rural nature of most of the study area, the use of structures would not be an effective means of noise attenuation.

Noise reduction measures such as earth berms and barrier walls would provide the greatest degree of noise attenuation. A graded, vegetated earth berm that blends with the surrounding topography is one of the more aesthetically pleasing noise barriers. The feasibility of berm construction will be considered as part of the overall grading plan for the project, especially if there is an excess of cut material. There may be instances where an effective earth berm can be constructed within normal right-of-way or with a minimal additional right-of-way purchase. If right-of-way is insufficient to accommodate a full height earth berm, a lower earth berm could be constructed in combination with a wall to achieve the necessary height and attenuation. An earth berm may also provide slightly more attenuation (up to 3 dBA more) than a vertical barrier wall of the same height because of the better absorptive quality of the earth and ground vegetation.

A solid, acoustically opaque barrier (barrier wall) can theoretically reduce noise exposure to a property by as much as 15 to 20 dBA, although a typical reduction is approximately 5-10 dBA. The barriers can be constructed from common building materials such as concrete, wood, plastic, and recycled products. The design can range from relatively simple, straight-line walls to complex designs that blend in with local features such as terrain and neighborhood characteristics. The materials should be rigid and sufficiently dense to provide adequate mitigation and drainage, while at the same time be attractive, durable, and relatively maintenance-free. Both the on-site cost and the degree of noise attenuation must be considered when selecting barrier wall materials. In addition, it is unlikely that any one barrier wall type or material would be applicable in every situation. Consideration must also be made for the on-site cost of the foundations, fabrication, erection, and maintenance of the wall, as well as for any additional drainage costs that may be associated with the construction of a barrier.

For maximum effectiveness, barriers should be as close as possible to either the source or the receiver and should be high and long enough to adequately mitigate the site. Space limitations and public involvement often determine the type of barrier used, if any are desired by the public in the first place. A combination of earth mound topped

by a wall can be visually pleasing as well as functional. In some cases, the wall may serve to control access and eliminate the need for and the cost of right-of-way fencing.

### ***Conditions for Implementing Mitigation Measures***

Mitigation measures (noise abatement) will be considered when one or more of the following conditions are met:

- The design year sound levels exceed or approach the FHWA Noise Abatement Criteria. (66 dBA in Arkansas for Category B receptors)
- The predicted design year sound level substantially increases over the existing sound level at the same site. In Arkansas, a substantial increase is defined as an increase of 10 or more dBA over the existing condition.

Mitigation considerations evaluate two components: feasibility and reasonableness. The feasibility of mitigating noise impacts deals primarily with quantitative elements such as topography, access points, drainage, safety, maintenance requirements, other noise sources, and whether the proposed insertion of a barrier provides minimum sound level reductions.

The reasonableness of mitigating noise impacts is a more subjective criteria. Reasonableness is based on such factors as the cost effectiveness of protecting an isolated or small number of

receptors, exposed wall heights, distances to receptors from the mitigated source, a minimum decibel change of at least 5 dBA over the existing or future No-Action levels (when people can first notice a change in the sound environment), residential support or desires for noise abatement features, and concerns for physical and visual access to commercial establishments. Where noise abatement considerations are warranted, every reasonable effort will be made to achieve adequate noise level reductions for locations where the levels exceed the noise abatement criteria or where the projected noise levels exceed the substantial increase criteria.

### ***Preliminary Noise Abatement Analysis***

A preliminary analysis addressed the receptors that required noise mitigation consideration. Some receptors were eliminated from further noise abatement consideration (sound barriers) because of the justifiable warrants identified below:

- Isolated or single receptor locations that would not typically warrant further consideration because of the potential cost of protecting one site
- Areas with only a few homes which did not have acceptable cost per receptor ratios
- Areas where the predicted noise contributions coming from other streets would have predicted an insufficient Insertion Loss (IL) from any proposed solid wall structure

- Overriding direct access requirements to the roadways
- Other considerations, such as access to the general public.

Although walls and berms are normally the preferred abatement measure studied for a project constructed on new location, the extremely rural nature of the majority of the project area may preclude the use of a wall or berm because of the sparsely located residences. Locations where only one or a few number of homes could be shielded will not be considered candidates for wall construction. It is not economically feasible to construct a wall for a single home since the costs simply outweigh the benefits. However, berms may be considered. As mentioned previously, the feasibility of berm construction could be considered part of the overall grading plan for the proposed project.

A noise wall meets AHTD criteria for feasibility and reasonableness if:

1. The ability to achieve noise reduction is not limited by topography, access requirements for driveways or ramps, the presence of local streets, and other noise sources
2. The reasonableness scale for cost established by AHTD is met. It is unlikely that barriers exceeding \$20,000 per benefited receptor will be built.
3. "Most" impacted residents that are benefited want noise abatement features
4. The housing development predated the initial highway construction
5. The housing and/or sensitive development has been in place for at least 10 years
6. The future noise levels would approach or exceed the dBA  $L_{eq}(h)$  established as FHWA's Noise Abatement Criteria for its respective Activity Category
7. The future build noise levels are at least 10 dBA  $L_{eq}(h)$  greater than the existing noise levels
8. The future build noise levels are at least 7 dBA  $L_{eq}(h)$  greater than the future no-build noise levels
9. At least one receptor receives a 10 dBA reduction and other benefited receptors receive at least a 5 dBA reduction.

The following locations were analyzed according to the conditions discussed in this section for implementing noise barriers. The following preliminary abatement results were obtained by evaluating areas representative of the noise measurement locations which may warrant noise abatement consideration. These estimates are assumed to be worst-case conditions and, if implemented, would most likely require less than the noise barrier lengths stated. For preliminary analysis purposes, a barrier height of 5.28 meters

(16 feet) and a cost of \$161 per square meter (\$15 per square foot) was assumed to calculate potential barrier costs. Unless noted otherwise, the site warrants consideration of noise abatement for any alignment under consideration.

❑ Site # 1 - U.S. 70, 71 & 59, DeQueen.

Dominant noise source is from the existing route. Maintaining uncontrolled access to this route would preclude the construction of any noise abatement feature because of the need to maintain a continuous barrier. No further analysis is required.

❑ Site # 2 - Sevier Co. Rd. 43 & 45. An 1800 meter (5900 foot) and 700 meter (2300 foot) noise abatement feature needs to be studied in this area to protect 2 groups of receptors for Lines 1 and 2. Other receptors in this area are too far away. Preliminary cost per receptor: \$59,636.

❑ Site # 3 - Cossatot Arts Center, Town of King. The four receptors are too scattered in order to provide cost effective abatement and a minimum decibel reductions for Lines 2 and 3. Line 1 is a study candidate for a 1000 meter (3300 foot) barrier to protect fifteen residences in that area. Preliminary cost per receptor: \$52,800.

❑ Site # 5 - U.S. 71, south of Grannis. There are small numbers of receptors that are grouped together but they are too scattered for cost

effective noise abatement and minimum decibel reductions. No further analysis is required.

❑ Site # 7 - S.H. 4, Wickes. Some receptors are located within the proposed cut/fill lines, however, two 400 meter (1300 foot) long abatement features would be studied at this location for Line 2. Preliminary cost per receptor: \$12,235.

❑ Site # 9 - S.H. 246, Vandervoort. These receptors would be located behind an area of cut. Therefore, no further analysis is required as long as the area of cut is maintained.

❑ Site # 10 - Polk Co. Rd. 23. For Line 1, a 500 meter (1600 foot) long abatement feature needs to be studied in this area. Preliminary cost per receptor: \$12,387.

❑ Site # 11 - Polk Co. Rd. 31. Most of the receptors in this area are fairly scattered and behind areas of cut. Cost effectiveness and minimum decibel reductions would be compromised to adequately mitigate for these sites. No further analysis is required.

❑ Site # 12 - Polk Co. Rd. 78. Most of the receptors in this area are fairly scattered in small groups and behind small and large areas of cut. Cost effectiveness and minimum decibel reductions would be compromised to adequately mitigate for these sites. No further analysis is required.

- ❑ Site # 13 - Polk Co. Rd. 44. Most of the receptors in this area are fairly scattered, many are farther away than the measured representative site and there are some small and large areas of cut. Cost effectiveness and minimum decibel reductions would be compromised to adequately mitigate for these sites. No further analysis is required.
- ❑ Site # 15 - S.H. 8, Mena. There are 60 residences in this area. A 2000 meter (6600 foot) long noise abatement feature including an integrated 600 meter (2000 foot) cut for Line 1 (the Selected Alignment) and Line 2 would be studied. Line 3 does not impact this area. Preliminary cost per receptor: \$18,400.
- ❑ Site # 16 - S.H. 88, Mena. Many of these receptors are within the proposed cut/fill lines with too few remaining to be cost effective. In addition, S.H. 88 accounts for 67 dBA in for the No-Action alternative. No further analysis is required.
- ❑ Site # 19 - U.S. 71 at the Ouachita National Recreational Trail. This receptor is immediately adjacent to the existing highway, where the trail crosses. It is not an area where human activity occurs over a long period of time. No further analysis is required.
- ❑ Site # 20 - U.S. 71 Ouachita National Recreational Trail. This receptor is located about 1.6 kilometers (1 mile) from existing U.S. 71, within the forest. It is not an area where human activity occurs over a long period of time. No further analysis is required.
- ❑ Site # 21 - U.S. 71, Scott County. This is a single receptor located adjacent to existing U.S. 71 that will have a predicted 72 dBA level for the design year No-Action alternative (without the proposed highway). Cost effectiveness is not reasonable for 1 receptor. Predicted sound levels will be reduced due to the traffic diversion from this site.
- ❑ Site # 23 - Scott Co. Rd. 12. These receptors are too scattered for cost effectiveness and minimum decibel reductions. No further analysis is required.
- ❑ Site # 26 - S.H. 28, North of Waldron. For Line 3, these receptors are too scattered or are within the proposed cut/fill lines. Mitigation would not be cost effective. No further analysis is required.
- ❑ Site # 31 - Sebastian Co. Rd. 226. For Line 2, there are too few receptors for cost effective mitigation and for minimum decibel reductions. Also, some of the receptors are within the proposed cut/fill lines. No further analysis is required.
- ❑ Site # 32 - Sebastian Co. Rd. 38, 40. For Line 2, these receptors are too scattered for cost effective abatement and minimum decibel reductions. In addition, much of the proposed

highway is in areas of cut. No further analysis is required.

- ❑ Site # 33 - Sebastian Co. Rd. 126. An 800 meter (2600 foot) long noise abatement feature requires further study for all lines. Preliminary cost per receptor: \$18,353.
- ❑ Site # 34 - S.H. 10, Sebastian Co. Rd. 52. There are 142 receptors in this area that are candidates for study for several barriers ranging from 600 meters to 2000 meters (1900 to 6500 foot) in length for all lines. Preliminary cost per receptor: \$10,985.
- ❑ Site # 35 - Sebastian Co. Rd. 54. Similar to site # 34. The representative measured receptor site is not impacted. However, there are some receptors that are located closer to the alignments than the representative site. Further study of a 600 meter (1900 foot) long noise abatement feature will be considered for Line 3 (the Selected Alignment). Preliminary cost per receptor: \$6,909.
- ❑ Site # 36 - Sebastian Co. Rd. 90, Co. Rd. 8. There are 64 receptors and 1 partially complete residential subdivision in this area. These are candidates for study of three barriers ranging from 300 meters to 500 meters (1000 to 1600 foot) in length for Line 1 (the Selected Alignment) and Line 2. Preliminary cost per receptor: \$6,000.

- ❑ Site # 37 - Fort Chaffee at cemetery-swimming pool area. This is not cost effective for 1 site and the proposed highway is in cut north of the measured receptor. No further analysis is required.
- ❑ Site # 38 - Springhill Park. Partial mitigation for this site will be gained from the dense and tall vegetation that will effectively mitigate up to 5 dBA at the site (FHWA Traffic Noise Prediction Model: A Method of Adjustments). Further, proposed mitigation of the noise impacts to the park have been discussed and agreed to with the Corps of Engineers as discussed in Section 5. The extent of vegetative clearing beyond where the bridge crosses the park would be minimized. In addition, the eastern end of the park is currently not in use.
- ❑ Site # 40 - Crawford Co. Rd. 1, 121. Some receptors are within the proposed cut/fill lines and it is not cost effective for the small number of receptors in this area. No further analysis is required.
- ❑ Site # 41 - S.H. 162, Kibler. There are 108 receptors in this area and it is a candidate for study of noise abatement features ranging from 1000 meters to 1500 meters (3300 to 5000 feet) in length for all lines. Preliminary cost per receptor: \$11,111.

The preliminary noise analysis indicates that a number of locations may be impacted by an

increase in sound levels. Preliminary costs per receptor were provided for the areas where study candidate barriers are proposed. Some barriers may or may not be determined feasible and/or reasonable when additional design is undertaken. A final decision on barriers for noise mitigation will be made upon completion of a detailed barrier analysis, the final engineering design, and a public involvement process. The final engineering design and corresponding final noise mitigation analysis will take into account changes to the horizontal and vertical alignments, additional property acquisition, drainage requirements, costs, natural resource and environmental considerations, design criteria constraints, and interchange designs.

#### 4.19 NAVIGATION EVALUATION

The McClellan-Kerr Arkansas River navigation system was constructed by the U.S. Army Corps of Engineers to improve navigation on the Arkansas River and its tributaries in Arkansas and Oklahoma. James W. Trimble Lock and Dam, located 8 kilometers (5 miles) east of Fort Smith, is one of the primary units in this navigation system.

The alignments under consideration cross the Arkansas River in the vicinity of river mile 291.8 as shown in Exhibit 5-1 in Section 5. The possible impacts of a bridge crossing the river at this location have been considered based on available information.

##### 4.19.1 Current Usage

Commodities, in order of tonnages, moved through the James W. Trimble Lock and Dam for the 1995 navigation season include fertilizer, wheat, forest products (wood chips), iron/steel, coal, lignite, coke, cement, and other miscellaneous products. Tows up to 365 meters by 32 meters (1,200 feet by 105 feet) can be moved through the locking system. In addition, pleasure craft up to 30 meters (100 feet) use the waterway and often lock through. Vessels engaged in emergency or maintenance operations on the waterway may include cutter head dredges, U.S. Coast Guard buoy tenders and Corps of Engineers fleets.

Lockage information for the James W. Trimble Lock and Dam's 1995 navigation season was as follows:

<input type="checkbox"/> total lockages	961
<input type="checkbox"/> tows	558
<input type="checkbox"/> barges	3,313
<input type="checkbox"/> pleasure craft	382
<input type="checkbox"/> total tons	3,501,668.

##### 4.19.2 Navigation Impacts

The primary issue regarding the bridge location is adequate pier spacing (horizontal clearance) to accommodate safe passage of vessels on their downstream lock approach. Access to the powerhouse tailrace located on the north bank of the river must also be considered in the final pier location. These design issues will be coordinated

with the U.S. Coast Guard and with the Corps of Engineers and power plant operators during the remainder of this study and during the design phase of the bridge.

Vertical clearance as required by the Coast Guard in this reach of the Arkansas River is 15.8 meters (52 feet) above the 2% flowline. The 2% flowline is the elevation that is exceeded 2% of the time. This elevation is 118.9 meters (389.7 feet) at 4,673 cubic meters per second (165,000 cubic feet per second) flowrate and has been considered in setting the grades on the alignments.

The proposed bridge will meet the above clearance requirements, will provide similar horizontal and vertical clearances as existing Arkansas River bridges and will provide adequate clearances for vessels engaged in emergency operations, national defense activities, or channel maintenance operations. The bridge, as proposed, will not adversely impact the safe passage of any vessels currently using the Arkansas River. The proposed bridge would not impact the use of the existing boat ramp located in Springhill Park.

Continued coordination with the Coast Guard will occur during the design phase of the proposed bridge. This will ensure that the necessary horizontal and vertical clearances and pier placement will be provided for the safe, efficient passage of vessels along the McClellan-Kerr

Arkansas River navigation system. When the proposed bridge is no longer used for transportation purposes, it will be removed completely from the waterway, in its entirety or to an elevation established by the Coast Guard. Such removal and clearance will be completed by and at the expense of AHTD using Federal funding if available.

No other facilities such as existing bridges, repair shops or fueling stations are located near the proposed bridge location that would affect safe passage of vessels.

#### **4.19.3 Hydrologic and Atmospheric Conditions**

The average velocity of the river at the proposed crossing is 1.8 meters per second (6 feet per second), with a range in velocity of 1.2 to 3.6 meters per second (4 to 12 feet per second). The width of the river channel at the proposed bridge locations under normal conditions is approximately 300 meters (1,000 feet).

Atmospheric conditions in the area would not influence the bridge location. Prevailing winds are from west to east at 2.0 kilometers per hour (6.7 miles per hour).

#### **4.19.4 Military Water Obstacle Training**

Although river navigation is halted during the Water Obstacle Training periods on the Arkansas River, the proximity of the training area bears on the location of the proposed bridge. Army safety

precautions require that a 500 meter (1,640 feet) clear area is maintained both upstream and downstream of the floating bridge site. As the Army chooses different locations for the construction of the floating bridge, the upstream-most of the four launch points was used to locate the three proposed alignments crossing the river, as shown in Exhibit 5-1. Further, the use of smoke in the military training requires its release at least 200 meters (650 feet) upstream of the operation. The approximate smoke release area provided by the military was also considered in the location of the alignments across the river.

**4.19.5 Bridge Impact Summary**

As a result of the regulatory authority of the Coast Guard, all environmental issues associated with the proposed highway, between the abutments of the bridge over the Arkansas River, must be reviewed by the Coast Guard, prior to issuance of a Coast Guard Permit. Application for this permit would be made during the final design of the bridge, in order to confirm exact clearances. Impacts from abutment to abutment are as follows:

- fish and wildlife none
- endangered species none
- wetlands none
- public water supply none
- floodplains none
- air quality none
- land use impacts none
- hazardous waste none
- prime farmland none

- social none
- economic none
- relocatees none
- environmental justice issues none
- archeological resources no known sites.

Construction impacts would cause temporary impacts to water quality. As described in Sections 3, 4 and Appendix I, measures to reduce and minimize erosion and sedimentation would be implemented during construction at this site.

Bridge construction would have temporary impacts on river traffic. The construction of falsework, cofferdams or other obstructions, if required, and the scheme for constructing and erecting the proposed bridge will be in accordance with plans submitted to and approved by the Coast Guard prior to construction of the bridge. Construction plans will ensure that free navigation of the waterway is not unreasonably interfered with and the present navigable depths are not impaired. Timely notice of any and all events that may affect navigation will be given to the Coast Guard during construction of the bridge. The channel or channels through the structure will be promptly cleared of all obstructions placed therein or caused by construction of the bridge.

Consideration of noise and visual effects to Springhill Park, a Section 4(f) resource, is discussed in Section 5.

#### 4.20 HAZARDOUS MATERIALS

Two potential hazardous materials sites would be impacted within the preferred corridor. Lines 1, 2, and the Selected Alignment would require the removal of underground storage tanks (UST) located at the Conoco Country Convenience Center. This site is located in segment E-F along the northern side of S.H. 8 east of Mena in Polk County. Prior to right-of-way acquisition and removal, a UST assessment would be conducted at the site to determine the extent of soil or groundwater contamination.

Line 3 and the Selected Alignment would impact a dumping site located in Sebastian County, south of County Road 43 in segment J-K. This dump is in a wooded ravine and consists of miscellaneous household trash, pieces of metal, and wood. The exact extent and amount of debris in this dumping area is unknown at this time. However, this area appears to have been used by one or several residential households and would not be expected to contain commercial or industrial waste.

Prior to construction, a site assessment of this area would be conducted to determine the exact contents. If contamination is present, an environmental investigation would be conducted and appropriate measures would be employed to remediate this area. If the dump contents are considered to be non-hazardous, the contents

would be excavated and disposed of at the nearest landfill facility.

No alignments would require a Preliminary Site Investigation (PSI). The preferred corridor Initial Site Assessment (ISA) (see Section 3) did not identify any properties containing asbestos or abandoned underground storage tanks, or that had previous permit violation problems, past history of handling or storage of hazardous materials, used or generated hazardous materials, or involving other high risk activities.

#### 4.21 ENERGY

Construction related energy consumption is based on the construction cost of the alternative. The amount of energy required for the production and placement of materials (asphalt, structures, cut, fill, etc.) during construction will be a fixed cost. This cost will be offset over the life of the project by the energy efficiencies gained with the use of an improved transportation facility. In most situations, fuel efficiencies would be improved due to higher levels of service resulting from uniform speeds, less congestion, and free flow of traffic in most situations. As traffic is diverted to the proposed highway, previously congested segments of U.S. 71 would experience a decrease in traffic. Consequently, the operating efficiency would likely improve in most sections of U.S. 71. Improved levels of service would also reduce travel times

between destinations, thereby reducing overall fuel consumption.

Roadway geometrics and grades would be improved through the construction of the proposed highway resulting in decreased vehicle fuel consumption, especially the consumption by truck traffic which comprises over 20% of the total traffic currently using U.S. 71.

#### **4.22 CONSTRUCTION IMPACTS**

Construction activities for the proposed highway would impact the environment with most being classified as "short-term". The most common impacts associated with the construction of the proposed highway include the temporary degradation of air, noise, and water quality; temporary disruption of traffic including maintenance, control, and safety concerns; the stockpiling and disposal of construction materials; the use of borrow areas; and the construction and use of haul roads.

Air, noise, and water quality concerns are discussed in detail in Sections 3 and 4. In general, although the noise associated with construction activities cannot be eliminated, noise impacts can be reduced by the establishment of reasonable working hours. Sensitive noise areas, such as residential neighborhoods will be identified and work restricted to daylight hours in these areas. Dust associated with construction can be

reasonably controlled with a watering program and erosion from construction sites will be controlled using standard erosion control measures (see Appendix I). Traffic disruption should be minimal due to the entire route being on new location, minimizing the involvement with residential and commercial areas.

Construction of the proposed highway will occur in close proximity to several single family residences, mobile homes, and businesses. Efforts to minimize construction impacts in these areas will be closely monitored.

#### **4.23 CUMULATIVE IMPACTS**

Cumulative impacts are defined as those impacts that "result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions" (Bank, 1992).

Foreseeable actions are generally defined as those for which plans exist. One federal action, although plans are not yet in place, is that of the redevelopment of 2,400 hectares (6,000 acres) of land on Fort Chaffee as part of BRAC 1995. This action has been previously discussed in Sections 1 and 2 of this document. Development of Fort Chaffee would likely involve:

- the conversion of land from natural uses to residential, commercial and park uses. It is

also likely that large areas would be preserved in their natural state

- filling of wetlands
- an increase in noise levels from increased traffic
- a change in air quality from point, mobile and area sources within the redeveloped land
- a change in the economic and social environment due to the increased employment opportunities.

By definition, these impacts are difficult to quantify. As the BRAC 95 process proceeds and as plans for the use of the land are in place, these impacts may become quantifiable. All consequences of this action will be fully documented in a separate Draft and Final Environmental Impact Statement prepared for this federal action.

No other federal or private actions for major developments in the preferred corridor have been made public.

#### **4.24 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND LONG-TERM PRODUCTIVITY**

The impacts associated with any of the proposed alignments would be short-term in nature. Efforts to minimize and mitigate for these impacts, have been discussed previously under each impact category. The proposed action has been identified by the U.S. Congress, the AHTD and the Fort

Smith / Van Buren long range transportation plan, as well as by local planning bodies, as essential for the continued growth and development and long-term productivity of western Arkansas.

#### **4.25 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

Construction of the proposed highway along any of the alignments would involve a commitment of land, labor, materials, equipment and funds. These resources would be permanently committed to the project and could not be expended for other purposes. The conversion of land from present uses to highway use would not be available for other purposes, unless at some time in the future it is determined that the proposed highway is no longer needed. At present, there is no reason to consider that this would ever occur.

Other resources used would be completely irreversible such as labor, paving materials and the fossil fuels required to construct the proposed highway. The commitment of these resources would not adversely affect other uses for these materials as they are not in short supply in the region. Federal and state funds for construction as well as continued maintenance of the facility would be committed and not available for other uses.

## Section 5: FINAL SECTION 4(f) EVALUATION

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### 5.1 INTRODUCTION

Section 4(f) of the USDOT Act of 1966 prohibits the use of significant publicly owned public parks, designated recreation areas, wildlife and waterfowl refuges and significant historic sites unless it can be shown that:

1. There is no prudent and feasible alternative that meets the project purpose and need that avoids use of that land; and
2. The proposed action has considered all possible planning to minimize harm to the property which would result from the proposed action.

The U.S. 71 Relocation project from DeQueen to Interstate 40 would affect two properties which meet the requirements of Section 4(f). These are Springhill Park in Sebastian County managed by the U.S. Army Corps of Engineers and the Ouachita National Recreation Trail managed by the U.S. Forest Service, Ouachita National Forest. Accordingly, a complete evaluation of the alternatives to avoid the use of these properties has been conducted for this project and measures to minimize harm to each resource have been coordinated with managing agencies and will be incorporated into the project plans.

### 5.2 SPRINGHILL PARK

Springhill Park is located at James W. Trimble Lock and Dam (Lock and Dam 13) on the Arkansas River and is owned and managed by the U.S. Army Corps of Engineers. Located 8 kilometers (5 miles) east of Fort Smith, Arkansas (at river mile 292.8), James W. Trimble Lock and Dam was completed in August 1969 for the purpose of river navigation. The dam provides no flood control storage. The elevation of the normal pools just upstream and downstream of the dam are 119.2 - 119.5 meters and 112.8 - 113.4 meters, respectively. Equivalent English measures are 391.0 - 392.0 feet and 370.0 - 372.0 feet.

Springhill Park is located on the south bank of the river and is accessed by S.H. 59 from the north and south through Van Buren and Barling, Arkansas. The park encompasses 136 hectares (337 acres) of which 61 hectares (150 acres) are developed for recreational use. Existing facilities provided at the park include picnic areas, an overlook, a boat launching ramp and camping areas (Exhibit 5-1). The existing facilities are all located in the western half of the park and with the exception of the boat ramp, all are upstream of river mile 292.0.

The Master Recreation Plan for the park was prepared by the Corps of Engineers in June 1976, but has not been updated. Although this plan provided for future development of the eastern half of the park by 2020, these plans have been essentially abandoned due to recurrent flooding problems. For the same reason, the Corps closed off the four easternmost camp sites in this area from public use. Similar flooding problems and associated problems with mosquitoes prompted the Corps to relocate 32 camp sites from east of the boat ramp to the extreme western, more heavily used, area of the park in August 1993.

Total visitation to the park was 211,765 in 1995, only slightly higher than the 1974 visitation of 198,500. The 1995 figures show a 23% drop in visitation since just 1993, which logged 273,877 total visits. The majority (over 98%) of park visits over the last four years have been day use visits, with overnight camping visits comprising less than 2% of park use. Current total usage figures are well below the estimated 1990 total visitation of 417,000 forecasted in the 1976 Master Recreation Plan (Corps, 1976).

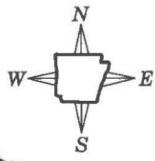
A unique characteristic of the eastern areas of the park involve the use of this area, and adjacent property to the east, by the Fort Chaffee Military Reservation. Fort Chaffee provides Water Obstacle Training for several segments of the armed forces which involves construction of a

floating temporary bridge. This installation is the only Army base that owns property on both sides of a navigable waterway and therefore is the only location in the United States that provides such training. During this training, the army uses an estimated 5 hectares (13 acres) of the park. Part of the training doctrine includes the release of black smoke in the floating bridge crossing area of the river. The approximate area engulfed in smoke during the training mission is shown in Exhibit 5-1.

### 5.2.1 Impacts to Springhill Park

The alignments cross the park at its narrowest point (approximately 300 meters or 1,000 feet) and would entirely span the park with a bridge (Exhibit 5-1). The locations were chosen such that they minimize impacts as much as possible. Lines 1, 2 and 3 would have similar effect on the park although Line 3 would be furthest from the developed areas. The alignments are located approximately between 712 and 1,112 meters (2,330 and 3,650 feet) from the nearest camping sites. The land use involved would be limited to that required for the substructure of the bridge, most likely concrete piers. The number of piers located within the park would be determined during the design phase of the project.

No currently used facilities would be physically affected by any of the alignments. Line 1 would affect the four presently abandoned camp sites and water fountain. Line 3 would not affect the use



DEVELOPED PORTION OF PARK

UNDEVELOPED OR UNUSED PORTION OF PARK

NEW LOCATION OF 32 CAMP SITES

S.H. 59  
TO  
VAN BUREN

VISITOR CENTER  
BOAT RAMP

JAMES W. TRIMBLE  
LOCK & DAM

LINE 1  
SELECTED ALIGNMENT  
LINE 2  
LINE 3

River Mile  
292

ARKANSAS

River Mile  
291

RIVER

PARK ENTRANCE

McALLESTER  
CEMETERY

OLD LOCATION OF  
32 CAMP SITES

S.H. 59  
TO  
BARLING

EXISTING  
GASWELL

ABANDONED  
CAMP SITES

LAUNCH POINTS FOR  
WATER OBSTACLE  
TRAINING

SMOKE RELEASE  
AREA

LEGEND

- LINE 1
- ..... LINE 3
- - - LINE 2
- SPRINGHILL PARK BOUNDARY
- SELECTED ALIGNMENT

SOURCE: MASTER RECREATION PLAN

U.S. 71 RELOCATION  
DeQueen to I-40

Exhibit 5-1  
SPRINGHILL PARK

Baker

SCALE IN METERS  
0 250 1000

SCALE IN FEET

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of park facilities; however, this line crosses the estimated smoke coverage area of the park and is the closest to the military's Water Obstacle Training Area. Line 2, the Selected Alignment in this area, also would not affect the use of any park facilities and is at the upstream limit of the smoke release area for military training.

**Noise Impacts**

Future noise levels have been calculated for Lines 1, 2 and 3 and are provided below. The decibel levels shown represent the worst case scenario and do not account for the existing tree cover and the height of the proposed highway bridge above the existing ground. These factors are expected to reduce the future noise levels in the park by at least 5 decibels (FHWA Traffic Noise Prediction Model: A Method of Adjustments). Therefore, the Selected Alignment and Line 3 would likely not result in a substantial noise increase, but Line 1 may.

Alignment	1995	2020
No-Action	45	45
Line 1	-	59
Line 2 (Selected)	-	56
Line 3	-	55

Source: Michael Baker Jr., Inc.

**Visual Effects**

Due to the dense vegetative cover of most areas of the park, the bridge over the park would not be visible from most park facilities. At the crossing location, the bridge would be approximately 15 meters (50 feet) above the existing ground of the park and hidden within the forested canopy. The main spans of the bridge over the Arkansas River would be visible from the boat launching ramp and the overlook just as the lock and dam structure are currently visible from these locations. Lines 1 and 2 crossing the park would be visible from the end of the roadway through the park although no park facilities are located in this area. Should the Corps find a solution to the recurrent flooding problems and further develop the eastern area of the park, the bridge would be visible as visitors pass under it and for some distance beyond. As in the case of the existing camping areas and other park facilities, it is expected that dense vegetation associated with the future developed areas would obstruct the view of the bridge.

**Secondary Effects**

It is possible that the park could experience increased use following construction of the proposed highway due to increased accessibility and attractiveness to vacationing travelers.

**5.2.2 Avoidance Alternatives**

The multi-step alternatives development process discussion in Section 2 provides a description of

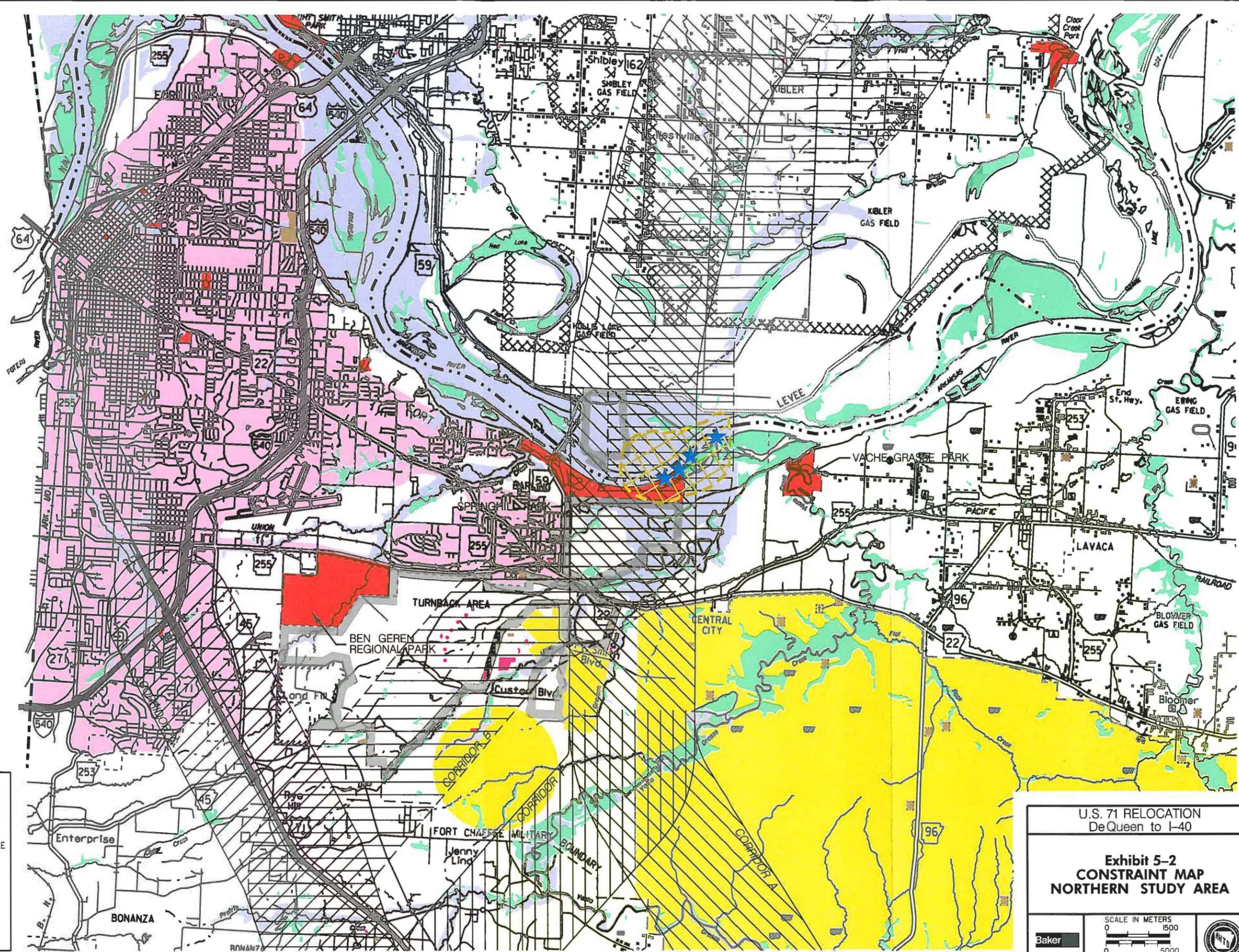
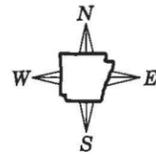
the Major Investment Study, the Corridor Feasibility Study and the Alignment Study. Some of the alternatives considered in these studies are discussed below. A detailed explanation of the process used for each step in the alternatives study and a description of the alternatives considered is provided in Section 2.

The Major Investment Study considered planning level strategies for the High Priority Corridor through the Fort Smith metropolitan area. Springhill Park is located within the metropolitan area considered in the MIS. The I-540 / I-40 widening strategies considered in the MIS would avoid Springhill Park. However, the MIS found that a widening strategy along I-540 and I-40 would not provide the high level of service required for the HPC and would be inconsistent with local development plans and the local project objectives. Further, the widening strategies were known to potentially impact hundreds of houses and businesses located along frontage roads to I-540 and I-40 or directly adjacent to highway right-of-way. Therefore, the widening strategies were eliminated from further consideration because they did not meet the project purpose and need and because the potential displacement impacts would cause community disruption of extraordinary magnitude. The MIS working group made up of community leaders and other local officials and

professionals was unanimously in favor of a new location strategy.

The Corridor Feasibility Study evaluated several 3 kilometer-wide (2 mile-wide) corridors within the broad study area. A constraint map of sensitive resources was prepared prior to the development of the corridors within the study area. Resources (constraints) considered in the constraint map were developed jointly with state and federal resource agencies and the public. A portion of the constraint map of the project covering the Springhill Park reach is shown in Exhibit 5-2. The constraints presented include Vache Grasse Park, cemeteries, wetland areas, the military training area, and dense residential areas. Other engineering considerations involve the following design aspects: the need to cross the Arkansas River in a perpendicular fashion, the need to bridge the regulated floodway (ideally at the narrowest point) and the need to minimize the angle of the S.H. 22 crossing.

Corridor C would avoid most constraints except for the densely developed areas that border the existing I-540 and I-40 highways and wetland areas directly adjacent to the existing highways. Corridor A is nearly coincident with the preferred corridor (Corridor B) in the Springhill Park area of the project and has the same potential to affect the park.



NOTES:  
 ENDANGERED SPECIES AND ARCHEOLOGICAL  
 SITES NOT SHOWN DUE TO SENSITIVITY  
 OF THIS INFORMATION.

**LEGEND**

FLOODPLAINS	WETLANDS
PARKS	CEMETERY
HAZARDOUS MATERIALS	FORT CHAFFEE TURNBACK AREA
AREAS CRITICAL TO MILITARY OPERATION	SMOKE RELEASE AREA
DENSE RESIDENTIAL OR COMMERCIAL DEVELOPMENT	
LAUNCH POINTS FOR WATER OBSTACLE TRAINING	

MAP BASE SOURCE: AHTD GENERAL HIGHWAY MAPS

U.S. 71 RELOCATION  
 DeQueen to I-40

**Exhibit 5-2  
 CONSTRAINT MAP  
 NORTHERN STUDY AREA**

SCALE IN METERS  
 0 1500

SCALE IN FEET  
 0 5000




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Corridors could not be developed east of Corridor B due to the presence of Vache Grasse Park, another Section 4(f) resource, as well as the unacceptable river crossing that would result in this location. Further, to locate a corridor between Springhill and Vache Grasse Parks would require crossing the Fort Chaffee land that has been determined critical to base operation, or would result in an unacceptable angle of crossing of S.H. 22. The Base Realignment and Closure process involved detailed studies and assessment of the land that the military must retain to still remain a functioning training center. Further, a corridor located between the two parks would affect the nationally important military Water Obstacle Training Area.

A corridor to the west of Corridor B would result in severe residential impacts in the City of Barling.

Any of the above corridor alternatives that would avoid Springhill Park would either affect another Section 4(f) resource or would result in community disruption of extraordinary magnitude (over 100 houses and nearly 40 businesses), or impact the truly unique Water Obstacle Training Area.

To confirm the findings of the MIS, an actual count of the potential displacees along I-540 and I-40 was conducted and is provided in Section 2.

### 5.2.3 Measures to Minimize Harm

The following measures to minimize impact to Springhill Park were incorporated into the Alignment Study:

- Cross the park at the narrowest point
- Cross at a point with dense vegetation
- Cross the park in an area with no public use facilities.

Further, the coordination process with the Army Corps of Engineers has resulted in the following mitigative measures:

1. The four camp sites and water fountain (currently not in use) will be relocated to another section within Springhill Park at the Corps' direction to mitigate for potential noise impacts.
2. Access to all existing park facilities will be maintained during all construction phases.
3. The park will be entirely bridged so that the only land used in it is for the bridge substructure.
4. Signing on the proposed highway directing the public to the park will be provided at the proposed S.H. 22 interchange or the S.H. 59 connector interchange north of the river. Signing will be provided from both directions. The S.H. 59 interchange is the Corps' preferred signing location. Signing will also be

- provided at appropriate state highways, either S.H. 22 or S.H. 59.
5. A closed drainage system will be provided as the bridge crosses the park in order to protect the public from accidental spills.
  6. Screens or other measures to protect the public from objects thrown or falling from the bridge will be provided.
  7. The highway may change the future usage of the park from fishermen to travelers and vacationers. As a result, the Corps must maintain their ability to further develop the park on both sides of the proposed highway. The main paved road through the park which currently ends at the cul-de-sac will be relocated, if necessary, so that it may be extended east of the proposed highway.
  8. Any preconstruction activities, such as core borings, must receive prior right-of-entry approval by the Corps.
  9. Prior to bridge construction, fencing will be installed to prevent public access to the construction area. A gate would be provided in the fence, preferably near the cul-de-sac for Corps access to the undeveloped area of the park.
  10. Access to the construction site to be used by construction vehicles, construction workers, materials deliveries and any other construction-related activities will not be through the developed areas of the park. Contractor access roads and work areas will be subject to Corps approval.
  11. The cleared area for the bridge across the park will be minimized.
  12. Access for mowing will be of minimal width and gated from the public.
  13. All areas outside of the permanent easement which are disturbed during construction activities will be restored to their previous grades and revegetated with native species. Disturbed areas within the easement will be restored and seeded. Nonsuitable materials from substructure excavation will be disposed of outside of the park in accordance with other disposal requirements.
  14. Any temporary items constructed for bridge erection will be removed in their entirety.

#### **.5.2.4 Coordination**

Section 8 lists several meetings that took place with the Corps of Engineers throughout the corridor and alignment study phases of the project, many of which concerned Springhill Park. In February 1996, a field trip of Springhill Park was conducted with Corps of Engineers staff from Russellville, Arkansas. In June 1996, a meeting was held with the Corps of Engineers and the Coast Guard to discuss mitigation measures as outlined above. Official correspondence with the Corps regarding Springhill Park is included in Appendix C. The Draft EIS was circulated to and comments were

received from the Department of the Interior, National Park Service.

### 5.2.5 Conclusion

Based upon the above considerations, there is no feasible and prudent alternative to the use of land from Springhill Park and the proposed action includes all possible planning to minimize harm to the park resulting from such use.

## 5.3 OUACHITA NATIONAL RECREATION TRAIL

The Ouachita National Recreation Trail was established in September 1976 and is owned and managed by the Ouachita National Forest. The Ouachita Trail is an east-west trail spanning 310 kilometers (192 miles) of the Ouachita National Forest between Talihina, Oklahoma and S.H. 9 south of Perryville (See Exhibit 5-3).

The Ouachita Trail offers hiking opportunities that pass through rugged, mountainous terrain and across wide valley floors. Elevations range from 965 to 3,225 meters (600 to 2,000 feet). Hikes of varying lengths can be experienced by way of the many developed and undeveloped access points along the trail's length. Within the preferred corridor, one undeveloped access point is located on existing U.S. 71. Off road vehicles and horses are prohibited on the trail. The trail is unpaved and is 46 to 61 centimeters (18 to 24 inches) in width. Trail grades are less than 10% with pedestrian bridges provided at seven stream crossings, the

largest of which is a 20 meter (65 foot) long concrete structure. Other trail bridges are shorter and constructed of timber or timber and steel.

Due to the nature of this resource, usage information is difficult to collect and specific usage figures are not available from the Forest Service. However, trail use is rated from 1 to 4, with 1 indicating light use of from 1-10 users on a weekend day or holiday, 2 indicating 10-50 users, and so on. The reach of the trail crossed by the proposed highway is rated as 1. The Forest Service reports that the ends of the trail receive heavier use due to its proximity to population centers and the availability of other forest facilities and recreational activities. It is possible that the proposed highway could increase trail use due to increased accessibility, although it is difficult to say by how much.

### 5.3.1 Impacts to the Ouachita National Recreation Trail

Lines 1 and 2 would cross the trail approximately 850 meters (260 feet) east of existing U.S. 71 as it follows the ridge of Fourche Mountain. Anticipated depth of cut at the trail crossing is approximately 74 meters (240 feet). Current access to the trail from existing U.S. 71 would not be affected because the existing highway would remain open under both Line 1 and Line 2.

Line 3 (the Selected Alignment) would cross the trail at nearly the same location as existing U.S. 71.

Under this option existing U.S. 71 would remain in service from the north to the existing trail access point.

**Noise Impacts**

The noise analysis completed for the project included two receptors along the trail: one (#19) at the existing trailhead on U.S. 71 and one (#20) about 1.6 kilometers (1 mile) east of U.S. 71, or about midway between Lines 1 and 2, and Line 3. The results are as follows:

<b>Table 5-2 EXISTING AND FUTURE NOISE LEVELS AT THE OUACHITA NATIONAL RECREATION TRAIL (dBA Leq)</b>				
Site #	No-Action		Lines 1 & 2	Line 3
	1995	2020	2020	2020
19: Trail @ U.S. 71	64	66	62	71
20: Trail w / in Forest	46	48	70	56

Source: Michael Baker Jr., Inc.

Site 19 is immediately adjacent to U.S. 71 where noise levels associated with a highway are expected. Line 3 (the Selected Alignment) would result in an increase to the ambient noise level at this location, while Lines 1 and 2 would not. Human activity in this area is transient, associated with hiking along the trail. Noise levels would decrease as one moves away from the proposed highway (and the existing highway) into the forested trail surroundings. Site 20, at a remote

forested location along the trail, would experience a greater impact from Lines 1 and 2 (from 46 to 70 dBA) than from the Selected Alignment (from 46 to 56 dBA).

**Visual Effects**

Construction of the proposed highway would change the view of the forest landscape as seen from the trail. The amount of visual impact is directly related to the depth of cut. Lines 1 and 2 in this reach would result in cuts up to 74 meters (240 feet) into the mountain. Line 3 would result in cuts of 6 meters (20 feet). The Selected Alignment (Line 3 in segment G-H) results in the least visual impact and also offers the best potential to minimize the visual impact during the design process.

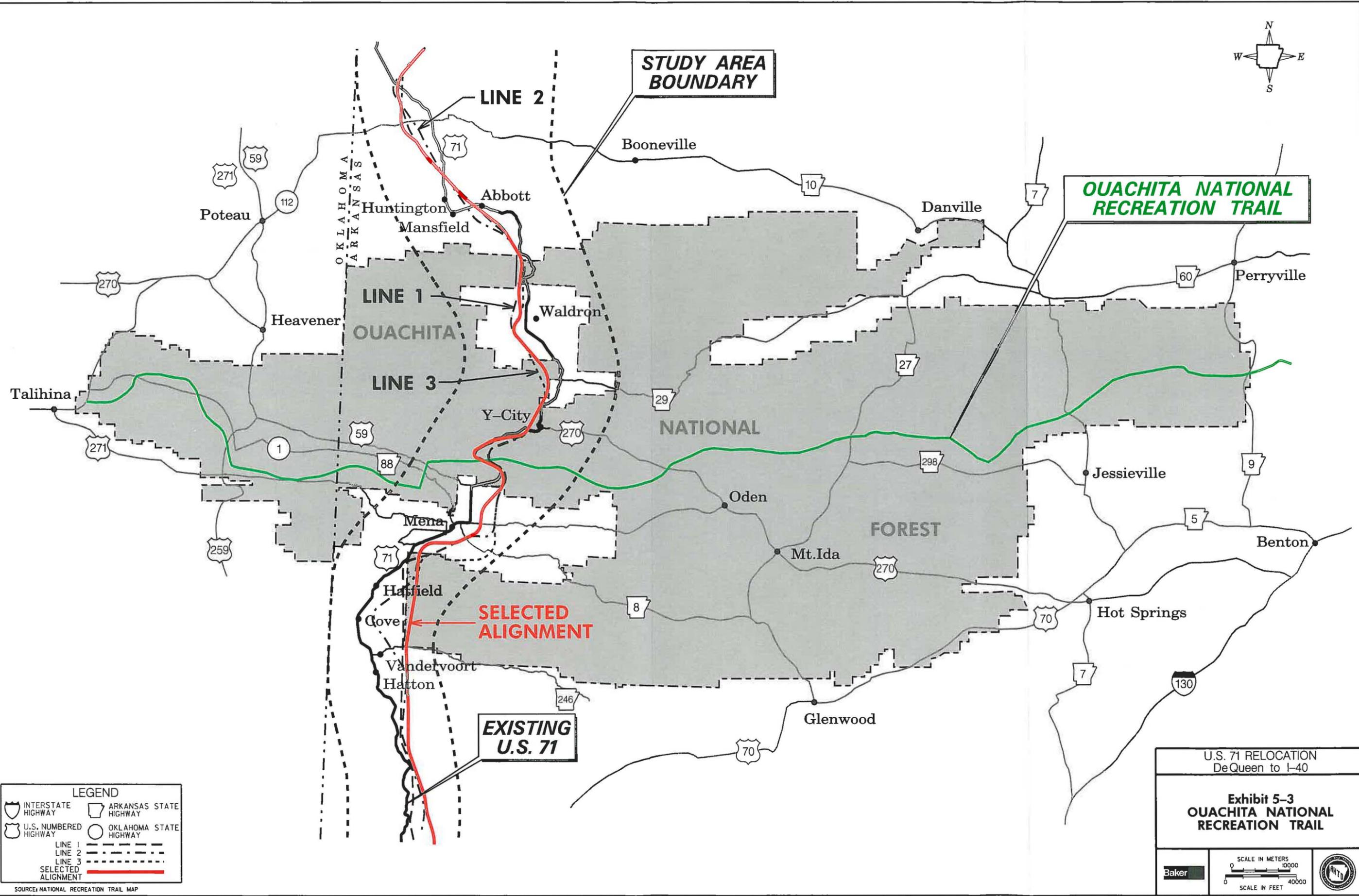
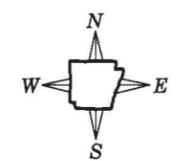
**5.3.2 Avoidance Alternatives**

Because the Ouachita Trail runs east-west and is 310 kilometers (192 miles) in length, alternative locations for a north-south highway that avoid the trail do not exist.

**5.3.3 Measures to Minimize Harm**

**Line 1 and Line 2**

For either Line 1 or Line 2, the trail would be shifted approximately 100 meters (330 feet) in a northerly direction. The length of this relocation would be approximately 2 kilometers (1.2 miles). This relocation would ensure a suitable location for a pedestrian bridge to carry the trail over the proposed highway.



**LEGEND**

INTERSTATE HIGHWAY	ARKANSAS STATE HIGHWAY
U.S. NUMBERED HIGHWAY	OKLAHOMA STATE HIGHWAY
LINE 1	-----
LINE 2	-----
LINE 3	-----
SELECTED ALIGNMENT	-----

SOURCE: NATIONAL RECREATION TRAIL MAP

U.S. 71 RELOCATION  
DeQueen to I-40

**Exhibit 5-3**  
**OUACHITA NATIONAL RECREATION TRAIL**

Baker

SCALE IN METERS  
0 10000 40000

SCALE IN FEET  
0 10000 40000

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The depth of cut at the proposed pedestrian bridge location is 24 meters (78 feet) on Line 1 and 34 meters (110 feet) on Line 2. The length of the pedestrian bridge would be approximately 200 meters (650 feet) on Line 1 and 250 meters (820 feet) on Line 2.

### **Line 3**

For Line 3 (the Selected Alignment), the trail would remain in its existing location and would be carried over the proposed highway on a pedestrian bridge. The pedestrian bridge would be about 150 meters (500 feet) in length.

Further, Line 3 in this reach has been adjusted so that U.S. 71 can remain open from the north, avoiding impacts to the existing undeveloped trail access point along this route. In order to facilitate the use of this access point, a small reach of connecting trail would be constructed from the existing route to an area near the pedestrian bridge. Parking areas could be established at the termination point of the existing route.

Coordination with the Forest Service regarding mitigation has identified the need to address the following issues during the design phase of the proposed highway:

- use of colored concrete for the pedestrian bridge to reduce the visual contrast
- screening or other enclosure for the pedestrian bridge to protect pedestrians and highway traffic

- pavement design for the pedestrian bridge to reduce hazardous footing during winter months.

### **Other Considerations**

The Ouachita Trail currently crosses existing U.S. 71 at grade. The 1995 truck percentage is 27%, the highest along the entire route. This reach also experiences the highest accident rate of the entire two-lane portion of existing U.S. 71 in the study area.

The Selected Alignment would eliminate the at-grade highway crossing and provide hikers with a safe location to cross the proposed highway. Lines 1 and 2 would not improve pedestrian safety.

### **5.3.4 Coordination**

Discussions with the Forest Service relative to the Ouachita National Recreation Trail took place at several agency coordination meetings throughout the project. These include July 1995, December 1995 and April 1996. Correspondence with the Forest Supervisor regarding impacts and mitigation are included in Appendix C.

### **5.3.5 Conclusion**

Based upon the above considerations, there is no feasible and prudent alternative to the use of land from Ouachita National Recreation Trail and the proposed action includes all possible planning to minimize harm to the trail resulting from such use.

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## Section 6: LIST OF PREPARERS

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## **Section 7: DISTRIBUTION OF STATEMENT**

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Copies of the Final Environmental Impact Statement have been distributed to the following agencies and organizations:

### **FEDERAL AGENCIES**

U.S. Army Corps of Engineers - Little Rock, AR  
U.S. Army Garrison - Fort Chaffee, AR  
U.S. Army Reserve Command - Atlanta, GA  
U.S. Coast Guard - St. Louis, MO  
U.S. Department of Housing & Urban Development - Little Rock, AR  
U.S. Department of the Interior, Fish & Wildlife Service - Vicksburg, MS  
U.S. Department of the Interior, National Park Service  
U.S. Environmental Protection Agency - Dallas, TX  
U.S. Environmental Protection Agency - Washington, D.C.  
U.S. Federal Emergency Management Agency - Denton, TX  
U.S. Forest Service, Ouachita National Forest - Hot Springs, AR

### **STATE AGENCIES**

Arkansas Army National Guard - Fort Chaffee, AR  
Arkansas Department of Health, Little Rock, AR  
Arkansas Department of Parks & Tourism - Little Rock, AR  
Arkansas Department of Pollution Control & Ecology - Little Rock, AR  
Arkansas Forestry Commission - Little Rock, AR  
Arkansas Game and Fish Commission - Little Rock, AR  
Arkansas Geological Commission, Little Rock, AR  
Arkansas Historic Preservation Program - Little Rock, AR  
Arkansas Industrial Development Commission - Little Rock, AR  
Arkansas Natural and Scenic Rivers Commission - Little Rock, AR  
Arkansas Natural Heritage Commission - Little Rock, AR  
Arkansas Soil & Water Conservation Commission - Little Rock, AR  
Arkansas State Planning and Development Clearinghouse - Little Rock, AR  
Arkansas Waterways Commission - Little Rock, AR  
Natural Resources Leasing, Permit Program, Little Rock, AR  
Office of the Governor - Little Rock, AR  
Office of the State Archeologist - Fayetteville, AR

**U.S. SENATORS AND REPRESENTATIVES**

Representative Jay Dickey - Pine Bluff, AR  
 Representative Tim Hutchinson - Fayetteville, AR  
 Senator Dale Bumpers - Washington, D.C.  
 Senator David Pryor - Little Rock, AR

**STATE SENATORS AND REPRESENTATIVES**

Representative Ammons - Waldron, AR  
 Representative DeLay - Fort Smith, AR  
 Representative Hall - Rudy, AR  
 Representative Hendrix - Fort Smith, AR  
 Representative Hill - Nashville, AR  
 Representative Pollan - Fort Smith, AR  
 Representative Wilkinson - Greenwood, AR  
 Representative Willems - Paris, AR  
 Senator Cassady - Nashville, AR  
 Senator Harriman - Van Buren, AR  
 Senator Jeffries - Fort Smith, AR  
 Senator Walters - Greenwood, AR

**LOCAL OFFICIALS**

City of Barling Administrator  
 City of Fort Smith, Director of Engineering  
 City of Fort Smith, Director of Planning  
 City of Fort Smith Administrator  
 Crawford County Judge  
 Crawford County Justice of the Peace  
 DeQueen Chamber of Commerce  
 Fort Smith Chamber of Commerce  
 Fort Smith Community Development Corporation  
 Fort Smith Planning Commission  
 Greenwood Chamber of Commerce  
 Greenwood Planning Commission  
 Howard County Judge  
 Logan County Judge  
 Mayor of Alma  
 Mayor of Barling  
 Mayor of Bonanza  
 Mayor of Booneville  
 Mayor of Central City

Mayor of Cove  
 Mayor of DeQueen  
 Mayor of Dierks  
 Mayor of Dyer  
 Mayor of Fort Smith  
 Mayor of Gillham  
 Mayor of Grannis  
 Mayor of Greenwood  
 Mayor of Hackett  
 Mayor of Hartford  
 Mayor of Hatfield  
 Mayor of Huntington  
 Mayor of Kibler  
 Mayor of Lavaca  
 Mayor of Mansfield  
 Mayor of Mena  
 Mayor of Midland  
 Mayor of Mulberry  
 Mayor of Van Buren  
 Mayor of Vandervoort  
 Mayor of Waldron  
 Mayor of Wickes  
 Mena Chamber of Commerce  
 Mena Planning Commission  
 Polk County Judge  
 Scott County Judge  
 Sebastian County Judge  
 Sevier County Judge  
 Southwest Arkansas Planning & Development  
 District - Magnolia, AR  
 State Federation of Negro Women - Fort Smith, AR  
 The Port of VanBuren - Van Buren, AR  
 Van Buren Chamber of Commerce  
 Waldron & Scott County Chamber of Commerce  
 Waldron Chamber of Commerce  
 Waldron Industrial Development Commission  
 Western Arkansas Employment Development  
 Agency  
 Western Arkansas Planning & Development District  
 - Fort Smith, AR

**OTHER ORGANIZATIONS AND PLACES**

- Arkansas State University
- DeQueen Public Library
- Fort Chaffee Redevelopment Authority
- Fort Smith Library
- Mena Library
- Scott County Library
- University of Arkansas

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## **Section 8: COORDINATION AND PUBLIC INVOLVEMENT**

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The general public, local elected officials and state and federal resource agencies were encouraged to participate in this project from its inception. This section describes the type of coordination at each step of the study process. Lists of meetings including dates, topic and invitees are provided at the end of this section.

### **8.1 SCOPING PROCESS**

The scoping process was centered on a week long series of meetings held in Little Rock, DeQueen, Mena, Waldron and Fort Smith. Four public meetings, one local officials meeting and one agency meeting were held. Further, a notice of intent was published in the Federal Register on July 18, 1995, officially announcing the project. Requests for information were sent to the resource agencies and responses were received. These documents, along with all other agency correspondence are included in Appendix C.

A video was prepared for the public and local official scoping meetings which explained the purpose of the U.S. 71 Relocation project, explained the steps in the study process, and provided information about further public involvement. The workshop type meetings were designed to obtain important information about the public's perception of the need for the project, their likes and dislikes of the existing route, and the

anticipated benefits and impacts of the proposed highway. Environmental, social and other issues of importance that were identified by the public were considered in the planning process.

### **8.2 NEEDS ANALYSIS AND MAJOR INVESTMENT STUDY**

Two meetings were held at this step in the process, one in Mena and one in Fort Smith. A video was also prepared for these public meetings. This video provided and explained the results of the Needs Analysis. The Fort Smith public meeting also explained the MIS and encouraged additional comments on strategies for the HPC through Fort Smith.

Further, a copy of the video, reduced versions of the public meeting display boards and comment forms were provided to town halls in DeQueen, Mena, Waldron and Fort Smith for further public review.

### **8.3 CORRIDOR FEASIBILITY STUDY**

Involvement in the corridor study was centered around identifying a preferred corridor for the proposed highway. A resource agency meeting was held in Little Rock to present the findings of the corridor study and to request comments on the

preferred corridor. All agencies responding concurred with the preferred corridor.

Workshop style public meetings were held in DeQueen, Mena, Waldron and Fort Smith. A meeting of study area local officials was also held. Many local officials also attended the public meetings in their communities.

#### **8.4 ALIGNMENT STUDY**

Due to the increased detail of the alignment study effort, meetings with the various parties were conducted over a series of months, so that appropriate focus could be placed on each reach of the project. Three series of meetings were held from February through May 1996 to cover the southern, middle and northern reaches of the corridor. For a given reach, public meetings and local officials meetings were held, followed by a field trip with state and federal resource agencies. Please refer to the appropriate tables at the end of this section.

#### **8.5 ENVIRONMENTAL DOCUMENTATION**

Public hearings were held in DeQueen, Mena, Waldron, Fort Smith and Kibler to obtain formal comment on the draft environmental impact statement. Table 8-4 presents the dates, locations, and attendance at each hearing, and the number of individual comment letters received by area.

At the close of the comment period on January 10, 1997, approximately 8 comments were received

from communities and organizations, 184 from individuals (172 written and 12 oral) and 573 form letters and petition signatures. Comments received on the DEIS have been fully evaluated and considered in the identification of the Selected Alignment. Table 8-5 presents a summary of each comment received and a response. A public hearing record of comments received through January 10, 1997 is on file at AHTD. Section 8.7 below summarizes the primary issues discussed in the public comment letters.

Comment letters on the Draft EIS made by state and federal resource agencies are provided in Appendix C. A summary of each agency letter and a response are provided in Table 8-6.

#### **8.6 PUBLIC NOTIFICATION METHODS**

Notification for meetings were handled in several ways:

- Direct mailings to persons on mailing lists (public, local officials and agencies)
- 14 area newspapers
- 14 radio stations
- 4 television stations
- City access channel
- Notification sent to 61 area schools (Elementary, Middle, Junior and Senior High Schools) with a request to post or distribute the announcement

- ❑ Notification to 142 employers in the area with a request to post or distribute the announcement
- ❑ Additional copies of announcements sent to local officials for posting in their communities

Three types of mailing lists were maintained for the study: public, local officials and agencies. The public mailing list was initiated from a small list of names on file at AHTD. As each public meeting was held, or as each phone or written inquiry was received, these persons were added to the mailing list. The current public mailing list contains nearly 1600 names. The local officials list began with 80 invitees and grew to nearly 100, and are listed in Section 7. Approximately fifteen (15) state and federal agencies participated throughout the project. A much longer list of agencies actually received copies of the DEIS.

## **8.7 TOPICS OF PUBLIC COMMENT LETTERS ON THE DEIS**

The topic of most comments received fall into two categories. The first is the concern about the impact of the proposed highway on personal property. The second centers around the public debate in a particular area as to the best location of the proposed highway. Often, these issues are intertwined.

In any location, the Selected Alignment has been identified in order that it first provide the anticipated benefit and then minimizes impacts to communities and the environment. To locate the proposed

highway solely on its impacts would compromise its intended function and purpose.

### **8.7.1 Personal Property Impacts**

Many property owners expressed anxiety and frustration over the possibility that they may lose their homes and property. AHTD recognizes property owners concerns and has worked at all stages of the project to minimize the number of homes taken by the proposed highway. It would not be possible to construct the project without some impact to personal property.

There were several comment letters requesting minor line shifts to the Preferred Alignment in order to reduce property impacts. AHTD has evaluated all of these and believe that many can be accomplished that will further minimize impact to property. However, most of these shifts are so minor that adequate mapping detail will not be available until the final design phase of the project. At that time, AHTD will consider the following shifts:

1. Adjustments at Port Arthur Avenue in Grannis in segment B-C to minimize residential relocations
2. In segment J-K, between the proposed Abbott/Mansfield interchange with U.S. 71 and the Witcherville interchange with U.S. 71, shift to minimize residential relocations
3. In segment D-E in Mena, shift west to miss the Elks Club

4. In segment N-O, shift west in the reach north of the S.H. 162 crossing to minimize property impacts.

Other shifts that appear feasible and that will reduce impacts to property or residential relocations will be considered during the final design phase of the project.

### **8.7.2 Mena Location and S.H. 8 Interchange**

There were several individual comment letters that agreed with the location of the Preferred Alignment in the Mena area. There were also several individual comment letters that disagreed with the Preferred Alignment in Mena.

Those that disagree cited that the Preferred Alignment (also the Selected Alignment) takes more homes in segments D-E and E-F while in all other segments except Waldron the Selected Alignment takes the fewest. Impacts, particularly residential relocations, must be considered in the final decision. However, only if all alternatives under consideration equally address the project purpose and need, can impact minimization be considered. In Mena, traffic congestion along U.S. 71 is causing severe delays. Although this is not an overall purpose of the HPC, AHTD is committed to constructing its projects so that they have the most local benefit. The need to relieve traffic congestion and related safety issues in Mena was stated by several involved parties and this local

need was adopted by AHTD. The Selected Alignment has the greatest potential to serve as a bypass around the center of Mena to relieve this congestion. The further out the proposed highway would be located, the lower the potential to relieve traffic congestion. To choose Line 2 or Line 3 solely on the basis of residential and business relocations would not be serving the transportation needs of the greater public. Further, Line 3 would add unnecessary length (5.4 km or 3.3 miles) to the highway in the Mena area which would increase travel time and user costs for all motorists using the facility.

Some commentors felt that Line 2 in segment E-F would provide Mena with "more room to grow". The proposed highway would bridge or be bridged by all major streets and highways and would not be a barrier to the growth of Mena. At some point in the future, Mena will need to grow beyond the proposed highway, regardless of its location, and the Selected Alignment will not curtail that growth. Based on previous studies (Epps et al., 1974; Hartgen et al., 1992) by locating the highway at Line 1, there is a higher likelihood that any development associated with the new highway will become integrated with the existing business district rather than to function autonomously. The further out an interchange is located on S.H. 88, the higher the likelihood that a second business district will develop.

Many comments were received that an interchange is needed at S.H. 8 in Mena. This comment was received from people who agree with the Preferred Alignment as well as those who disagree.

AHTD has added an interchange at S.H. 8 for the Selected Alignment for the following reasons:

1. An interchange at S.H. 8 will increase the potential for traffic diversion from existing U.S. 71 for all traffic.
2. Lumber trucks traveling through Mena destined for S.H. 8 can access the proposed highway at U.S. 71 south of Mena and exit at S.H. 8 thereby improving congestion and safety on U.S. 71 and Morrow Street (S.H. 8).
3. An interchange at S.H. 8 will provide the best access to the industrial park development at the Mena Intermountain Municipal Airport.

In addition to comment letters from individuals in Mena, over 300 form letters were received. These form letters were prepared by a Mena resident affected by the Selected Alignment and were not official comment forms. Residents and business owners were approached by the resident and asked to check off their choice in two decisions. Each decision was a separate form letter. The first decision was whether the person preferred an interchange at S.H. 8 or S.H. 88. Given that the response to the first form letter was S.H. 8, the person was then asked to fill out the second form

letter which asked whether the person preferred the Line 1 (Preferred and Selected Alignment) crossing or the Line 2 crossing of S.H. 88. In all, approximately 320 such form letters were received. A review of the respondents of the form letter shows that they represent roughly 120 households and 40 businesses in Mena. There were 4 form letters submitted that chose Line 1 in segment E-F.

### **8.7.3 Cove Location**

A petition containing over 210 signatures of residents from the Cove and Hatfield areas states that they prefer that the proposed highway be located along Line 3 in segment C-D. The residents signing the petition reside in the rural area outside Cove though most are not directly affected by the Preferred Alignment (Line 2). The Selected Alignment in this reach is a combination of Line 3 and Line 2 and is discussed in detail in Section 2.6.

### **8.7.4 Vandervoort Location**

A petition containing 11 signatures stated that the Preferred Alignment should be located 400 meters (1,310 feet) further west in order to locate the interchange closer to Vandervoort. This petition was signed by the Mayor of Vandervoort and some persons having Cove addresses.

It is not possible to locate the interchange between County Roads 31 and 277 as suggested due to the geometry of S.H. 246 at this location. The decision

to move the Selected Alignment to Line 3 in segment C-D results in the highway moving further east at S.H. 246 rather than further west. Refer to Section 2.6 for a discussion of the Cove decision.

#### **8.7.5 Grannis - Wickes Location**

Several letters were received that requested a line shift one half mile east in the reach of the Preferred Alignment between Grannis and Wickes in order to reduce the number of residential relocations as well as chicken houses, barns and shops. Port Arthur Avenue was an area of concern due to the number of relocations concentrated there. A review of this area suggests that some adjustments may be possible in the design phase of the project in order to avoid this area, but must be deferred until more detailed mapping is prepared as part of the design process.

<b>Table 8-1 PUBLIC MEETINGS</b>			
<b>DATE</b>	<b>LOCATION</b>	<b>APPROXIMATE ATTENDANCE</b>	<b># OF WRITTEN COMMENTS</b>
<b>Scoping Process</b>			
July 11, 1995	DeQueen High School	40	13
July 12, 1995	Mena Middle School	50	32
July 13, 1995	Cook Elementary School, Fort Smith	30	32
July 14, 1995	Waldron Elementary School	40	16
	<b>Subtotal</b>	<b>160</b>	<b>93</b>
<b>Needs Analysis and Major Investment Study</b>			
October 4, 1995	Sutton Elementary School, Fort Smith	35	8
October 5, 1995	Mena Middle School	55	7
	<b>Subtotal</b>	<b>90</b>	<b>15</b>
<b>Corridor Feasibility Study</b>			
November 14, 1995	Waldron Elementary School	45	31
November 15, 1995	Sutton Elementary School, Fort Smith	70	22
November 16, 1995	DeQueen High School	50	10
November 17, 1995	Mena Middle School	120	47
December 18, 1995	Tate Elementary School, Kibler	300	11
	<b>Subtotal</b>	<b>585</b>	<b>121</b>
<b>Alignment Study</b>			
February 29, 1996	DeQueen High School	100	22
March 1, 1996	Mena Middle School	155	42
April 4, 1996	Mena Middle School	300	47
April 15, 1996	Waldron Elementary School	190	34
May 20, 1996	Cook Elementary School, Fort Smith	105	24
May 23, 1996	Tate Elementary School, Kibler	110	68
June 1996 - information provided to Mena City Hall	N/A	N/A	75
August 1996 - information provided to Waldron City Hall	N/A	N/A	1
	<b>Subtotal</b>	<b>960</b>	<b>313</b>
<b>TOTALS</b>		<b>1795</b>	<b>542</b>

Source: Michael Baker Jr., Inc.

**Table 8-2  
LOCAL OFFICIALS MEETINGS**

DATE	LOCATION	INVITEES	PURPOSE
July 13, 1995	Waldron City Hall	Local Officials List	Scoping
October 5, 1995	Waldron City Hall	Local Officials List	Needs Analysis and MIS
November 14, 1995	Waldron City Hall	Local Officials List	Corridor Feasibility Study
March 1, 1996	Mena City Hall	DeQueen to Mena Local Officials	DeQueen to Mena Preliminary Alignments
April 18, 1996	Waldron City Hall	Mena to Huntington Local Officials	Mena to Huntington Preliminary Alignments
May 21, 1996	Fort Chaffee	Huntington to I-40 Local Officials	Huntington to I-40 Preliminary Alignments
May 21, 1996	Fort Chaffee	FCRA	Fort Chaffee Alignments
December 3, 1996	Waldron City Hall	Local Officials List	Comments on Draft EIS

Source: Michael Baker Jr., Inc.

**Table 8-3  
AGENCY MEETINGS**

DATE	AGENCY	PURPOSE / TOPIC
July 10, 1995	Appropriate State and Federal Agencies	Scoping
July 27, 1995	Fort Chaffee	Environmental Constraints
August 21, 1995	Arkansas Historic Preservation Program	Section 106 Evaluation
November 13, 1995	Fort Chaffee and FCRA	BRAC Excess Property
December 7, 1995	Appropriate State and Federal Agencies	Corridor Feasibility Study
December 14, 1995	Corps of Engineers	Corridor Feasibility Study
February 6, 1996	Corps of Engineers	Wetlands
February 8, 1996	Forest Service	Red-Cockaded Woodpecker
February 9, 1996	Corps of Engineers	Springhill Park Field Trip
February 27-28, 1996	Appropriate State and Federal Agencies	Field review of preliminary alignments DeQueen to Mena
April 16-17, 1996	Appropriate State and Federal Agencies	Field review of preliminary alignments Mena to Huntington
May 22, 1996	Appropriate State and Federal Agencies	Field review of preliminary alignments Huntington to I-40
June 21, 1996	Corps of Engineers & Coast Guard	Springhill Park Mitigation
July 12, 1996	Army Reserve	Review of proposed alignments in vicinity of Darby USAR Center
July 19, 1996	Forest Service	Red-Cockaded Woodpecker
January 23, 1997	Forest Service	Red-Cockaded Woodpecker
February 12, 1997	Forest Service	Discuss January 8, 1997 Comment Letter
February 20, 1997	Forest Service	Red-Cockaded Woodpecker 4(f) applicability of Habitat Management Area

Source: Michael Baker Jr., Inc.

AREA	DATE	LOCATION	APPROXIMATE ATTENDANCE	INDIVIDUAL COMMENT LETTERS RECEIVED BY AREA*
DeQueen Sevier County	December 2, 1996	DeQueen High School	95	31
Mena Polk County	December 3, 1996	Mena Middle School	262	92
Waldron Scott County	December 4, 1996	Waldron Elementary School	191	23
Fort Smith Sebastian County	December 5, 1996	Cook Elementary School	161	18
Kibler Crawford County	December 6, 1996	Tate Elementary School	135	8
<b>TOTALS</b>			844	172

Source: Michael Baker Jr., Inc.

\*Form letters and petitions received are shown in Table 8-5.

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<b>Table 8-5 SUMMARY OF COMMENTS RECEIVED ON DRAFT EIS</b>		
<b>COMMUNITIES AND ORGANIZATIONS (in chronological order)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Gary Newcomb, Mena/Polk Chamber of Commerce, Industrial Committee	Proposed three interchange locations for the Mena area; S.H. 8, S.H. 88, and south Mena city limits.	Comment noted. The Selected Alignment includes three interchanges for the Mena area: S.H. 8, S.H. 88 and U.S. 71 south near the Mena city limits.
The Honorable Ray B. Stanley, Polk County Judge	1. Locate interchange at S.H. 8 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
City of Mena, Resolution No. 902	The City of Mena supports three interchanges on the Preferred Alignment: S.H. 88, S.H. 8, and near U.S. 71 near Old Line Road.	The Selected Alignment includes three interchanges for the Mena area: S.H. 8, S.H. 88 and U.S. 71 south near the Mena city limits.
Bill Beam, Mena/Polk Chamber of Commerce, Industrial Committee, Highway Subcommittee	Construct highway as soon as possible.	Comment noted.
Polk County Industrial Development Corporation	Agree with Preferred Alignment in Mena area with an additional interchange located at S.H. 8.	Comment noted. The Selected Alignment includes an interchange at S.H. 8 in Mena.
City of Mena	Designate the construction of the highway in the Mena area as a priority to alleviate traffic problems through Mena.	Comment noted. AHTD will consider this request when programming projects as part of the U.S. 71 Relocation.
Richard A. Gordon, Public Awareness Committee, Inc.	1. Support the building of the highway. 2. Place name on mailing list.	1. Comment noted. 2. Your organization is currently on the project mailing list.
Fort Chaffee Redevelopment Authority, December 19, 1996 Resolution	1. Supports the continued study, planning, and construction of a relocated U.S. 71. 2. The Preferred Alignment through Fort Chaffee surplus property is acceptable to the Authority.	1. Comment noted. 2. Comment noted.
Arkansas Wildlife Federation	Agree with the Preferred Alignment.	Comment noted.
<b>INDIVIDUAL ORAL COMMENTS (in order of actual taping)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Max and Lavon Duggan Gillham, AR	Concerned with impacts to personal property.	Comment noted.
Ruel P. Archer DeQueen, AR	Agree with Preferred Alignment in DeQueen area.	Comment noted.
Conway Wood Mena, AR	Locate interchange at S.H. 8 in Mena.	The Selected Alignment includes an interchange at S.H. 8 in Mena.

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL ORAL COMMENTS (cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Richard Barrett Mena, AR	Prefers Line 3 in Cove area.	Comment noted. The Selected Alignment follows Line 3 in this segment.
Eva Harrell Mena, AR	Locate interchange at S.H. 8 instead of S.H. 88 in Mena.	The Selected Alignment includes an interchange at S.H. 8 in Mena.
Betty Gober Mena, AR	Place highway where Mena will benefit from potential business development.	Comment noted.
Ed Mayhue Mena, AR	Concerned with impacts to personal property.	Comment noted.
Robert Manis Mena, AR	Refer to written comments below.	Refer to response to written comments below.
Richard Warrington Cove, AR	Concerned with loss of recreational opportunities in the National Forest.	AHTD has worked with the U.S. Forest Service throughout this study to minimize impacts to the Ouachita National Forest. In the Cove area, the Selected Alignment crosses a mixture of forested and logged areas just within the Forest proclamation boundary. Property ownership in this area is a combination of both public and private parcels and as such, parts of this area may not be open for public recreation.
Jeff Ulmer Mena, AR	1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Steve Schulte Mena, AR	1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Jerry Jackson Waldron, AR	Concerned with impacts to personal property.	Comment noted.
<b>INDIVIDUAL WRITTEN COMMENTS (in alphabetical order)</b>		
George Ainsworth Huntington	Concerned with impacts to personal property.	Comment noted.
Keith Aleshire Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
Jim Alexander Cove, AR	An interchange is needed at S.H. 8 in Mena.	The Selected Alignment includes an interchange at S.H. 8 in Mena.

<b>Table 8-5 (Cont.) SUMMARY OF DEIS COMMENTS</b>		
<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Terry Alexander Wickes, AR	Request alignment shift one half mile east in Grannis area.	AHTD has considered the shift described in your comment letter. Such a shift would result in less convenient access to both Grannis and Wickes. However, impacts to residents along Port Arthur Avenue may be reduced during the final design of the highway.
Adam Anderton Mena, AR	1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Alice Anderton Mena, AR	1. Locate interchange at S.H. 8 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Diana Anderton Mena, AR	1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Michael Archer DeQueen, AR	Agree with Preferred Alignment in DeQueen area.	Comment noted.
Ruel P. Archer DeQueen, AR	Agree with Preferred Alignment in DeQueen area.	Comment noted.
Michael E. Bailey Huntington, AR	No connection between I-540 and new highway facility.	Existing interchanges on I-540 at S.H. 255 and existing U.S. 71 provide connectivity of the local highway network with the proposed U.S. 71 Relocation.
Charles E. Baker Jr. Alma, AR	Concerned with length of time of study and politics.	Comment noted.
Jack Barnes Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
Kenneth Harold Barnett Mansfield, AR	Concerned with impacts to personal property.	Comment noted.
Laura Charlene Barnett Mansfield, AR	Concerned with impacts to personal property.	Comment noted.

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Orville Bittle Fort Smith, AR	Proposed alignment shift in Rye Hill area.	The alternatives studied in the DEIS have been shifted as far east as possible. The main constraint is the need to remain west of Donahoe Ridge just inside Fort Chaffee. This affects how far east the alignments can be moved in the Rye Hill area.
Marilyn Blair Grannis, AR	Proposed alignment shift at Polk County 11.	AHTD has considered the shift described in your comment letter. Due to the limited locations feasible for the crossing of Cross Mountain, this shift is not possible. Further, because the Selected Alignment follows Line 3 in the Cove area, it is not reasonable to shift the line to the west.
Harold & Virginia Blanton DeQueen, AR	Repair existing U.S. 71 rather than build new highway.	Existing U.S. 71 will continue to be maintained after construction of the U.S. 71 Relocation. The decision being made is not a choice between one or the other.
Curtis & Susan Boyd Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
Philip Brainerd Mena, AR	1. Agree with S.H. 88 interchange location in Mena. 2. Interchange south of Mena should be as close to Potter as possible.	1. Comment noted. 2. The south Mena interchange has been located such that it serves south Mena as well as Potter.
Edmond Brewer Booneville, AR	Concerned with impacts to personal property.	Comment noted.
Lavene Briggs Grannis, AR	Proposed alignment shift between Hatton and Grannis	AHTD has considered the shift described in your comment letter. Such a shift would result in less convenient access to both Grannis and Wickes. The structure referenced in your comment letter has been reviewed by the Arkansas Historic Preservation Program and was found not to be a significant cultural resource. However, impacts to residents along Port Arthur Avenue may be reduced during the final design of the highway and will be considered by AHTD.

<b>Table 8-5 (Cont.) SUMMARY OF DEIS COMMENTS</b>		
<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Jim & Linda Burns Fort Smith, AR	Concerned with impacts to personal property.	Choosing Line 3 east of your home would affect others living south of U.S. 71.
Charles & Carol Burt Prairie Grove	Agree with Preferred Alignment in Mena area.	Comment noted.
Stanley & Doris Burt Mena, AR	Prefer Line 3 in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Thomas E. Butler Hatfield, AR	Prefers Line 3 in Hatfield and Mena.	Comment noted. The Selected Alignment follows Line 3 near Hatfield but remains along Line 2 in segment D-E and Line 1 in segment E-F. Please refer to the Mena Location discussion in Section 8.7.
Sam D. Callahan Waldron, AR	Would like interchange at S.H. 248 in Waldron.	The proposed interchanges adequately address general public access needs in Waldron.
R.C. Campbell Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
Winton Carson Fort Smith, Ar	Construct highway as soon as possible.	Comment noted.
Dean W. Clark Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
Dinnis Clark Cove, AR	Prefers Line 3 in Cove area.	Comment noted. The Selected Alignment follows Line 3 in this segment.
Sally Clark Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
Howard C. Colley Huntington, AR	Proposed alignment shift.	The proposed shift has been considered by AHTD. This suggestion will be considered during the final design of the highway in this area.
Lois Colley Huntington, AR	Proposed alignment shift.	The proposed shift has been considered by AHTD. This suggestion will be considered during the final design of the highway in this area.
Ellie Cox Mena, AR	<ol style="list-style-type: none"> <li>1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena.</li> <li>2. Prefer Line 2 or Line 3 in the Mena area.</li> <li>3. Concerned with effectiveness of public involvement.</li> </ol>	<ol style="list-style-type: none"> <li>1. The Selected Alignment includes an interchange at S.H. 8 in Mena.</li> <li>2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.</li> <li>3. Comment noted.</li> </ol>

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Charles Cramer Fort Smith, AR	Agree with Preferred Alignment in Rye Hill area.	Comment noted.
Lee Crawford Mena, AR	Proposed alignment shift to national forest land to avoid personal property impacts.	The Selected Alignment follows Line 3 in the Cove area.
Carylin Dossey DeQueen, AR	Highway would have a negative impact on DeQueen.	Comment noted.
Roger Dossey DeQueen, AR	Prefer Line 1 in the DeQueen area.	Comment noted.
Max and Lavon Duggan Gillham, AR	Concerned with impacts to personal property.	Comment noted.
Carole Ann Dunlap Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
John L. & Janice B. Eddleman Hackett, AR	<ol style="list-style-type: none"> <li>1. Concerned with number of structures shown on maps.</li> <li>2. Concerned with wildlife habitat and wetlands.</li> <li>3. Concerned with archeological qualifications.</li> <li>4. Concerned with Devil's Backbone Ridge Civil War Site.</li> <li>5. Concerned with impacts to personal property.</li> </ol>	<ol style="list-style-type: none"> <li>1. The number and location of homes and businesses were determined initially from 1994 aerial photography and confirmed in the field.</li> <li>2. Wildlife habitat and wetlands are described in Section 3 of the FEIS. All efforts have been coordinated with appropriate state and federal resource agencies.</li> <li>3. The archeological survey is being conducted by SPEARS, Inc, a qualified Arkansas archeological firm, as stated in Section 6 of the FEIS under subconsultants.</li> <li>4. The Devil's Backbone Ridge Civil War Skirmish site is discussed in Section 4 of the FEIS. This site has been determined eligible for inclusion in the National Register of Historic Places. The Arkansas Historic Preservation Program (AHPP) provided a delineation of the core area of this site which was used during alignment development. Guidance from the AHPP has been followed in the identification of the Preferred Alignment.</li> <li>5. Comment noted.</li> </ol>
Mary Elmore Mansfield, AR	Concerned with impacts to personal property.	Comment noted.

<b>Table 8-5 (Cont.) SUMMARY OF DEIS COMMENTS</b>		
<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Cathy English VanBuren, AR	Agree with Preferred Alignment in Kibler area.	Comment noted.
Linda Lee Floyd Mena, AR	Concerned with impacts to personal property.	The Selected Alignment has been modified in your area and as a result will no longer affect your property.
Ronny Floyd Mena, AR	1. Concerned with impacts to personal property. 2. Proposed alignment shift.	1. Comment noted. 2. The Selected Alignment has been modified in your area and as a result will no longer affect your property.
Carl & Donna Frachiseur Wickes, AR	1. Continued repair and maintenance of U.S. 71 2. Lack of funding 3. New highway not needed	1. Existing U.S. 71 will continue to be maintained after construction of the U.S. 71 Relocation. The decision being made is not a choice between one or the other. 2. Comment noted. 3. Comment noted. Please refer to Section 1.
Hartzell Geyer Mena, AR	Concern with potential impacts to Elks Club and airport in Mena.	Sufficient study has been conducted to determine that the Elks Club can be avoided during final design engineering. The Mena airport will not be affected.
Hoyt & Nora Graves Mena, AR	AHTD should choose alignment based on anticipated benefits and cost.	Comment noted.
Harold W. Griffin Greenwood, AR	Agree with Preferred Alignment in Segment K-L.	Comment noted.
Ron Griffin Greenwood, AR	Concern with potential impacts to Mt. Zion Cemetery expansion site.	The Selected Alignment would not impact this area.
Fran Hadaway Mena, AR	Prefer Line 2 in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
David Hamilton Vandervoort	Prefers Line 3 in Cove area.	The Selected Alignment follows Line 3 in the Cove area.
Wanda Hamilton Vandervoort	Prefers Line 3 in Cove area.	The Selected Alignment follows Line 3 in the Cove area.
Juanita Harrison Waldron, AR	Request to shift alignment to avoid personal property in Waldron area.	Such a shift would reduce required airport runway clearances.
Nancy Heath Mena, AR	Concern with new highway limiting airport growth.	There are no current plans to extend the airport. The land designated as an industrial park is not affected by the proposed highway.

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Frank Hebert Mena, AR	<ol style="list-style-type: none"> <li>1. Mena requires interchanges at S.H. 8, south of town, and S.H. 88 interchange should be relocated further east.</li> <li>2. Prefer Line 2 in the Mena area.</li> </ol>	<ol style="list-style-type: none"> <li>1. The Selected Alignment includes an interchange at S.H. 8 in Mena.</li> <li>2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.</li> </ol>
Robert Hedge Wickes, AR	<ol style="list-style-type: none"> <li>1. Proposed alignment shift.</li> <li>2. Concern with Cossatot River Watershed.</li> </ol>	<ol style="list-style-type: none"> <li>1. AHTD has considered the shift described in your comment letter. Due to the limited locations feasible for the crossing of Cross Mountain, this shift is not possible. Further, because the Selected Alignment follows Line 3 in the Cove area, it is not reasonable to shift the line to the west.</li> <li>2. Potential impacts to water quality are discussed in Section 4 of the FEIS.</li> </ol>
W.T. Hedge Wickes, AR	Proposed alignment shift.	Please see above response.
Glenn Hicks Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
John S. Hilton Mena, AR	Proposed alignment shift.	Such a shift would not allow for an interchange for south Mena.
Audrey Hollington Mena, AR	Prefer Line 3 in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Patrick Horan Fort Smith, AR	<ol style="list-style-type: none"> <li>1. Concerned with cost estimate of new highway.</li> <li>2. Use and expansion of I-540 for U.S. 71 Relocation.</li> <li>3. Concerned with cost of maintenance and operation of new highway facility.</li> <li>4. Concerned with potential navigation impacts on the Arkansas River.</li> <li>5. Concerned with location of Preferred Alignment through Springhill Park.</li> </ol>	<ol style="list-style-type: none"> <li>1. Cost estimate is based on recent AHTD highway construction projects and quantities consistent with a study of alternative highway locations.</li> <li>2. An I-540 alternative was studied for this project and is discussed in detail in Section 2 of the FEIS.</li> <li>3. Funding allocations for maintenance are based on total highway mileage and will therefore increase.</li> <li>4. Navigation impacts are discussed in Section 4 of the FEIS. AHTD has worked throughout this study with the U.S. Coast Guard to minimize navigation impacts. Correspondence with this agency is found in the Appendix C.</li> </ol>

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Patrick Horan (Cont.) Fort Smith, AR		5. The location of the Preferred Alignment through Springhill Park is discussed in detail in Section 5 of the FEIS.
Ben D. House Vandervoort, AR	Prefers Line 3 in the Vandervoort / Cove area.	The Selected Alignment follows Line 3 in this area.
Wade Howard Hackett, AR	Concerned with impacts to personal property.	Comment noted.
Carol Hupp Mena, AR	Agree with Preferred Alignment in Mena area with an interchange located at S.H. 8.	The Selected Alignment includes an interchange at S.H. 8 in Mena and remains on the same location as the Preferred Alignment in the DEIS.
Jerry & Edward Jackson Booneville, AR	1. Concerned with impacts to personal property. 2. Use portions of U.S. 71 for new interstate.	1. Comment noted. 2. The use of existing U.S. 71 was studied for this project and is discussed in Sections 1 and 2 of the FEIS. Existing U.S. 71 has been utilized through Fourche Gap for the Selected Alternative.
Sam & Rosemary James Waldron, AR	Agree with Preferred Alignment in Waldron area.	Comment noted.
Sharon Jent Boles, AR	Request to be placed on mailing list.	Comment noted. You have been added to the project mailing list.
Donald Jones Alma, AR	The Preferred Alignment will impact fewer homes in the Kibler area.	Comment noted.
Priscilla Jones Alma, AR	1. Question the need for the road. 2. Agree with Preferred Alignment in Kibler area.	1. The purpose and need for this project are discussed in Section 1 of the FEIS. 2. Comment noted.
Alvin Keeton Cove, AR	The Preferred Alignment will not impact the Pioneer Cemetery in the Cove area.	Comment noted.
Scott & Betty Kelso Mena, AR	1. Concerned with impacts to personal property. 2. Concerned with impacts to cultural resources.	1. Comment noted. 2. Cultural resources are discussed in detail in Sections 3 and 4 of the FEIS and have been assessed by an archeologist meeting the state requirements in this field.
Wanda M. Kessler Alma, AR	Agree with Preferred Alignment in Kibler area.	Comment noted.

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Timothy Kiser Mena, AR	<ol style="list-style-type: none"> <li>1. An interchange is needed at S.H. 8 in Mena.</li> <li>2. Prefer Line 2 in the Mena area.</li> </ol>	<ol style="list-style-type: none"> <li>1. The Selected Alignment includes an interchange at S.H. 8 in Mena.</li> <li>2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.</li> </ol>
Lenny & Debbie Lott Waldron, AR	<ol style="list-style-type: none"> <li>1. Concerned with impacts to personal property.</li> <li>2. Improve and maintain existing highway system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Comment noted.</li> <li>2. Existing U.S. 71 will continue to be maintained after construction of the U.S. 71 Relocation. The decision being made is not a choice between one or the other.</li> </ol>
Bill Loyd Grannis, AR	Request alignment shift one half mile east in Grannis area.	AHTD has considered the shift described in your comment letter. Such a shift would result in less convenient access to both Grannis and Wickes.
Donnie Loyd Grannis, AR	Request alignment shift one half mile east in Grannis area.	Please see above response.
Freddie Loyd Grannis, AR	Request alignment shift one half mile east in Grannis area.	Please see above response.
Robert J. Manis Mena, AR	<ol style="list-style-type: none"> <li>1. Believes the Preferred Alignment does not address the project need to minimize impacts to residential areas, to maximize access, and to minimize bypass effect of local businesses</li> <li>2. Concerned that an interchange at S.H. 8 is needed to serve the business community in Mena and to meet job growth commitments made for the airport expansion</li> <li>3. Concerned that the Preferred Alignment takes more homes in Mena while in other segments, it takes the fewest</li> <li>4. States errors in the document relative to Mena Lakewood estates</li> <li>5. Believes the Preferred Alignment will staunch the growth of Mena to the east and states that this is the opinion of the Mena Planning Commission</li> <li>6. Disagrees with the statement that the Preferred Alignment agrees with Mena's draft land use plan</li> <li>7. Disagrees with interpretation of Mena June 1996 comment forms</li> </ol>	<ol style="list-style-type: none"> <li>1. These are not project "needs" in terms of the project's purpose and need. These are the desired effects of the project on the communities and were adopted by AHTD. However, these desires can be considered only after the purpose and need of the project are met. The purpose of the project is to complete a portion of the interstate system and to provide regional connectivity. The project is not being constructed to solely benefit any one community nor to address only local concerns. However, AHTD is committed to construct its projects so that they provide the most local benefit and have the least impact as possible to the communities through which they pass, but only after the overall project objectives that serve the general public have been met.</li> <li>2. The Selected Alignment includes an interchange at S.H. 8. Note that guarantees on job growth at the Mena</li> </ol>

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Robert J. Manis (Cont.) Mena, AR		<p>Airport were made prior to any planning or discussion of the U.S. 71 Relocation.</p> <p>3. Mena is the largest community in close proximity to the project and therefore it is not unusual that more homes are taken there than elsewhere. Further, the impacts to any resource can be minimized only after the project objectives have been met, as stated in response 1 above. There is no requirement that the Selected Alignment take the fewest homes, nor must it have the least impact to any resource, provided that these impacts have been considered. The Selected Alignment best meets the overall purpose and need and has the greatest potential to relieve traffic congestion in Mena. Please refer to the impact summary and note that Line 2 in segment E-F has a greater impact to some resource categories, most notably noise impacts which are an issue in residential areas.</p> <p>4. The DEIS is correct in its statement on page 4-8 regarding Mena Lakewood estates. The topic in this section of the document is impacts to established neighborhoods. Mena Lakewood estates may be a planned subdivision but it clearly is not an established neighborhood because the area through which the project passes contains no homes.</p> <p>5. Persons who are members of the Mena Planning Commission commented on the project as individuals. No official comment was received from the Mena Planning Commission. However, Resolution 902 passed by Mena City Council on December 10, 1996 states that three interchanges are needed "for the continued growth of the area and for the safe uncongested flow of traffic."</p>

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Robert J. Manis (Cont.) Mena, AR		<p>The cover letter states that the City of Mena supports "the need for three (3) interchanges in the Mena area on the preferred alignment". The commentor notes that the Preferred Alignment will most likely force growth beyond the interstate. It is unclear whether the commentor is concerned about lack of developable land for future housing needs or the annexation ability of the city. Mena City Council did not identify annexation as an issue in their comments on the project.</p> <p>6. In any cooperative effort, one agency (the City planners) or the other (AHTD) must take the first step. Then an exchange of information and opinions occurs. Special meetings with the preparers of Mena's Draft Land Use Plan were conducted throughout the study. The Plan and the DEIS were open for public comment concurrently. The process is not yet complete.</p> <p>7. Comment responses are not a vote, nor do they necessarily represent the opinion of the general public. The breakdown of the June 1996 responses showed a split of roughly 30%, 30% and 40% for Lines 1, 2, and 3, respectively in the S.H. 8 to Acom reach of the project. The only conclusion that can be drawn from this is that no matter which line is chosen, 60 - 70% of those responding would not be in favor. The commentor is interpreting the results strictly as to which interchange location on S.H. 88 is preferred. This was not the question.</p>
Sharyn Ruby K. Manis Mena, AR	<ol style="list-style-type: none"> <li>1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena.</li> <li>2. Prefer Line 2 in the Mena area.</li> </ol>	<ol style="list-style-type: none"> <li>1. The Selected Alignment includes an interchange at S.H. 8 in Mena.</li> <li>2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.</li> </ol>

<b>Table 8-5 (Cont.) SUMMARY OF DEIS COMMENTS</b>		
<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Suzanne Manis Mena, AR	1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Walter Manis Mena, AR	1. S.H. 8 interchange location is preferred in the Mena area. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Zachary Manis Mena, AR	1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena. 2. Prefer highway further away from Mena.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Floyd Marshall Waldron, AR	Supportive of relocating S.H. 80 in Waldron.	Comment noted.
Gary & Deborah Martin Fort Smith, AR	1. Concerned with impacts to personal property. 2. Use money to improve existing roads.	1. Comment noted. 2. Comment noted. Existing roads will continue to be maintained after construction of the U.S. 71 Relocation. The decision being made is not a choice between one or the other.
Glennis D. McCarley Wickes, AR	Agree with Preferred Alignment in Wickes/Grannis area.	Comment noted.
Larry McCarley Grannis, AR	Request alignment shift one half mile east in Grannis area.	AHTD has considered the shift described in your comment letter. Such a shift would result in less convenient access to both Grannis and Wickes.
T.N. McCarley Wickes, AR	Agree with Preferred Alignment in Wickes/Grannis area.	Comment noted.
Michael B. Medley Mena, AR	Locate interchange at S.H. 8 instead of S.H. 88 in Mena.	The Selected Alignment includes an interchange at S.H. 8 in Mena.
Jerry Montgomery Mena, AR	Agree with Preferred Alignment in Mena area with an additional interchange located at S.H. 8.	Comment noted. The Selected Alignment includes an interchange at S.H. 8 in Mena.
Bill H. Moran Fort Smith, AR	Concerned with impacts to personal property.	Comment noted.
Annis Morgan Mena, AR	Concerned with impacts to personal property.	Comment noted.

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
James & Oleta Morris Fort Smith, AR	Concerned with impacts to personal property.	Comment noted.
Darlene O'Bryant Mena, AR	Agree with Preferred Alignment in Mena area.	Comment noted.
Don Parker Mena, AR	Prefer Line 3 in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Shirley Parker Mena, AR	Prefer Line 3 in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Gordon R. Pershell Mansfield, AR	Concerned with impacts to personal property.	Comment noted.
Mary P. Pershell Mansfield, AR	Prefers Line 2 in segment J-K because it will impact fewer homes.	Based on the field collected data, Line 3 (the Selected) takes the fewest homes.
Morris Peters Rudy, AR	Concerned with impacts to personal property.	Comment noted.
Pamela Peters Hackett, AR	Concerned with impacts to personal property.	Comment noted.
Albert Pilkington, III Mena, AR	Locate interchange at S.H. 8 instead of S.H. 88 in Mena.	The Selected Alignment includes an interchange at S.H. 8 in Mena.
Sherri Pitchford Mena, AR	1. S.H. 8 interchange location is needed for Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
William H. Pitchford Mena, AR	1. S.H. 8 interchange location is needed for Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Daniel F. Price Russellville, AR	1. Concerned with amount of public involvement. 2. Concerned with noise impacts. 3. Concerned with transportation of hazardous materials. 4. Concerned with alignment development process. 5. Concerned with impacts to created wildlife habitat on private land.	1. Public involvement is discussed in detail in Section 8 of the FEIS and has been ongoing and extensive. 2. Noise impacts are discussed in detail in Section 4 of the FEIS and have been fully evaluated. Mitigation for noise will be considered in accordance with AHTD noise policy. 3. Comment noted. 4. Alternative alignment development is

<b>Table 8-5 (Cont.) SUMMARY OF DEIS COMMENTS</b>		
<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Daniel F. Price (Cont.) Russellville, AR	6. Concerned with retaining mineral rights. 7. Can landowners receive land in lieu of cash payments.	discussed in detail in Section 2 of the FEIS. 5. No created wildlife habitat was identified on private land during the study. 6. Landowners would retain mineral rights to property acquired by AHTD. 7. AHTD property acquisition policy generally does not allow a land for land transaction.
Delton Price Fort Smith, AR	Prefers Line 3 in Cove area.	Line 3 is the Selected Alignment in the Cove area.
Lloyd Prueitt Mena, AR	Concerned with impacts to personal property from Line 3 in Mena.	Comment noted. Line 3 is not the Selected Alignment in this area.
Elizabeth A. Quinn Mena, AR	1. Concerned with impacts to personal property. 2. Proposed alignment shift. 3. Concerned with S.H. 8 interchange and additional traffic past Mena high school. 4. Prefer Line 3 in Mena area.	1. Comment noted. 2. AHTD has considered the shift described in your comment letter. Some adjustment may be possible in the design phase of the project to reduce impacts to your property. 3. It is possible that traffic may increase on S.H. 8 as a result of the interchange. However, some commercial traffic will be diverted from U.S. 71 in Mena and therefore may not pass by the high school. 4. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Lisa Rackley Mena, AR	Prefer Line 2 in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
George J. Reeb Mena, AR	Construct highway as soon as possible.	Comment noted.
William T. & Charlene Riales Mena, AR	1. Concerned with impacts to personal property. 2. Concerned with wetland impacts. 3. Concerned with impacts to red-cockaded woodpecker. 4. Concerned with noise impacts.	1. Comment noted. 2. Wetland impacts are discussed in detail in Section 4 of the FEIS and have been given full consideration in the alignment development process. 3. Threatened and endangered species are discussed in Sections 3 and 4 of the

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
William T. & Charlene Riales Mena, AR (Cont.)	5. Prefer Line 3 in the Mena area.	FEIS. The red-cockaded woodpecker has been fully considered. Intensive coordination with the Forest Service was conducted from the earliest point in this study.  4. Noise impacts are discussed in detail in Section 4 of the FEIS and have been fully evaluated. Mitigation for noise will be considered in accordance with AHTD noise policy.  5. Comment noted.
Sherry Ridenhour Waldron, AR	Would like an interchange at S.H. 248 in Waldron.	The proposed interchanges adequately address general public access needs in Waldron.
Karen Robbins Mena, AR	Proposed alignment shift.	AHTD has considered the shift described in your comment letter. Due to the limited locations feasible for the crossing of Cross Mountain, this shift is not possible. Further, because the Selected Alignment follows Line 3 in the Cove area, it is not reasonable to shift the line to the west.
Joseph Roberts Wickes, AR	Agree with Preferred Alignment in Wickes/Grannis area.	Comment noted.
L.A. Robinson Wickes, AR	Plan for public rest areas	Comment noted. Plans for these facilities will be addressed during the final design process
Dale T. Rodgers Mena, AR	Agree with Preferred Alignment in Mena area with an additional interchange located at S.H. 8.	Comment noted. The Selected Alignment includes an interchange at S.H. 8 in Mena.
George & Marge Rousseau Mena, AR	Concerned with potential location of interchange on Fairground Road in Mena.	Comment noted. The Selected Alignment includes an interchange at a new connector road, not at Fairground Road.
W.R. Sadley Jr. Greenwood, AR	Concerned with impacts to personal property. Prefers conversion of U.S. 71 to a four-lane highway.	Comment noted. Please refer to Section 2 of the FEIS which discusses an existing location alternative.
Andrea Salem Mena, AR	Concerned with Mena being surrounded by mountains on one side and by the proposed highway on the other.	Alternative development is discussed in detail in Section 2 of the FEIS which addresses the issues involved in the development of corridors in Mena.

<b>Table 8-5 (Cont.) SUMMARY OF DEIS COMMENTS</b>		
<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Mike Salem Mena, AR	1. S.H. 8 interchange location is needed for Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Selinda Salem Mena, AR	1. S.H. 8 interchange location is needed for Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Norma Sanders Hatfield, AR	Prefer Line 3 in Cove area.	The Selected Alignment follows Line 3 in this segment.
Shirley Sanders Wickes, AR	Prefer Line 3 in Cove area.	The Selected Alignment follows Line 3 in this segment.
Kathy Schulte Mena, AR	1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Steve Schulte Mena, AR	1. Mena requires interchanges at S.H. 8 and south of town, and if necessary, the S.H. 88 interchange should be relocated further east to Line 2. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena and an interchange south of town. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Steve and Kathy Schulte Mena, AR	1. Mena requires interchanges at S.H. 8, south of town, and if necessary, the S.H. 88 interchange should be relocated further east to Line 2. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena and an interchange south of town. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Madell Scudder DeQueen, AR	Would like an interchange to service the King and Pullman area.	The Selected Alignment provides an interchange east of Gillham on County Road 41 which will adequately serve the King/Pullman area.
S.R. Shanlever, D.D.S. Mena, AR	1. Locate interchange at S.H. 8 instead of S.H. 88 in Mena. 2. Prefer Line 2 in the Mena area.	1. The Selected Alignment includes an interchange at S.H. 8 in Mena. 2. Comment noted. Please refer to the Mena Location discussion in Section 8.7.

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Ray Shelley Mena, AR	Prefer Line 2 or Line 3 in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Clodean Sinyard Cove, AR	Prefer Line 3 in Cove area.	The Selected Alignment follows Line 3 in this segment.
Phillip Smith Mena, AR	S.H. 8 interchange location is needed for Mena.	The Selected Alignment includes an interchange at S.H. 8 in Mena.
Glen Standerfer Hatfield, AR	Prefer Line 3 in the Cove area.	The Selected Alignment follows Line 3 in this segment.
Wilma Standerfer Hatfield, AR	Prefer Line 3 in the Cove area.	The Selected Alignment follows Line 3 in this segment.
Vicki Stanley Mena, AR	Locate interchange at S.H. 8 instead of S.H. 88 in Mena and locate an interchange on the south side of Mena.	The Selected Alignment includes three interchanges for the Mena area: S.H. 8, S.H. 88 and U.S. 71 south near the Mena city limits.
Aubrey D. Stormer Mena, AR	Put the proposed highway in Oklahoma.	Please refer to Section 1 Purpose and Need for project.
Dexter V. Turner Wickes, AR	Request alignment shift one half mile east in Grannis area.	AHTD has considered the shift described in your comment letter. Such a shift would result in less convenient access to both Grannis and Wickes.
Doyle Turner Wickes, Ar	Request alignment shift one half mile east in Grannis area.	Please see above response.
Michael Turner Wickes, AR	Request alignment shift one half mile east in Grannis area.	Please see above response.
Bob Varner Hatfield	Concerned with loss of hunting opportunities in the National Forest.	AHTD has worked throughout this study with the U.S. Forest Service to minimize impacts to the Ouachita National Forest. In the Hatfield area, the Selected Alignment crosses a mixture of forested and logged areas just within the Forest proclamation boundary. Property ownership in this area is a combination of both public and private parcels and as such, parts of this area may not be open for public recreation .
Thomas Walker Mena, AR	Proposed alignment shift.	AHTD has considered the shift described in your comment letter and found that it would involve adverse effects to other properties. The alignment is also not traveling in a due

<b>Table 8-5 (Cont.) SUMMARY OF DEIS COMMENTS</b>		
<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>NAME</b>	<b>COMMENT</b>	<b>RESPONSE</b>
Thomas Walker (Cont.) Mena, AR		north direction where it crosses your property making the shift unworkable.
Connie Ward Mena, AR	Concerned with location of Preferred Alignment in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Donald Ward Mena, AR	Concerned with location of Preferred Alignment in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Richard Warrington Cove, AR	Concerned with loss of recreational opportunities in the National Forest.	AHTD has worked throughout this study with the U.S. Forest Service to minimize impacts to the Ouachita National Forest. Within the Cove area, the Selected Alignment crosses a mixture of forested and logged areas just within the Forest proclamation boundary. Property ownership in this area is a combination of both public and private parcels and as such, parts of this area may not be open for public recreation.
W.D. West Mena, AR	Prefer Line 3 in the Mena area.	Comment noted. Please refer to the Mena Location discussion in Section 8.7.
Linda White Wickes, AR	Use portions of U.S. 71 for new interstate.	This issue is discussed in Sections 1 and 2 of the FEIS.
Peggy White Mena, AR	Need highway regardless of location.	Comment noted.
Raymond & Sharon Wilcher Wickes, AR	1. Proposed alignment shift further east of Wickes. 2. Impacts to historical marker.	1. Moving further east would not provide good access to the Wickes area. The objective is to remain as close as possible to U.S. 71 without adding unnecessary length to the highway and causing severe residential displacements. 2. Cultural resources are discussed in detail in Sections 3 and 4 of the FEIS. The structure referenced in your comment letter has been reviewed by the Arkansas Historic Preservation Program and was found not to be a significant cultural resource.
Charles DeWayne Williams Mansfield, AR	Concerned with impacts to personal property.	Comment noted.

**Table 8-5 (Cont.)  
SUMMARY OF DEIS COMMENTS**

<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>DESCRIPTION</b>	<b>NO. OF SIGNATURES/FORMS</b>	<b>RESPONSE</b>
Earline & Charles Williams Mansfield, AR	Concerned with impacts to personal property.	Comment noted.
Terry Williams Huntington, AR	1. Concerned with amount of public involvement. 2. Concerned with location of alternatives.	1. Public involvement is discussed in detail in Section 8 of the FEIS. 2. Alternative development is discussed in detail in Section 2 of the FEIS.
Tonya Williams Mansfield, AR	Concerned with impacts to personal property.	Comment noted.
Donna Wilson Mena, AR	Locate interchange at S.H. 8 instead of S.H. 88 in Mena.	The Selected Alignment includes an interchange at S.H. 8 in Mena.
Mr. & Mrs. Robert Wright, Sr. Springdale, AR	Consider toll road.	Comment noted.
Betty Wylie Greenwood, AR	Concerned with public meeting format.	Comment noted.
Larry Wylie Greenwood, AR	Use portions of U.S. 71 for new interstate.	This topic is discussed in Sections 1 and 2 of the FEIS.
Lena Yakley VanBuren, AR	Agree with Preferred Alignment in Kibler area.	Comment noted.
Chris Young Greenwood, AR	Use portions of U.S. 71 for new interstate.	This issue is discussed in Sections 1 and 2 of the FEIS.
Andy Youngblood Wickes, AR	Proposed alignment shift.	AHTD has considered the shift described in your comment letter. Due to the limited locations feasible for the crossing of Cross Mountain, this shift is not possible. Further, because the Selected Alignment follows Line 3 in the Cove area, it is not reasonable to shift the line to the west.
<b>PETITIONS AND FORM LETTERS</b>		
Mena Form Letters Requested a person to choose an interchange either at S.H. 8 or at S.H. 88 and then whether the person preferred the Line 1 (Preferred and Selected Alignment) crossing or the Line 2 crossing of S.H.88.	In all, approximately 320 form letters were received from 120 households and 40 businesses.	The Selected Alignment includes an interchange at S.H. 8 in Mena. Please refer to the Mena Location discussion in Section 8.7.
Cove Petition Favored Line 3 as the Preferred Alignment in segment C-D.	Approximately 210 signatures.	The Selected Alignment follows Line 3 in this segment.

<b>Table 8-5 (Cont.) SUMMARY OF DEIS COMMENTS</b>		
<b>INDIVIDUAL WRITTEN COMMENTS (Cont.)</b>		
<b>DESCRIPTION</b>	<b>NO. OF SIGNATURES/FORMS</b>	<b>RESPONSE</b>
Vandervoort Petition Favored moving the Preferred Alignment 400 meters (1,310 feet) further west to locate the interchange closer to Vandervoort.	Contained 11 signatures.	It is not possible to locate the interchange between County Roads 31 and 277 as suggested due to the geometry of S.H. 246 at this location.
Grannis / Wickes Petition Requested a line shift one half mile east of the Preferred Alignment between Grannis and Wickes to reduce residential displacements.	Contained 31 signatures.	AHTD has considered the shift described in this petition. Such a shift would result in less convenient access to both Grannis and Wickes. Impacts to residents along Port Arthur Avenue may be reduced during the final design of the highway and will be considered by AHTD.
Abbott Petition Favored Line 2 in segment J-K because it would impact fewer homes.	Contained 25 signatures.	Based on the field collected data, Line 3 (the Selected) takes the fewest homes.

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**Table 8-6**  
**SUMMARY OF AGENCY COMMENTS AND RESPONSES ON DRAFT EIS**

<b>Agency: Arkansas Historic Preservation Program, December 4, 1996</b> <b>Ms. Cathy Buford Slater</b>	
<b>Issue: DOCUMENT EVALUATION</b>	
<b>Comment:</b>	We concur with your decision to conduct an intensive cultural resource survey and do National eligibility evaluations on all historic properties in your preferred alignment route.
<b>Response:</b>	Comment noted.
<b>Agency: U.S. Department of the Interior, December 23, 1996</b> <b>Mr. Willie R. Taylor</b>	
<b>Issue: SECTION 4(f) EVALUATION</b>	
<b>Comment:</b>	We concur that there is no prudent and feasible alternative to the proposed project, if project objectives are to be met. We also concur with the proposed measures to minimize harm to Springhill Park in Sebastian County and the Ouachita National Recreation Trail in the Ouachita National Forest.
<b>Response:</b>	Comment noted.
<b>Issue: WETLAND MITIGATION</b>	
<b>Comment:</b>	The Fish and Wildlife Service will participate with other resource agencies in the development and review of the wetland mitigation plan and the selection of mitigation areas.
<b>Response:</b>	Comment noted. The Fish and Wildlife Service and other resource agencies will be invited to participate in the development and review of the wetland mitigation plan and the selection of mitigation areas as the project moves forward.
<b>Issue: THREATENED AND ENDANGERED SPECIES</b>	
<b>Comment:</b>	The Fish and Wildlife Service anticipates that formal consultation in accordance with Section 7 of the Endangered Species Act may be required to address potential impacts to the American burying beetle ( <i>Nicrophorus americanus</i> ).
<b>Response:</b>	As discussed in Section 4.12.1 of the DEIS, coordination with the FWS will continue during the final design process to insure that this issue is fully addressed in accordance with Section 7.
<b>Agency: Federal Emergency Management Agency, December 26, 1996</b> <b>Ms. Vickey A. Carter</b>	
<b>Issue: DOCUMENT EVALUATION</b>	
<b>Comment:</b>	It appears that our concerns have been adequately addressed in the draft and we have no comments to offer.
<b>Response:</b>	Comment noted.

**Table 8-6 (Cont.)  
AGENCY COMMENTS AND RESPONSES**

**Agency: U.S. Environmental Protection Agency, December 30, 1996  
Mr. Michael P. Jansky**

**Issue: DOCUMENT EVALUATION**

**Comment:** EPA rates this proposed action as "LO," i.e., EPA has "Lack of Objection" to the preferred action as discussed in the Draft EIS. We find the Draft EIS to be comprehensive, thorough, and to adequately address the impacts associated with the preferred action and the alternatives so to fully comply with the requirements of NEPA and the CEQ regulations.

**Response:** Comment noted.

**Agency: U.S. Forest Service, Ouachita National Forest, January 8, 1997  
Mr. Alan G. Newman**

**Issue: EFFECTS ON WILDLIFE**

**Comment:** Concern with applicability of Dr. Michael's 1975 West Virginia study.

**Response:** The results of Dr. Michael's 1975 West Virginia study of the distribution of wildlife species, including game species, before and after highway construction parallels the results of several other studies (Burke and Sherburne, 1982 and Adams and Geis, 1982). These studies indicate that highway construction and operation would not adversely affect the distribution and abundance of the majority of bird and mammal species, including game species. These studies would certainly be applicable to the western Arkansas study area where the majority of forest dwelling species, including deer and turkey, are similar. In addition, the Adams and Geis (1982) study was a geographically extensive investigation, conducted by the U.S. Fish and Wildlife Service that attempted to determine the effects, both positive and negative, of highways on the diversity, density and spatial distribution of a variety of wildlife species including birds, small and large mammals and amphibians and reptiles. This study was conducted along interstate highways and county roads in three geographic regions; the Southeast (the piedmont regions of Virginia, North Carolina, South Carolina), the Midwest (Illinois) and the Northwest (Oregon and northern California). No significant regional differences were observed. When the information from the three study areas was combined, the major results were:

- no differences were found in the distribution of the majority of bird species with respect to distance from roads;
- small mammal community structure and abundance differed between right-of-way and adjacent habitats;
- no significant difference was detected in deer distribution in relation to interstate highways, but deer appeared to avoid county roads.

**Table 8-6 (Cont.)**  
**AGENCY COMMENTS AND RESPONSES**

**Agency: U.S. Forest Service, Ouachita National Forest**  
**Mr. Alan G. Newman**

**Issue: EFFECTS ON WILDLIFE (Cont.)**

**Comment:** The EIS should list the acres of habitat changes that will be made from one type to another, as well as the number of acres that will be totally eliminated from production. How many fewer game animals will be produced and how will this change the recreation and hunter user days for the area? What will be the future economic impact?

**Response:** The proposed highway would impact approximately 332 hectares (820 acres) of Forest Service land, roughly 0.05% of the total Ouachita National Forest holdings. Of the impacted acreage, approximately 70 hectares (172 acres) would be in pavement and shoulders and would be permanently lost as wildlife habitat. The remaining 262 hectares (648 acres) of existing habitat would primarily be replaced with plantings designed for bank stabilization for erosion and sediment control purposes based on AHTD's right-of-way and roadside development guidelines. As discussed in the DEIS (4-39), vegetation in these areas would be similar to pasture/old field habitat. Numerous studies have shown that constructed right-of-way habitat is utilized by many wildlife species (Oetting and Frank, 1971, Adams and Geis, 1982, Michael, 1975, Getz *et al.*, 1978, Burke and Sherburne, 1982, Michael and Kosten, 1981).

The future economic impacts to recreation and hunter user days are difficult to quantify for a project of this size. The resulting numbers of animals potentially lost due to a reduction of 70 hectares (172 acres) acres of habitat (< .001% of Forest land) would be negligible in a forest approaching 2 million acres in size. Furthermore, recreation and hunter user days could increase through greater access provided by a new highway facility.

**Comment:** The potential increase in wildlife mortality should be disclosed. Highways dissect habitat for deer and other species and they must cross highways to get to habitat components to meet their needs. Concern with highway mortality of reptiles and amphibians.

**Response:** The construction of an interstate highway through undeveloped forest land would increase wildlife mortality resulting from collisions with motor vehicles and could cause home range shifts in the more wide ranging wildlife species. It is unlikely that in a forest approaching 2 million acres in size, the proposed highway would prevent an animal from accessing critical habitat components. The majority of wildlife species within the forest are not restricted to a particular habitat type that is in short supply or that would be cut off by the construction of this highway. As discussed in the DEIS (4-40), while individuals of many species would suffer highway related mortality, no major impacts to any wildlife species populations identified as occurring or potentially occurring along the highway corridor would occur. Several highway related wildlife mortality studies have concluded that roads appear to act in a density-dependent manner. Species killed in greatest numbers were those with high population densities attracted to right-of-way habitat, such as edge associated birds and small/medium sized mammals (Adams and Geis, 1982; Michael, 1975).

**Table 8-6 (Cont.)  
AGENCY COMMENTS AND RESPONSES**

**Agency:** U.S. Forest Service, Ouachita National Forest  
Mr. Alan G. Newman

**Issue:** EFFECTS ON WILDLIFE (Cont.)

**Response (Cont.):** With respect to reptiles and amphibians, Adams and Geis (1982) reported that reptiles and amphibians made up 19% of the interstate highway wildlife mortality. No salamander species were recorded during the road mortality study. The study concluded that salamanders do not readily cross interstate highways and are not attracted to right-of-way habitat. Other studies (Jackson, 1996) found highways to be a serious threat to migrating amphibian populations, such as the spotted salamander (*Ambystoma maculatum*), where roads separated breeding ponds from upland, non-breeding habitat. No migrating amphibian species of federal or state concern are found near the Selected Alignment. In their southeast study area, Adams and Geis (1982) found that the eastern box turtle (*Terrapene carolina*) was the most common species killed. Mortality to box turtles (*Terrapene* sp.) would likely follow a similar trend in the western Arkansas study area. Impacts to all wildlife species, including reptile and amphibian populations (Fourche Mountain salamander (*Plethodon fourchensis*)), through the Ouachita National Forest have been minimized through the location of the Selected Alignment through Fourche Gap. This 10 mile section utilizes the existing U.S. 71 corridor and minimizes habitat removal in this area.

**Comment:** The highway and its right-of way may increase habitat fragmentation for some resident and neotropical migratory species, and increase predation and nest parasitism in others.

**Response:** Habitat fragmentation is a process whereby large continuous and often homogenous areas of habitat, pine/oak forest in the Ouachita National Forest, are broken into smaller often isolated tracts surrounded by a matrix of cultivated land, residential development, or other nonforest use. Construction of the Selected Alignment through the Ouachita National Forest would not lead to the mosaic of land cover patterns described above. Furthermore, the proposed highway would not appreciably alter the existing pine/oak forest acreage nor would it lead to further development within the Ouachita National Forest boundaries. Within the Ouachita National Forest, the majority of resident and neotropical migratory bird species are not restricted to a particular habitat type that is in a limited supply and that would directly be impacted or cut off by the construction of the proposed highway.

Forest fragmentation with respect to nest parasitism and predation has recently been investigated by Robinson et al. (1995). This study looked at the reproductive success of forest breeding birds and the relationship to regional forest fragmentation. They found that nest parasitism (brown-headed cowbird) and nest predation (all types from all predators) were significantly related to the amount of forest cover in the landscape; the higher the forest cover within a 10 km radius (31,400 hectares, 77,600 acres) of each study site, the lower the percentage of nest parasitism and predation. Within the Ouachita National Forest, approximately 332 hectares (820 acres) of forest land would be impacted by the construction of the Selected Alignment in a landscape dominated by forested habitat. If the above methodology were applied along the Selected Alignment through the Ouachita National Forest, a 10 km radius circle centered on the proposed highway would be dominated by forest cover,

**Table 8-6 (Cont.)  
AGENCY COMMENTS AND RESPONSES**

**Agency: U.S. Forest Service, Ouachita National Forest  
Mr. Alan G. Newman**

**Issue: EFFECTS ON WILDLIFE (Cont.)**

**Response (Cont.):** with the exception of the Waldron area. In all areas, maximum post-construction impacts would reduce the forest acreage by less than 1% and would not appreciably change the overall percentage of forest cover within this circular area. Based on the results of Robinson et al's (1995) study, our analysis suggests that nest predation and nest parasitism should remain relatively constant in this area following highway construction. As stated previously, impacts to the Ouachita National Forest have been minimized through the location of the Selected Alignment through Fourche Gap (approximately 10 miles) which utilizes the existing U.S. 71 corridor and minimizes habitat removal and fragmentation in this area.

**Issue: RED-COCKADED WOODPECKER HABITAT MANAGEMENT AREA**

**Comment:** The Forest Service believes that the RCW HMA qualifies for protection under the USDOT Act of 1966 Section 4(f) policy and as such, the Forest Service should be compensated for the loss of habitat within the HMA.

**Response:** This issue was discussed in detail at the February 20, 1997 meeting with the Forest Service. Subsequently, the Federal Highway Administration (FHWA) has determined that Management Area 22 functions as a multiple use area allowing timbering and dispersed recreational activities such as hunting, hiking, and fishing in addition to providing habitat for the RCW and does not qualify for protection under Section 4(f). Refer to AHTD letter dated May 16, 1997. However, FHWA and AHTD recognize the importance of this management area and the continued recovery of and management for the RCW. AHTD will consider equitable compensation in the form of a 1:1 land purchase from willing sellers for up to 177 ha (437 acres) of suitable RCW habitat impacted on Ouachita National Forest property by the Selected Alignment. This acreage was determined based on the January 23, 1997 meeting with the Forest Service that identified suitable RCW habitat on Forest Service property. This acreage represents less than 1% of the suitable RCW habitat within the HMA. As part of this compensatory process, the U.S. Forest Service will identify willing sellers of property near or adjacent to the existing HMA that could be acquired to increase the overall Forest Service ownership of lands in this area. Coordination with the U.S. Forest Service will continue to ensure that this issue is fully addressed during the final design process.

**Issue: EFFECTS ON THREATENED, ENDANGERED AND SENSITIVE SPECIES**

**Comment:** Concerned with potential effects to Leopard darter.

**Response:** Section 7 informal consultation, as defined in the Endangered Species Act (16 USC 1536), has been carried out throughout this study. The U.S. Fish and Wildlife Service (FWS) has been involved with this project since the July 1995 scoping meeting. All correspondence with the FWS is included in Appendix C. Comments received on the DEIS from the Department of the Interior, found the discussions and conclusions of potential impacts to threatened and endangered species as presented in the DEIS to be satisfactory for this project. Continued coordination with the FWS will continue as this project progresses to address concerns on the American burying beetle.

**Table 8-6 (Cont.)  
AGENCY COMMENTS AND RESPONSES**

**Agency: U.S. Forest Service, Ouachita National Forest  
Mr. Alan G. Newman**

**Issue: EFFECTS ON THREATENED, ENDANGERED AND SENSITIVE SPECIES (Cont.)**

**Response (Cont.):** With respect to the Leopard darter, based on information provided by the FWS and the Arkansas Natural Heritage Commission, the Selected Alignment is greater than 5 miles from any known collection site of this species. Where upper tributaries of the Leopard darter drainage are crossed, erosion and sedimentation control plans will be prepared. These plans will be reviewed by Arkansas Pollution Control and Ecology and an NPDES permit will be issued based on their assurance of a sound plan.

**Comment:** Table 2-12 should be broken out by watershed.

**Response:** Table 2-12 has been revised and tabulated by major river drainages and has been incorporated into the FEIS.

**Comment:** Concerned with potential effects to Arkansas Fatmucket Mussel.

**Response:** Section 7 informal consultation, as defined in the Endangered Species Act (16 USC 1536), has been carried out throughout this study. The FWS has been involved with this project since the July 1995 scoping meeting. All correspondence with the FWS is included in Appendix C. Comments received on the DEIS from the Department of the Interior, found the discussions and conclusions of potential impacts to threatened and endangered species as presented in the DEIS to be satisfactory for this project. Continued coordination with the FWS will continue as this project progresses to address concerns on the American burying beetle.

With respect to the Arkansas fatmucket mussel and the Ouachita River crossing, it is noted that a significant spill at this site could pose a risk to the downstream mussel population, but not necessarily a greater risk than currently exists on U.S. 71. Design standards for interstates provide for improved safety and would reduce the likelihood of an accident and subsequent spill at this river crossing. Furthermore, a new interstate and river crossing of the Ouachita River may reduce hazardous material traffic on the existing U.S. 71 highway where the chance of a spill would remain greater, thereby lowering the overall risk of a hazardous material spill in the Ouachita River area. During final design, AHTD will consider options that would reduce the possibility of contaminated bridge runoff.

**Comment:** Concerned with potential effects to *Procambarus reimeri*, a crayfish.

**Response:** Potential impacts to *Procambarus reimeri*, a species of state concern, were assessed using information obtained from the Natural Heritage Commission. This information is based on the 1979 survey work done by Dr. H.H. Hobbs who found this species scattered from Posey Hollow Road (County 70) to the Ouachita River at State Highway 88, a linear distance of over 5 miles. In the 1979 paper, Hobbs reports that the extent of the surveying was limited to roadside ditches due to high water in the Ouachita River and other tributaries. More intensive surveys of the this area may reveal a more extensive population of this species in the future. Recent discussions with the FWS have revealed no plans to list *Procambarus reimeri* as a threatened or endangered species in the near future. The current Selected Alignment does not impact any known locations of this species and remains west of all known location sites. No additional work is planned to address this issue during this study. However, AHTD will conduct a Biological Evaluation for the future permanent easement as described in the June 18, 1997 letter from USFS to AHTD.

**Table 8-6 (Cont.)  
AGENCY COMMENTS AND RESPONSES**

**Agency:** U.S. Forest Service, Ouachita National Forest  
Mr. Alan G. Newman

**Issue: EFFECTS ON THREATENED, ENDANGERED AND SENSITIVE SPECIES (Cont.)**

**Comment:** Concerned with potential effects to Species of State Concern.

**Response:** Information on species of state concern provided by the Arkansas Natural Heritage Commission was considered throughout the planning process. When possible, attempts were made to avoid or minimize impacts to known locations of these species. The location of the Selected Alignment through Fourche Gap (approximately 10 miles) minimizes forest impacts in this area, including sensitive species on Fourche Mountain. No additional surveys are planned to address potential impacts to state species during this study, but may be considered as part of the Biological Evaluation.

**Comment:** Concerned with mechanism to address threatened or endangered species if found at a later date.

**Response:** Coordination with the FWS will continue as this project moves forward. If the Selected Alignment is determined to affect any federally listed threatened or endangered plant or animal species, immediate consultation with the FWS pursuant to Section 7 of the Endangered Species Act would be initiated.

**Issue: FISH PASSAGES**

**Comment:** Fish species nomenclature should be updated in Appendix.

**Response:** Appendix E has been revised to reflect the scientific nomenclature found in the 1991 edition of Peterson's Field Guide to Freshwater Fishes.

**Comment:** The need for fish passages should be discussed.

**Response:** All intermittent and perennial streams would be either culverted or bridged by the highway to allow uninterrupted flow of water after construction of the highway. Standards for interstate highway design consider drainage issues thoroughly and attempts are made to maintain natural flow patterns throughout each watershed. Culverts are generally sized based on a 50 year storm event. In some areas, data on 100 year storm events are also considered when sizing culverts. Based on drainage design standards, no changes to flow patterns in stream headwaters are anticipated.

Cary and Wagner (1996) report several common conditions at culverts that create migration barriers to fish species including excess drop at culvert outlet, high velocity within culvert barrel, inadequate depth within culvert barrel, high velocity and/or turbulence at culvert inlet, and debris accumulation at culvert inlet. AHTD will consider these elements during final design for streams identified as being significant for migratory spawning fish species, as described in the June 18, 1997 letter from USFS to AHTD.

**Issue: EFFECTS OF CHANGING RUNOFF PATTERNS**

**Comment:** Concerned with changing runoff patterns which directly affect stream channel integrity.

**Response:** Careful calculations are carried out during final design to maintain natural flow patterns throughout a watershed. As such, no substantial increases in stream runoff are anticipated that would cause changes in stream morphology and instream habitat. The issuance of the

**Table 8-6 (Cont.)  
AGENCY COMMENTS AND RESPONSES**

**Agency:** U.S. Forest Service, Ouachita National Forest  
Mr. Alan G. Newman

**Issue:** EFFECTS OF CHANGING RUNOFF PATTERNS (Cont.)

**Response (Cont.):** 401 water quality certification for this project by AR PC&E on November 13, 1996 indicates that there is a reasonable assurance that this activity will not physically alter a significant segment of a waterbody and will not violate the water quality criteria. In addition, PC&E will review and approve NPDES plans for each segment of the highway prior to construction. During final design, AHTD will consider measures to dissipate and stabilize runoff flow velocities when appropriate, as described in the June 18, 1997 letter from USFS to AHTD.

**Comment:** Concerned with watershed crossings in the Cedar Creek area.

**Response:** Potential impacts to drainage areas or watersheds crossed were assessed and described in the DEIS. Using methodology developed by AHTD, six parameters (see Appendix F) that influence water quality were quantified and used to calculate a water quality index. Pages 4-24-25 of the DEIS report the results of this analysis. Segment G-H within the Selected Alignment had the largest drainage area crossing (Cedar and Johnson Creeks). This area also had several high WQI scores (see Appendix F). As stated on page 4-25 of the DEIS, drainage area crossings in moderate and high WQI groupings would indicate a combination of slope, soil, and land use features that could affect the quantity and quality of stormwater runoff during and after construction. Concentrating erosion and sedimentation control measures at these points could reduce overall adverse water quality impacts.

**Issue:** BIOLOGICAL ASSESSMENT

**Comment:** Concerned with the need to prepare a Biological Assessment.

**Response:** Section 7 informal consultation, as defined in the Endangered Species Act (16 USC 1536), has been carried out throughout this study. The FWS has been involved with this project since the July 1995 scoping meeting. All correspondence with the FWS is included in Appendix C. Comments received on the DEIS from the Department of the Interior, found the discussions and conclusions of potential impacts to threatened and endangered species as presented in the DEIS to be adequate for this project. No Biological Assessment is required at this time. Continued coordination with the FWS will continue as this project progresses to address concerns on the American burying beetle.

**Issue:** HARPERELLA, AN ENDANGERED PLANT

**Comment:** Concerned with potential effects to harperella (*Ptilmniium nodosum*), an endangered plant.

**Response:** Section 7 informal consultation, as defined in the Endangered Species Act (16 USC 1536), has been carried out throughout this study. The FWS has been involved with this project since the July 1995 scoping meeting. All correspondence with the FWS is included in the Appendix C. This species was not identified as potentially being within the project area during early coordination with the FWS and the Natural Heritage Commission. In addition, Forest Service surveys near the proposed highway have not located this species. Based on the available information, no populations will be affected by this project. However, AHTD will conduct a Biological Evaluation for the future permanent easement as described in the June 18, 1997 letter from USFS to AHTD.

<b>Table 8-6 (Cont.)</b> <b>AGENCY COMMENTS AND RESPONSES</b>	
<b>Agency: U.S. Forest Service, Ouachita National Forest</b> <b>Mr. Alan G. Newman</b>	
<b>Issue: HARPERELLA, AN ENDANGERED PLANT (Cont.)</b>	
<b>Response (Cont.):</b>	Coordination with the FWS will continue as this project moves forward. If additional surveys determine that the Selected Alignment would potentially impact this species, immediate consultation with the FWS pursuant to Section 7 of the Endangered Species Act would be initiated.
<b>Issue: SITE SPECIFIC CONCERNS</b>	
<b>Comment:</b>	Concerned with access to Forest Service roads.
<b>Response:</b>	Maintaining access to forest lands will be discussed with the Forest Service prior to initiating final design and would include a joint review of the pre-final design plans. Access to Forest Service property would be maintained either through bridging or relocating existing Forest Service roads. Please refer to Michael Baker Jr., Inc. July 17, 1996 letter to the Forest Service on AHTD's behalf.
<b>Comment:</b>	Concerned with erosion and sedimentation control techniques.
<b>Response:</b>	Appendix I contains a complete section on stormwater runoff minimization measures. During the design phase of this project, the Arkansas Department of Pollution Control and Ecology will be reviewing the erosion and sedimentation control plans for each segment of the project and will be issuing a NPDES permit based on their assurance of a sound erosion and sedimentation control plan. USFS involvement in this process is outlined in the June 18, 1997 letter from USFS to AHTD.
<b>Issue: DISTRIBUTION OF DOCUMENT</b>	
<b>Comment:</b>	Concerned with distribution of the Draft EIS.
<b>Response:</b>	Notices of availability of the DEIS were sent to any person attending the public meetings or otherwise commenting on the project since July 1995, including state senators and representatives, the Ouachita Watch League, and the Sierra Club. United States senators and representatives have also been kept informed of the status of this project. Copies of the document were sent to individuals upon request.  The number of copies needed for internal distribution at the Hot Springs Office of the Forest Service was obtained by AHTD prior to distribution of the DEIS. Copies were also sent to the Poteau and Mena Ranger Districts.  The state agencies noted in the comment letter are listed in Section 7, Distribution of Statement.
<b>Agency: Arkansas Department of Parks and Tourism, November 18, 1996</b>	
<b>Issue: DOCUMENT EVALUATION</b>	
<b>Comment:</b>	No comments.

<b>Table 8-6 (Cont.) AGENCY COMMENTS AND RESPONSES</b>	
<b>Agency: Arkansas Soil and Water Conservation Commission, December 6, 1996 Mr. Joseph Krystofik</b>	
<b>Issue: DOCUMENT EVALUATION</b>	
<b>Comment:</b>	No comments.
<b>Agency: Arkansas Natural Heritage Commission, January 17, 1997 Ms. Cindy Osborne</b>	
<b>Issue: SPECIES OF SPECIAL STATE CONCERN</b>	
<b>Comment:</b>	Table 3-5 should be revised to reflect most recent database information on species of special state concern.
<b>Response:</b>	Comment noted. Table 3-5 has been revised and has been incorporated into the FEIS.
<b>Issue: COSSATOT AND OUACHITA RIVER WATERSHED IMPACTS</b>	
<b>Comment:</b>	Concerned with cumulative watershed impacts to the Cossatot and Ouachita River drainages and that Best Management Practices are adhered to during construction.
<b>Response:</b>	Potential water quality impacts are discussed in detail in Section 4.7 of the DEIS. In addition, Appendix I contains a complete section on stormwater runoff minimization measures. During the design phase of this project, the Arkansas Department of Pollution Control and Ecology will be reviewing the erosion and sedimentation control plans for each segment of the project and will be issuing a NPDES permit based on their assurance of a sound erosion and sedimentation control plan. Environmental monitoring during the construction process will be considered by AHTD.
<b>Issue: RED-COCKADED WOODPECKER HABITAT</b>	
<b>Comment:</b>	Encourage right-of-way design that benefits RCWs through retention and management of mature pines along the median and road margins.
<b>Response:</b>	In consultation with the U.S. Fish and Wildlife Service and the U.S. Forest Service, AHTD will consider design modifications where appropriate that would retain mature pine trees along the median and road margins.
<b>Issue: PRAIRIE REMNANTS</b>	
<b>Comment:</b>	Impacts to prairie remnants should be avoided. If avoidance is not possible, impacts should be minimized and mitigation measures developed.
<b>Response:</b>	Prairie remnants have not been identified along the Selected Alignment from Waldron to Fort Smith. With the exception of Fort Chaffee, land cleared of forest vegetation is predominantly in pasture. Information received from the Natural Heritage Commission in 1995 and 1997 listed several vertebrate species of concern on Fort Chaffee, but did not identify any prairie remnants of concern. State and federal guidelines do not require mitigation of prairie land.

<b>Table 8-6 (Cont.) AGENCY COMMENTS AND RESPONSES</b>	
<b>Agency: U.S. Coast Guard, January 24, 1997 Mr. David H. Sulouff</b>	
<b>Issue: COAST GUARD DISTRICT UPDATE</b>	
<b>Comment:</b>	Title page should be changed from "U.S. Coast Guard - Second District" to "U.S. Coast Guard - Eighth Coast Guard District".
<b>Response:</b>	Comment noted. The title page has been revised.
<b>Issue: NAVIGATION IMPACTS</b>	
<b>Comment:</b>	In Section 4.19.2, change mean sea elevation of the 2 percent flow line to 389.7 feet at 165,000 cubic feet per second flowrate.
<b>Response:</b>	Comment noted. This Section has been revised and has been incorporated into the FEIS.
<b>Comment:</b>	In Section 4.19.2, add comments on continued coordination with the Coast Guard.
<b>Response:</b>	Comment noted. This Section has been revised and has been incorporated into the FEIS.
<b>Comment:</b>	In Section 4.19.5, add comments on bridge construction impacts upon river traffic.
<b>Response:</b>	Comment noted. This Section has been revised and has been incorporated into the FEIS.
<b>Issue: SECTION 4(f) EVALUATION</b>	
<b>Comment:</b>	A completed Section 4(f) evaluation will be required prior to final processing of a bridge permit application for the crossing of Springhill Park.
<b>Response:</b>	Comment noted. The FEIS (Section 5) includes the Final Section 4(f) Evaluation.
<b>Agency: U.S. Army, Corps of Engineers, Little Rock District, February 24, 1997 Mr. Jerry Harris</b>	
<b>Issue: DOCUMENT EVALUATION</b>	
<b>Comment:</b>	We have reviewed the documentation in the DEIS and concur with the findings. We feel the document provides a complete wetland impact comparison for each alternative alignment studied and clearly defines the selection of the preferred alignment for the project.
<b>Response:</b>	Comment noted.
<b>Agency: Caddo Indian Tribe of Oklahoma, January 29, 1997 Ms. Rebecca Davidson</b>	
<b>Issue: DOCUMENT EVALUATION</b>	
<b>Comment:</b>	We have reviewed the documentation in the DEIS and are concerned that it passes through original Caddo homelands. We would like to be consulted on the project due to the cultural and historical significance of this area.
<b>Response:</b>	Comment noted. Concerns of and appropriate coordination with the Caddo Tribe are stipulated in the Section 106 Programmatic Agreement (see Appendix J). The Caddo will be consulted during the on-going archeological investigations as appropriate.

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KIBLER, ARKANSAS

RESOLUTION NO. 96-2

AN RESOLUTION OF THE CITY OF KIBLER, ARKANSAS, FOR THE PURPOSE OF EXPRESSING THE INTENT OF THE CITY OF KIBLER AS TO LOCATION OF THE EXTENSION AND RELOCATION OF HIGHWAY 71, IN THE AREA OF THE CITY OF KIBLER, ARKANSAS, AND FOR OTHER PURPOSES.

WHEREAS, the City of Kibler, Arkansas, is duly incorporated under the laws of the State of Arkansas, with all powers, authority and duties of a city of the second class, and

WHEREAS, the extension and relocation of the present Highway 71 from the Missouri border to the Texas-Louisiana border, is essential not only to the continued growth of Western Arkansas, but to the growth of the entire State of Arkansas, and

WHEREAS, the routing of said Highway extension and relocation in the area of the City of Kibler is essential to the continued growth of the City of Kibler, and a successful, overall, highway extension, relocation and upgrading, therefore,

BE IT RESOLVED by the City Council of the City of Kibler, Arkansas:

1. The said Council hereby finds and declares that the facts herein set out are true and correct.

2. The considered opinion and desire of the Council of the City of Kibler, Arkansas, and the citizens of the City of Kibler, Arkansas, whom it represents is that this project is essential not only to the growth and future of Western Arkansas, but also the entire State of Arkansas, and

3. Within the proposed Corridor for such highway extension and relocation, that the most desirable location for such highway in the Kibler, Arkansas, area is Line, or proposed location No. 1 from Interstate 40 to a point immediately to the north of Frog Bayou Creek, thence in a south-southwesterly direction to a point at, or near the Southeast Corner (SE/C) of the Northeast Quarter (NE $\frac{1}{4}$ ) of Section 31, Township 9 North, Range 30 West, Crawford County, Arkansas, where it would intersect the present Line or proposed location No. 3, and continue on in a southerly and southwesterly direction, following Line, or proposed location no. 3, to the Arkansas River, a copy of such location map being hereto attached, and

4. That off ramps be provided on said highway at the present Clear Creek Road, which, although presently a county road would appear to require less than one-half mile extension of the existing State Highway, to have a state highway exit, however, this off ramp would well service the Corps of Engineers' Park approximately 3 $\frac{1}{2}$

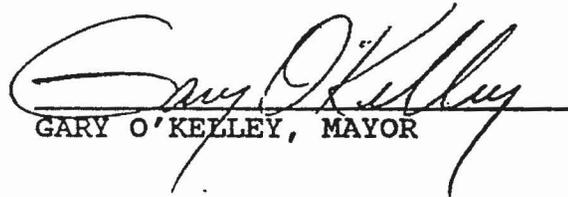
miles to the East, the City of Kibler, and the rich river bottoms farmlands in and adjoining the areas, and

5. The Mayor and Recorder of the City of Kibler, Arkansas, are hereby directed and authorized, to furnish an executed copy of this Resolution to the Arkansas State Highway Department, its personnel, and contractors working with it on this project.

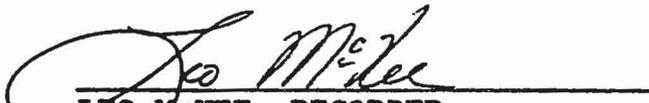
IN WITNESS WHEREOF, the City of Kibler, Arkansas, by its City Council, did pass the foregoing Resolution at its meeting held on the 3rd day of June, 1996, with the yea and nay vote as follows:

	VOTE
Alderman, Ward 1, Position 1, Maxine Phillips	Yea
Alderman, Ward 1, Position 2, Leta Underwood	Yea
Alderman, Ward 2, Position 1, Douglas Yancey	Yea
Alderman, Ward 2, Position 2, Gary Maynard	Yea
Alderman, Ward 3, Position 1, Rick Prestidge	Yea
Alderman, Ward 3, Position 2, Lorene Willis	Yea
Alderman, Ward 4, Position 1, Frank Newton, Absent, Military Leave	
Alderman, Ward 4, Position 2, Lonzo Beard	Yea

IN WITNESS WHEREOF, the foregoing Resolution having been duly approved and adopted on this date, we have hereunto set our hands this 3rd day of June, 1996.

  
GARY O'KELLEY, MAYOR

ATTEST:

  
LEO MCKEE, RECORDER

**HENRY SUNDERMAN**  
Mayor



**REGINA WALKER**  
City Clerk/Treasurer

**COUNCIL**  
Andy Brown  
Harold Coogan  
Bill Forsyth

**CITY OF MENA**  
520 Mena Street  
Mena, AR 71953

**COUNCIL**  
Mary Alice H...  
Jean Qu...  
Sue Witherspc...

December 17, 1996

Mr. Randy Ort  
Public Affairs Officer  
AR State Highway & Transportation Dept.  
P.O. Box 2261  
Little Rock, AR 72203-2261

Dear Mr. Ort:

Please find enclosed a copy of City of Mena Resolution No. 902 which was passed by the Mena City Council on December 10, 1996. This Resolution reflects the City of Mena's support of the need for three (3) interchanges in the Mena area on the preferred alignment of the U.S. Highway 71 Improvement program from DeQueen to I-40.

It is our wish that the Arkansas State Highway and Transportation Department give serious consideration to this proposal. We feel that Mena is large enough and has a significant amount of traffic volume to warrant three interchanges.

Thank you for your help in this matter.

Sincerely,

A handwritten signature in cursive script that reads "Henry G. Sunderman".

Henry G. Sunderman  
Mayor, City of Mena

HGS/bh

Enclosure

RESOLUTION No. 902

A RESOLUTION SPECIFYING INTERCHANGES FOR MENA/POLK COUNTY  
IN REFERENCE TO THE U.S. 71 RELOCATION

WHEREAS, the Michael J. Baker Firm from Pittsburgh, Pennsylvania, was procured by the Arkansas Highway and Transportation Department to study the U.S. 71 Relocation (aka I-49); and

WHEREAS, Phase I-Problem Assessment and General Solutions, Phase II-Corridor Location Studies, Phase III-Engineering and Environmental Studies have been completed; and

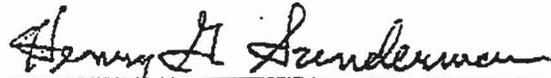
WHEREAS, Phase IV-the Environmental Documentation process, which includes public hearings and selection of preferred alignments is being finalized.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MENA, ARKANSAS, THAT:

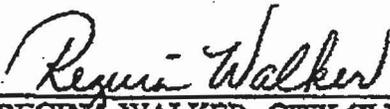
Section 1. All final plans include interchanges at S.H. 88, S.H. 8, and U.S. 71 near Old Line Road.

Section 2. The need for three (3) interchanges is necessary for the continued growth of the area and for the safe uncongested flow of traffic.

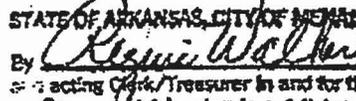
PASSED AND APPROVED THIS 10TH DAY OF DECEMBER, 1996

  
HENRY G. SUNDERMAN, MAYOR

ATTEST:

  
REGINA WALKER, CITY CLERK/  
TREASURER

STATE OF ARKANSAS, CITY OF MENA

By  the duly elected, qualified and acting Clerk/Treasurer in and for the city aforesaid, do hereby certify that above and foregoing is a full true and correct copy of the original Resolution No. 902, the same appears of record and now on file in my office.

WITNESS my hand and official seal this the 10th day of December

1996  
  
Clerk/Treasurer Deputy Clerk/Treasurer

**RESOLUTION**  
**FORT CHAFFEE REDEVELOPMENT AUTHORITY**  
**DECEMBER 19, 1996**

The Fort Chaffee Redevelopment Authority has reviewed the Draft Environmental Impact Statement for the U.S. 71 Relocation DeQueen to Interstate 40, particularly the preferred alignment for that portion of the Highway's relocation traversing portions of Fort Chaffee.

As the entity charged with the authority and responsibility to prepare a comprehensive reuse plan for Fort Chaffee property declared surplus by the Federal government, the Authority hereby states for the record that:

1. The Authority supports the continued study, planning and construction of a relocated U.S. 71 through western Arkansas and encourages Federal and State authorities to move forward in the completion of this very important project.
2. The preferred alignment through Fort Chaffee surplus property identified in the Draft EIS is acceptable to the Authority.
3. The relocated Highway, once constructed, will result in considerable benefit to the surplus properties and will greatly enhance the Authority's and area communities' reuse opportunities at Fort Chaffee.
4. The preferred alignment will essentially create a physical division between the surplus area and the remaining Military area of Fort Chaffee, thus resulting in an identifiable and positive demarcation between what will be non-military and Military areas.

The Authority appreciates the Arkansas Highway and Transportation Department's preparation of an EIS for U.S. 71's relocation and consideration of the Authority's input.

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