

Final Environmental Impact Statement

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



APPENDIX



APPENDIX

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Appendix A
LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

THE LEVEL OF SERVICE CONCEPT

A Level of Service (LOS) is a letter designation that describes a range of operating conditions on a particular type of facility. The 1994 Highway Capacity Manual defines levels of service as “qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers.”

The critical point in this definition is the need to define service quality in terms that are perceived by drivers and passengers. Several key measures are used to describe service quality in these terms:

- ❑ Speed and travel time. One of the most easily perceived measures of service quality is speed, or its inverse, travel time. Drivers and passengers alike are keenly aware of the amount of time it takes to get from place to place. On freeways, speed is a very evident measure of service quality, while on street systems, the driver is very sensitive to total travel time.
- ❑ Density. Density is a parameter not often used in traffic analysis. Nevertheless, it is an excellent descriptor of service quality in many cases. Density describes the proximity of vehicles to each other in the traffic stream and reflects ease of maneuverability in the traffic stream, as well as the psychological comfort of drivers.
- ❑ Delay. Delay can be described in many ways. Highway capacity analysis uses delay in several different ways. At intersections, delay is defined in terms of the average stopped time per vehicle traversing the intersection. On rural two-lane highways, percent time delay is defined as the percent of time that all drivers spend in platoons behind slow-moving vehicles they cannot pass. In any of its uses, it represents excess or additional travel time due to traffic conditions or controls. Delay times

are portions of travel time that are particularly obvious to drivers and are particularly annoying or frustrating.

- ❑ Other measures. A variety of other measures are used to describe service quality. In some cases, measures used are not directly discernible to drivers or passengers. Such measures generally rely upon volumes or flow rates because the state of the art does not yet include other calibrated quality measures.

Six levels of service are defined for capacity analysis. They are given letter designations A through F, with LOS A representing the best range of operating conditions and LOS F the worst. The specific terms in which each level of service is defined vary with the type of facility involved. In general, LOS A describes a free-flowing condition in which individual vehicles of the traffic stream are not influenced by the presence of other vehicles. LOS F generally describes breakdown operations (except for signalized intersections) which occur when flow arriving at a point is greater than the facility's capacity to discharge flow. At such points, queues develop, and LOS F exists within the queue and at the point of the breakdown. Levels of service B, C, D, and E represent intermediate conditions, with the lower bound of LOS E often corresponding to capacity operations.

LEVEL OF SERVICE DEFINITIONS

The six levels of service are generally described as follows.

- ❑ Level of Service A: This is a condition of free flow, accompanied by low volumes and high speeds. Traffic density will be low, with uninterrupted flow speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.

- ❑ Level of Service B: This occurs in the zone of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted. The lower limit (lowest speed, highest volume) of this level of service has been used in the design of rural highways.
- ❑ Level of Service C: This is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained, with service volumes suitable for urban design practice.
- ❑ Level of Service D: This level of service approaches unstable flow, with tolerable operating speeds being maintained, though considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low. These conditions can be tolerated, however, for short periods of time.
- ❑ Level of Service E: This cannot be described by speed alone, but represents operations at lower operating speeds, typically, but not always, in the neighborhood of 48 kilometers per hour (30 miles per hour), with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration. This level of service is associated with operation of a facility at capacity flows.
- ❑ Level of Service F: This describes a forced-flow operation at low speeds, where volumes are below capacity. In the extreme, both speed and volume can drop to zero. These conditions usually result from queues of vehicles backing up for a restriction

downstream. The section under study will be serving as a storage area during parts or all of the peak hour. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of the downstream congestion.

The above information was taken directly from Traffic Engineering, by William R. McShane and Roger P. Roess 1990, and Traffic Engineering theory and practice, by Louis J. Pignataro 1973.

Appendix B
MAJOR INVESTMENT STUDY

U.S. 71 Relocation - DeQueen to I-40
Technical Documentation for the Major Investment Study
for the Arkansas portion of the Bi-State Study Area

The U.S. 71 Relocation project requires the Arkansas Highway and Transportation Department to prepare an Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA). Part of this process involved the preparation of a Transportation Needs Analysis (40 CFR 1502.13) to identify and describe the transportation problems. In addition, a Major Investment Study (MIS) was conducted in accordance with the Metropolitan Transportation Planning Regulations (23 CFR 450.318) of 1993. An MIS is required when a project traverses a metropolitan planning area, may involve construction or reconstruction which would constitute a major investment, and utilizes federal funds. The objective of the MIS is to identify a range of alternative investments for solving a particular metropolitan transportation problem and to reach a consensus on the selected investment. The MIS is a collaborative process to promote effective communications between all the involved parties. The following documents the discussions and analyses that occurred during the Major Investment Study, performed for the portion of the U.S. 71 Relocation that falls within the jurisdiction of the Bi-State Policy Committee. (The Bi-State Policy Committee is the Metropolitan Planning Organization for Fort Smith and the surrounding area.)

1. MAJOR INVESTMENT STUDY PROCESS

Before the Major Investment Study (MIS) could begin, the study process needed to be approved by the Bi-State Policy Committee, the Metropolitan Planning Organization for Fort Smith and the surrounding area. On August 24, 1995, representatives from Michael Baker Jr., Inc. made a presentation to the Bi-State Policy Committee. This presentation included a review of the overall study process for the U.S. 71 Relocation project, explanation of the requirement to construct an MIS, and a presentation of the proposed MIS process. The process includes a list of groups which would be invited to send a representative to the "MIS Working Group" meetings, examples of the types of decisions that should result from these meetings, the number of anticipated meetings including a public meeting, and an understanding of how the MIS would be brought to a conclusion.

The Bi-State Policy Committee commented that the Fort Smith and Van Buren Chambers of Commerce should be included in the Working Group. The Major Investment Study process was thereby amended and approved by the Bi-State Policy Committee and signed by John Ballentine, Mayor of Alma and Chairman of the Bi-State Policy Committee.

Attachments:

- The minutes from the August 24, 1995 Bi-State Policy Committee Meeting
- A copy of the signed Major Investment Study Process.

ARKHOMA REGIONAL PLANNING COMMISSION

BI-STATE TRANSPORTATION COMMITTEE/
TECHNICAL TASK FORCE COMMITTEE MEETING

Thursday, August 24, 1995 - 11:30 a.m.

Golden Corral Restaurant, Fort Smith, Arkansas

MINUTES

I. CALL TO ORDER:

Mr. Richard Haberman, Barling City Administrator, opened the meeting of the Bi-State Transportation and Technical Task Force Committees.

The following members or their representatives were present:

II. ROLL CALL:

MEMBERS PRESENT FOR THE BI-STATE TRANSPORTATION COMMITTEE: Tom Harrell, AHTD; Sam Shehab, ODOT; Mayor Leon Hicks, Greenwood; Billy Dooly, Fort Smith Chamber of Commerce; Marjorie Armstrong, Van Buren Chamber of Commerce; and Phil Beatty, KEDDO.

BI-STATE MEMBERS NOT PRESENT: Mayor Jerry Barling, Barling; Mayor Harold Wallace, Central City; Mayor Loyd Farrar, Lavaca; Mayor John Riggs, Van Buren, Harold Beaver, AHTD District 4; Mayor John Ballentine, Alma; Mayor John Peerson, Bonanza; Mayor Ray Baker, Fort Smith; Mayor Gary O'Kelly, Kibler; Mayor Billy Rogers, Rudy; Mayor Larry Vickers, Arkhoma; Mayor David Carolina, Moffett; Mayor John Grizzle, Pocola; Mayor Joe Smith, Spiro; Judge Bud Harper, Sebastian County; Bruce Tabor, Sequoyah County Commissioner; Mayor David Morgan, Muldrow; Mayor Jack Williams, Roland; Judge Harold Loyd, Crawford County; and Donald Young, Leflore County Commissioner.

TECHNICAL TASK FORCE MEMBERS PRESENT: Virginia Porta, AHTD; Ed Rinke, City of Fort Smith; Larry Lanes, AHTD; Joe Shipman, AHTD District 4; Mayor Leon Hicks, Greenwood; Mack Cochran, Greenwood; Richard Haberman, Barling; Carl Hines, City of Van Buren; Sam Shehab, ODOT; Richard Orton, proxy for Bill Harding, City of Fort Smith; and David Hudson, Sebastian County.

TECHNICAL TASK FORCE MEMBERS NOT PRESENT: Marsha Woolsey, Alma; Judge Harold Loyd, Crawford County; Steve Garrett, EODD; Judge Bud Harper, Sebastian County; Bill Harding, City of Fort Smith; Mayor Gary O'Kelly, Kibler; Mayor Billy Rogers, Rudy; Charles Wiley, Crawford County; Judy Davis, Spiro Chamber of Commerce; Mayor Wayne Watts, Roland and Mayor David Morgan, Muldrow.

OTHERS PRESENT: Tim Smith, Patty Geshing and Mara Pritchard, Michael Baker Company, Inc.; David Streb, ODOT; Amy Sherrill, Southwest Times Record; Ellen Tynon, Ken O'Donnell, Rusty Myers and Rhonda Bell, WAPDD/ARPC.

III. APPROVAL OF JUNE 28, 1995 MINUTES:

Ms. Porta requested that a roll call for both committees in future minutes.

Marjorie Armstrong made a motion to approve and accept the minutes of the June 28, 1995 meeting. Richard Haberman seconded and the motion passed unanimously.

IV. FY '95 TIP AMENDMENT:

Handout sheets were passed out to those present listing the five projects to be amended along with funding sheets to be put into the TIP. Richard Haberman made a motion to approve and accept the amendments to the FY '95 TIP. Marjorie Armstrong seconded and the motion passed unanimously.

V. PRESENTATION BY U.S. 71 CONSULTANTS (MICHAEL BAKER COMPANY):

Patti Geshing explained that the Michael Baker Company was selected by the Arkansas State Highway and Transportation Department to do an environmental and local study on the new 71 Highway between Alma and DeQueen. The Michael Baker Company will hold a series of meetings with local officials in the area.

Ms. Geshing explained there were various procedures in the study process. A video was shown on the U.S. 71.

Mara Pritchard spoke on the results of the needs study. Marjorie Armstrong requested that Billy Dooly and she be put on the working group committee. Ms. Pritchard and Ms. Geshing agreed that that would definitely fill the working committee.

VI. BI-STATE 2020 TRANSPORTATION PLAN:

Ken O'Donnell handed out copies of the Unified Worked Program and explained that any comments needed to be sent to him.

VIII. BI-STATE PUBLIC INVOLVEMENT AMENDMENT REMIS:

Tom Harrell made a motion to accept and approve the amended REMIS policy procedures. David Hudson seconded and the motion passed unanimously.

IX. OTHER BUSINESS:

Billy Dooly reminded everyone that the new section from Alma to Mountainburg would open Monday and everyone was welcome.

VII. ADJOURN:

There being no further business, the meeting adjourned.

**U.S. 71 Relocation - DeQueen to I-40
Fort Smith Metropolitan Area
Major Investment Study Process**

In accordance with 23 CFR 450.318 of the Metropolitan Transportation Planning Regulations, a Major Investment Study (MIS) is required for this project because the project traverses a metropolitan planning area, is anticipated to involve construction or reconstruction which would constitute a major investment, and would utilize federal funds. The process for conducting an MIS is a cooperative one, involving various parties as outlined in the regulations, and specifically identified below for this project. The objective of the MIS is to jointly identify a range of alternative investments for solving a particular metropolitan transportation problem and to reach a consensus on the selected investment. The MIS is in itself a "process" to ensure effective communications between all the involved parties. It need not produce a report, but must produce a decision that will be documented.

An analysis of the transportation needs (problems) of the U.S. 71 corridor from DeQueen to I-40 is currently being conducted by Michael Baker Jr., Inc. (Baker). The completion of this work will initiate the MIS. There are several steps that the MIS will follow.

1) Obtain Bi-State Policy Committee Approval of the MIS Process

2) Establish the MIS Working Group

The "MIS Working Group" will be established to serve as the nucleus that will jointly conduct the study. The Arkansas Highway and Transportation Department (AHTD) has been named as the lead agency for this MIS, and Baker will serve as the MIS Working Group facilitator. Baker has met with AHTD, the Cities of Fort Smith and Van Buren, and the Arkhoma Regional Planning Commission technical staff to develop a diverse yet small group of individuals who should make up the MIS Working Group. A consensus of the above parties has been reached on the following participants:

| Participants: | Representatives: |
|--------------------------------------|---|
| Arkhoma 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 |

Table has been altered after the approval by the Bi-State Policy Committee to include names of actual participants

| Participants: | Representatives: |
|--|---|
| 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 |

Table has been altered after the approval by the Bi-State Policy Committee to include names of actual participants

3) **Review the Transportation Needs Analysis**

This group's first responsibility will be to review the transportation needs analysis. The transportation needs analysis will have evaluated U.S. 71 and I-540 and ascertained deficiencies associated with capacity, safety, system linkage, and social demand and economic development. This will be presented by Baker at the first meeting of the MIS Working Group.

4) **Develop Alternative Investment Strategies**

Also at the first meeting, the MIS Working Group will brainstorm the various investment strategies that could be used to satisfy the transportation needs. Investment strategy is composed of two parts: design concept and scope. (An example design concept is a highway; an example scope is four lanes, six lanes or HOV lanes.) These ideas should be general and creative. They can include alternative modes or multiple modes of transportation. These ideas will then be screened so that only reasonable concepts remain.

5) **Hold Public Involvement Meeting**

(handled by Baker with attendance by MIS Working Group)

The MIS Working Group will hold a public meeting in Fort Smith on the identified design concepts and invite additional concepts for consideration. Information distribution will be sensitive to the needs of low-income and minority groups who may be transportation dependent or disadvantaged.

6) **Review of Public Meeting Alternatives**

At the second meeting of the MIS Working Group, Baker and the MIS Working Group will review the reasonableness of any additional design concepts that resulted from input received during the public meeting.

7) **Development of Scope**

Baker will develop scope for each of the design concepts that remain as feasible alternatives.

8) Compare Investment Strategies

Also at the second meeting, the MIS Working Group will develop a list of criteria or measures of effectiveness that will be used to compare the strategies. Baker will then apply these measurements of effectiveness to each of the strategies that are under consideration. Baker will compare the results of the strategy evaluation and provide a preliminary recommendation to the AHTD staff for review.

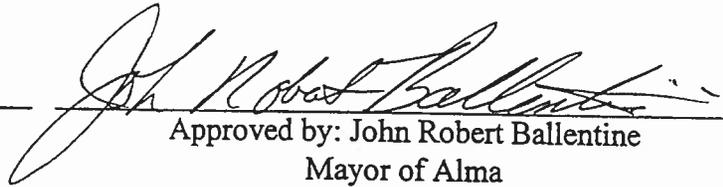
9) Recommend Investment Strategy

The results of the comparative evaluation will be brought back to the MIS Working Group at the third and final meeting. The MIS Working Group will then make a recommendation to the Bi-State Policy Committee for an investment strategy. The Bi-State Policy Committee will review the recommendation of the MIS Working Group. The Bi-State Policy Committee will provide approval and, if necessary, take action to revise the Bi-State 2020 Long Range Plan within 30 days of recommendation. This will conclude the MIS process for this project. This process and its results will be documented in a technical memo that will be submitted to AHTD.

Additional review or action by the Bi-State Policy Committee may become necessary during the study. The MIS Working Group may reasonably request additional involvement by the Bi-State Policy Committee, provided such additional action can be accomplished within the MIS schedule.

31 Aug 95

Date of Approval



Approved by: John Robert Ballentine
Mayor of Alma
Bi-State Policy Committee Chairman

2. FIRST MIS WORKING GROUP MEETING

Prior to this meeting, the MIS Working Group invitees were contacted by phone and sent an agenda for the first meeting. The representative from the public was randomly selected from a list of names of interested citizens that was compiled from the questionnaire distributed at the Fort Smith public meeting held on July 13, 1995. Ed Craig's name was selected and Mr. Craig accepted the invitation. Mr. John Alan Lewis was recommended by Mr. Rusty Meyers to serve as the representative from Partners in Progress. Mr. Lewis accepted the invitation.

The first meeting was held at 9:30 a.m., September 13, 1995, in the Fort Smith Chamber of Commerce Conference Room.

Attachments:

- The minutes from the first meeting
- The handouts from the first meeting.

**U.S. 71 Relocation - DeQueen to I-40
Location Study and Environmental Impact Statement**

Meeting Minutes

Subject: Major Investment Study Working Group Meeting 1

Attendees: See attached list

Time and Place: 9:30 a.m., September 13, 1995, Fort Smith Chamber of Commerce

1. The meeting began with an introduction of the Baker employees in attendance, and the participants of the Working Group. Ms. Pritchard asked the group if they had any questions concerning the Major Investment Study process that had been approved by the Bi-State Policy Committee and supplied to the participants. Ms. Pritchard then distributed a copy of a flow chart that presented the MIS process as a series of questions that would be answered during the course of the study.
2. The relative size of the area in which the MIS would be conducted was discussed. The U.S. 71 Relocation - DeQueen to I-40 project is a portion of the Shreveport, Louisiana to Kansas City, Missouri high priority corridor in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Furthermore, the MIS is being performed for only the northern portion of the project that falls within the Arkansas portion of the Bi-State Study Area. This area begins just south of Greenwood and continues to Interstate 40.
3. The Working Group participated in a brainstorming session that formulated ground rules that will be adhered to during the course of this study. The ground rules are attached to these minutes.
4. Ms. Pritchard distributed the preliminary findings of the needs analysis for the project. The group reviewed this information bullet by bullet. Detailed discussions of various traffic planning and engineering terms were reviewed with the group. A definition of those terms are attached to the minutes. The study concluded that existing I-540, without improvements, would not be able to carry the traffic anticipated by the year 2020. The traffic projections are based on historical growth and the additional traffic (latent demand) that would result from the completion of the Shreveport to Kansas City corridor.
5. The group was asked to brainstorm their objectives and expectations for the project. The results of the brainstorming session are listed below:
 - Aid in community and economic development
 - Provide connectivity to other highways and transportation modes
 - Ensure that the strategy has a flexible scope that could accommodate future (beyond 2020) increases in capacity demand and/or addition of other mode usage
 - Accommodate future noise impacts
 - Consider future development pressure so that appropriate land use planning can occur; keeping in mind that I-540 has been viewed as divisive

6. The group then participated in a brainstorming session on the types of investment strategies that should be considered. After the brainstorming session, the strategies were reviewed and unreasonable strategies were removed. The following strategies resulted from the brainstorming session:

- Use existing location for high priority corridor through widening
- Build an alternative route east of I-540 and through western Fort Chaffee
- Build a new river crossing
- Widen I-540 and provide high occupancy vehicle lanes (car pools and busses)
- Implement traffic management strategies (flex hours)
- Use shoulders during peak hours on I-540
- Provide exclusive through travel lanes which are physically separated from existing lanes but on same alignment (cantilevered)
- ~~Use existing State Highway 59 river crossing~~
- ~~Restrict truck traffic on I-540 and provide an alternative truck route~~

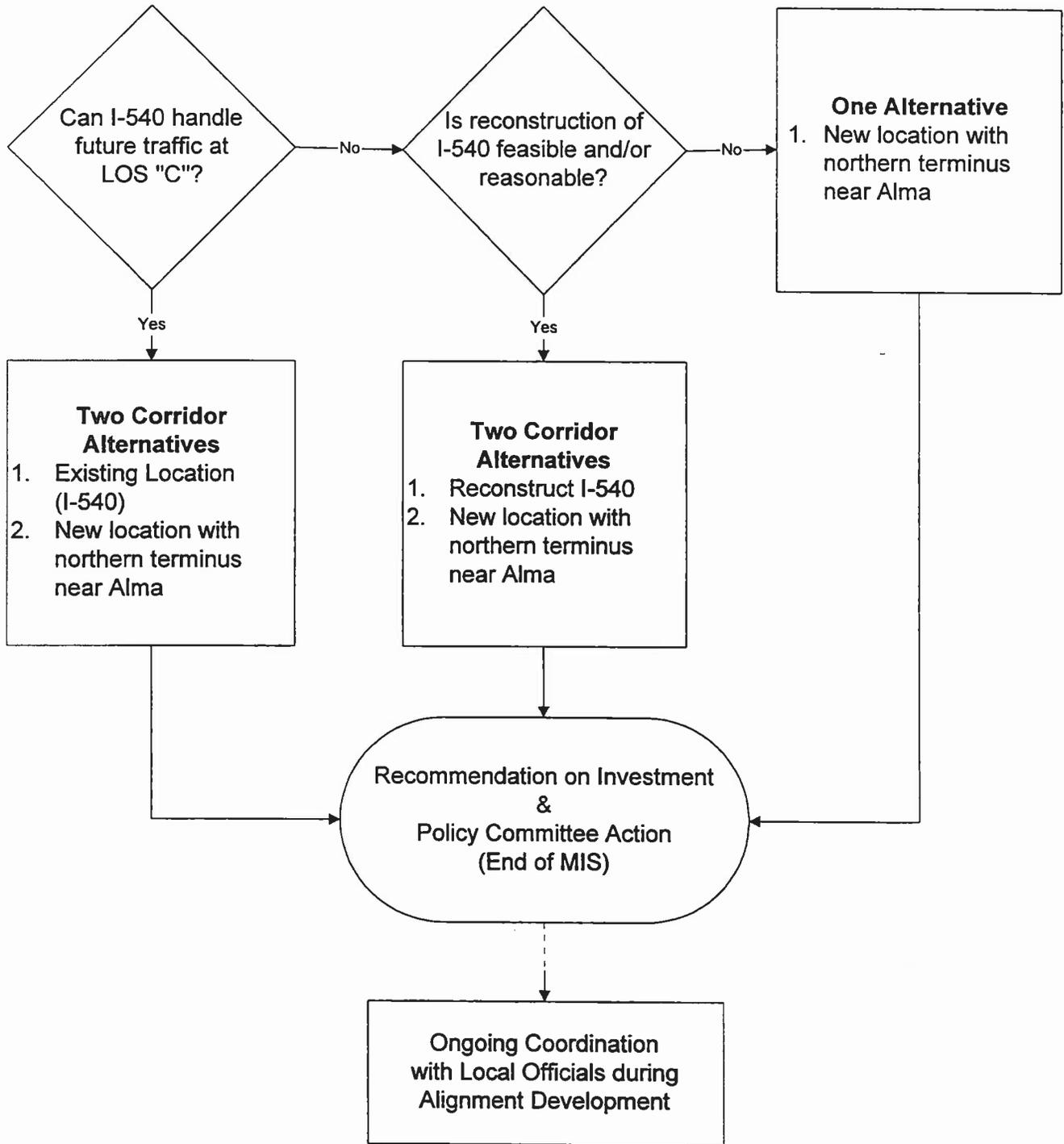
The last two bullets were considered by the group to be unreasonable solutions and were dropped from further consideration.

7. The group then set the schedule for the remaining meetings. The needs and MIS public meeting will be held on Wednesday, October 4, 1995 from 4:00 to 7:00 p.m. at Sutton Elementary School in Fort Smith. Meeting 2 of the MIS Working Group will be held on Tuesday, October 10, 1995 at 8:30 a.m. at the Fort Smith Chamber of Commerce. Meeting 3 of the MIS Working Group will be held on Tuesday, October 24, 1995 at 8:30 a.m. at the Fort Smith Chamber of Commerce. A Bi-State Policy Committee meeting will be scheduled between Thursday October 26, 1995 and Tuesday, October 31, 1995 to review the investment strategy developed from the MIS. Ken O'Donnell will notify the Bi-State Policy Committee of the need for this a meeting.

**U.S. 71
MIS - Working Group Meeting Attendance**

| Affiliation | September 13, 1995 | October 10, 1995 | October 24, 1995 |
|---|--|------------------|------------------|
| 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 | | |
| Arkansas State Highway and Transportation Department | Lynn Malbrough and Virginia Porta | | |
| Arkansas State Highway and Transportation Department District 4 | Joe Shipman | | |
| Fort Chaffee | Mr. Warren L. Johnson and 1SG Inocencio Rodriguez | | |
| Fort Smith Regional Airport | | | |
| Federal Highway Administration | Gary DalPorto | | |
| Federal Transit Administration | Due to the nature of the project, FTA felt that their involvement could be kept to a minimum. Minutes from the meetings were sent to FTA for review and comment. | | |
| The Fort Smith Port Terminal | Buck Shell | | |
| The Port of Van Buren | Jerry Janson | | |
| Public Representative | Ed Craig | | |
| Public Representative Partners in Progress | Alan Lewis | | |
| Sebastian County Judge | | | |
| Crawford County Judge | | | |
| Fort Smith Chamber of Commerce | Billy Dooly and Michael Tilley | | |
| Van Buren Chamber of Commerce | | | |

U.S. 71 MIS OBJECTIVE: To support the corridor* location decision



*(approximately 2 miles or 3,000 meters in width)

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

**PRELIMINARY SUMMARY AND CONCLUSIONS
TRANSPORTATION NEEDS**

The findings below have been excerpted from the transportation needs analysis prepared for the U.S. 71 Relocation project from DeQueen to Interstate 40. This information is for preliminary use by the Major Investment Study Working Group.

- ◆ Designated as a High-Priority Corridor in the Intermodal Surface Transportation Efficiency Act of 1991
- ◆ State and local plans and efforts have identified the project as an important factor in continued national, regional and local economic development in terms of growth in manufacturing, processing, retail and tourism
- ◆ The proposed project would complete a missing link in the regional interstate system and reduce certain trips by as much as 290 kilometers (180 miles)
- ◆ The proposed project would provide a connection between rail, bus, air and water transportation facilities currently available in the study area or immediate environs
- ◆ Capacity analyses for the existing route for year 2020 show that 85% of the existing route between I-40 and Coker Avenue operate at level of service D or lower
- ◆ Accident statistics suggest that the existing route could be improved in terms of safety by diversion of through traffic to a fully controlled access facility
- ◆ Community leaders and involved citizens have identified safety, traffic volumes and economic development as the most important issues that could be addressed by the proposed project
- ◆ The majority of involved persons anticipate regular use of the facility for work, social, retail and medical trips
- ◆ Major employers and industries and facilities dependent on trucking could benefit from an increase in transportation efficiency
- ◆ Recent growth in population, employment and income suggest a healthy economic environment that will pressure the existing transportation system in the future
- ◆ Improved access and reduced troop transportation costs are important to Fort Chaffee operations
- ◆ Social services within the study area could provide better service to communities if an interstate were provided

U.S. 71 Relocation - DeQueen to I-40

Important Definitions and Terms

Major Investment Study (MIS) - a collaborative effort that brings community officials, transportation officials and transportation providers within an MPO together, to study and evaluate the transportation needs, and develop an investment strategy that best serves the area

Investment Strategy - a transportation solution that will require the expenditure of transportation funds that will resolve a transportation need; specifies design concept and scope

Design Concept - the type or types of transportation modes used in an investment strategy

Scope - design criteria for the design concept

Metropolitan Planning Organization (MPO) - a forum for cooperative transportation decisionmaking within a metropolitan planning area

Bi-State Study Area - one of six MPOs in Arkansas and is made up of Fort Smith, Van Buren, Greenwood, Alma, Barling, Spiro (OK), Roland (OK) and parts of Sebastian and Crawford Counties

Average Annual Daily Traffic (AADT) - the number of vehicles passing a point within a 24 hour period that has been adjusted to consider seasonal and daily fluctuation

Capacity - the maximum number of vehicles that can pass a given point under prevailing roadway conditions

Level of Service - used to qualitatively describe the operational characteristics of a roadway. Ranges from level of service A (free flow condition) to level of service F (complete failure of the system). Level of service E is the value that corresponds to capacity.

Capacity Analysis - a tool used to evaluate the level of service provided by a roadway, which incorporates factors that are both measurable and immeasurable to describe the quality of service that a facility will provide. Some of the measurable factors include speed, travel time, delay, freedom to maneuver, and traffic interruptions.

Accident Rate - a unit used to measure accidents that balances out the roadway lengths and traffic volumes and allows a comparison based on the relative frequency of accidents (accidents per million vehicle miles traveled)

Latent Demand - the through traffic that would use the corridor if improved, but is currently using other north-south routes

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) - legislation passed by the U.S. Congress which sets policy to develop a National Intermodal Transportation System and establishes the National Highway System (NHS). The NHS is a system of interstate and principal arterial roadways that would establish a network of existing and planned highways to serve the travel, commerce, national defense and economic development needs of the country.

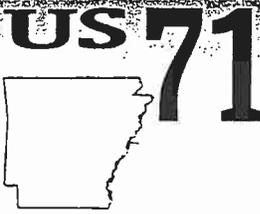
High Priority Corridor - a congressional designation applied in ISTEA to 21 corridors on the NHS considered to be nationally significant in order to connect population centers, to solve travel and economic development needs, and to improve the safety and efficiency of commerce and travel

3. PUBLIC MEETING

A Major Investment Study public meeting was held in Fort Smith at the Sutton Elementary School Cafeteria on October 4, 1995. Results of the Transportation Needs Analysis and the first MIS Working Group meeting were mounted on display boards. The public was given an opportunity to comment on the Investment Strategies developed by the Working Group.

Attachments:

- Handouts from the public meeting
- Results from the comment forms.



CORRIDOR CONNECTION

July 28, 1995

Summary of Public Involvement Meetings

MEETING OVERVIEW:

The first series of Public Involvement Meetings for the U.S. 71 Relocation between DeQueen and I-40 was held from July 11 - 14, 1995. One hundred and fifty-five citizens participated in the meetings. The objectives of the meetings were to obtain information about citizens' likes and dislikes regarding existing U.S. 71 and to identify the anticipated benefits of and the concerns about the proposed project.

A video was shown which provided an explanation of the project and the steps required to construct a highway. After viewing the video, citizens were invited to participate in small discussion groups in which three questions were asked. These discussions allowed participants to voice other comments as well. Prior to leaving the meeting, citizens were asked to fill out a questionnaire covering travel needs and highway usage.

SUMMARY OF DISCUSSIONS:

What do you like and dislike about existing U.S. 71?

LIKES: scenic views, good access to recreation, good access to all communities, secluded area

DISLIKES: too much traffic, too many trucks, unsafe, too winding, cannot pass, congested, narrow bridges, lack of shoulders, no turning lanes, not enough maintenance, too narrow, speeding, can't pass slow traffic, uncomfortable curves

What do you think the benefits of the proposed highway may be?

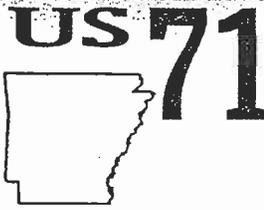
safety, reduce travel time, attract industry, reduce truck traffic on existing U.S. 71, generate tourism, scenic possibilities, towns will benefit, could provide economic diversity, improve living conditions along U.S. 71, will divert traffic from county roads

What are your concerns about the proposed highway?

property impacts, don't use existing route for interstate, decline of local businesses, must provide access to communities, increase in crime, will take too long to build - waited too long, natural resources of the area particularly the Ouachita National Forest and the Cossatot River

Other Comments: Try to keep the proposed highway within a few miles of communities and within the developed corridor, particularly through the Ouachita National Forest.

Further comments may be directed to Michael Baker Jr., Inc., 2912 Rogers Ave, Fort Smith AR 72901.



CORRIDOR CONNECTION

September 14, 1995

ANNOUNCING PUBLIC MEETINGS

The Arkansas Highway and Transportation Department (AHTD) and Michael Baker Jr., Inc. announce two public meetings to present the results of the *Transportation Needs Analysis* for the relocation of U.S. Highway 71 between DeQueen and I-40. The *Transportation Needs Analysis* has identified existing and future transportation problems within the study area which will be discussed at the meetings. Particular attention will be given to the transportation issues of the metropolitan area of Fort Smith. The public meetings will be held from 4:00 to 7:00 PM in the following communities:

- | | | |
|-------------------|----------------------|------------------------------------|
| ◆ October 4, 1995 | Fort Smith, Arkansas | Sutton Elementary School Cafeteria |
| ◆ October 5, 1995 | Mena, Arkansas | Mena Middle School Cafeteria |

PLEASE NOTE THAT ALTERNATIVE CORRIDORS WILL BE PRESENTED AT FUTURE MEETINGS IN NOVEMBER 1995, AS THIS WORK IS CURRENTLY IN PROGRESS.

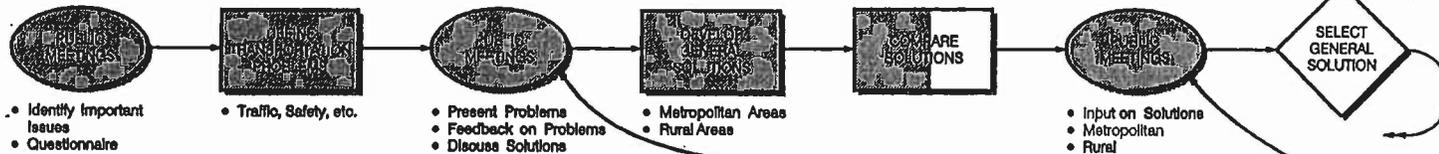
A video presenting the results of the *Transportation Needs Analysis* will be shown at the above meetings. This video will also be available for convenient viewing in the following communities:

- | | | |
|------------------------|-----------|----------------|
| ◆ DeQueen, Arkansas | City Hall | (501) 584-3445 |
| ◆ Mena, Arkansas | City Hall | (501) 394-4585 |
| ◆ Waldron, Arkansas | City Hall | (501) 637-3181 |
| ◆ Greenwood, Arkansas | City Hall | (501) 996-2742 |
| ◆ Fort Smith, Arkansas | City Hall | (501) 784-2225 |

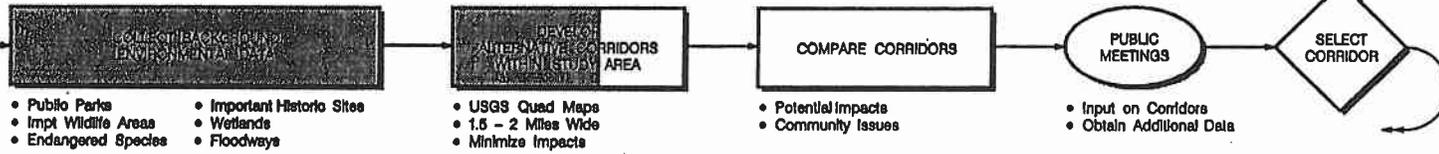
These meetings are an important part of the transportation decision-making process and your involvement is encouraged and appreciated. If you have any questions or concerns regarding these meetings or the availability of the video, please contact Michael Baker Jr., Inc., 2912 Rogers Avenue, Fort Smith AR 72901, or call 501-783-7790.

Thank you!

PHASE 1 - PROBLEM ASSESSMENT AND GENERAL SOLUTIONS

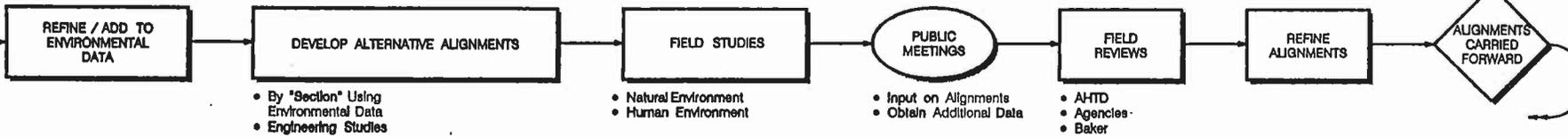


PHASE 2 - CORRIDOR LOCATION STUDIES

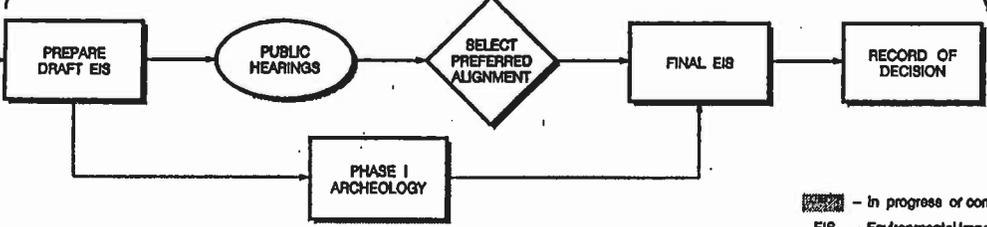


We are at these points in the Public Involvement Process

PHASE 3 - ENGINEERING AND ENVIRONMENTAL STUDIES



PHASE 4 - ENVIRONMENTAL DOCUMENTATION



- In progress or completed
 EIS - Environmental Impact Statement

**U.S. 71 Relocation
 DeQueen to I-40
 PROJECT STUDY PROCESS**

U.S. 71 Relocation DeQueen to Interstate 40

IMPORTANT DEFINITIONS AND TERMS

Major Investment Study (MIS) - a collaborative effort that brings community officials, transportation officials and transportation providers within an MPO together, to study and evaluate the transportation needs, and develop an investment strategy that best serves the area

Investment Strategy - a transportation solution that will require the expenditure of transportation funds that will resolve a transportation need; specifies design concept and scope

Design Concept - the type or types of transportation modes used in an investment strategy

Scope - design criteria for the design concept

Metropolitan Planning Organization (MPO) - a forum for cooperative transportation decisionmaking within a metropolitan planning area

Bi-State Study Area - one of six MPOs in Arkansas and is made up of Fort Smith, Van Buren, Greenwood, Alma, Barling, Spiro (OK), Roland (OK) and parts of Sebastian and Crawford Counties

Average Annual Daily Traffic (AADT) - the number of vehicles passing a point within a 24 hour period that has been adjusted to consider seasonal and daily fluctuation

Capacity - the maximum number of vehicles that can pass a given point under prevailing roadway conditions

Level of Service - used to qualitatively describe the operational characteristics of a roadway. Ranges from level of service A (free flow condition) to level of service F (complete failure of the system).

Capacity Analysis - a tool used to evaluate the level of service provided by a roadway, which incorporates factors that are both measurable and immeasurable to describe the quality of service of that facility. Some of the measurable factors include speed, travel time, delay, freedom to maneuver, and traffic interruptions.

Accident Rate - a unit used to measure accidents that balances out the roadway lengths and traffic volumes and allows a comparison based on the relative frequency of accidents (accidents per million vehicle miles traveled)

Latent Demand - the through traffic that would use the corridor if improved, but is currently using other north-south routes

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) - legislation passed by the U.S. Congress which sets policy to develop a National Intermodal Transportation System and establishes the National Highway System (NHS). The NHS is a system of interstate and principal arterial roadways that would establish a network of existing and planned highways to serve the travel, commerce, national defense and economic development needs of the country.

High Priority Corridor - a congressional designation applied in ISTEA to 21 corridors on the NHS considered to be nationally significant in order to connect population centers, to solve travel and economic development needs, and to improve the safety and efficiency of commerce and travel

**U.S. 71 Relocation
DeQueen to Interstate 40**

**TRANSPORTATION NEEDS ANALYSIS
SUMMARY OF FINDINGS**

The construction of a fully controlled access highway in the U.S. 71 study area is needed to:

- ◆ Support continued economic growth of western Arkansas as identified in the Intermodal Surface Transportation Efficiency Act of 1991, the 1988 Shreveport to Kansas City Corridor Feasibility Study prepared by AHTD and the Year 2020 Long Range Transportation Plan prepared by the Arkhoma Regional Planning Commission
- ◆ Support the population growth in the region that is expected to continue
- ◆ Complete a missing link in the regional interstate system
- ◆ Improve intermodal connectivity to airports, river ports, and rail facilities
- ◆ Remedy the level of service problems along 62% (1995) and 97% (2020) of the existing U.S. 71 corridor
- ◆ Improve safety and emergency response time through diversion of some trips to a fully controlled access facility
- ◆ Address community leaders' and involved citizens' concerns over safety, traffic volumes, truck traffic and economic development
- ◆ Increase transportation efficiency for major employers, industries and facilities dependent on trucking
- ◆ Improve access to medical facilities and other social services

**U.S. 71 Relocation
DeQueen to Interstate 40
Public Involvement Comment Form
Transportation Needs Analysis and Major Investment Study**

Fort Smith, Arkansas

October 4, 1995

Name _____ Street Address _____
City _____ State _____ Zip _____

Please answer the following questions.

Did you understand the information presented?

YES If no, please explain _____
 NO

Do you agree with the findings of the needs analysis?

YES If no, please explain _____
 NO

Do you have any comments about the investment strategies that the MIS Working Group has developed?
 YES NO If yes, please provide comments below.

Use existing location (I-540 and I-40) for high priority corridor through widening to six or eight lanes: _____

Construct an interstate type highway on new location east of I-540 and through the western end of Fort Chaffee : _____

Widen I-540 and provide high occupancy vehicle lanes (car pools and busses): _____

Implement traffic management strategies (flex hours) to reduce peak hour traffic volumes: _____

Use shoulders on I-540 during peak hours: _____

Construct exclusive "through" travel lanes which are physically separated from existing lanes but within same alignment (cantilevered above existing lanes): _____

<Please Turn Over>

Do you have any other investment strategies that you think should be considered by the MIS Working Group?

Do you have any other comments about tonight's meeting?

Do you want your name to be placed on a Mailing List? (You would be notified when a public document was ready for distribution.) YES NO

..... FOLD HERE

place
stamp
here

MICHAEL BAKER JR., INC.
2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

..... FOLD HERE

STAPLE HERE



CORRIDOR CONNECTION

SUMMARY OF OCTOBER 1995 PUBLIC MEETINGS

Public participation through informal group discussions and written comment forms was encouraged on the Transportation Needs Analysis and the Major Investment Study strategies presented. Additional comments and concerns were also noted. The following is a summary of responses gathered during the two public meetings.

FORT SMITH, ARKANSAS OCTOBER 4, 1995 TOTAL ATTENDANCE: 35

Investment Strategy Comments & General Comments

- ◆ Prefer new location corridor due to thru traffic - this should be the highest priority
- ◆ Use I-540: don't want to lose traffic
- ◆ Makes more sense to use I-540
- ◆ Demand management strategies won't work
- ◆ New location makes most sense
- ◆ Cantilever lanes won't take enough cars off I-540
- ◆ Widening of I-540 needs to be done regardless of the interstate construction
- ◆ New location east of I-540 from Alma interchange, through Fort Chaffee, and south of Greenwood is more practical; less displacement of people and businesses
- ◆ The I-69 proposal in eastern Arkansas should be considered only after I-49 is built in this part of the state

Additional Cultural Resource Information

- ◆ Unmarked cemetery south of S.H. 10 and east of U.S. 71
- ◆ Devil's Backbone Ridge Battlefield
- ◆ Massard Prairie Battlefield (east of Hiram Walker plant)

4. SECOND MIS WORKING GROUP MEETING

After the first meeting, Mr. Lewis, representative for Partners in Progress, resigned due to time constraints. Mr. Meyers suggested Bobby Ferrell as a replacement. Mr. Ferrell accepted the invitation to serve on the Working Group.

The second meeting was held at 8:30 a.m., October 10, 1995, in the Fort Smith Chamber of Commerce Conference Room. Traffic volumes for 2020 were presented for the three main "Investment Strategies": use existing I-540, provide exclusive through lanes on I-540, and build an alternative route. These numbers were based on historic growth, an origin/destination study conducted in Fort Smith in 1992, and the addition of traffic that would be diverted from other routes to the High Priority Corridor.

Attachments:

- The minutes from the second meeting
- The handouts from the second meeting.

**U.S. 71 Relocation - DeQueen to I-40
Location Study and Environmental Impact Statement**

Meeting Minutes

Subject: Major Investment Study Working Group Meeting 2

Attendees: See attached list

Time and Place: 8:30 a.m., October 10, 1995, Fort Smith Chamber of Commerce

1. The meeting began with a review of the minutes of the September 13, 1995 meeting. A short discussion yielded a revision to the minutes to include "Transit Alternative" to the list of Investment Strategies that resulted from the brain storming session. The Working Group approved the minutes as amended.
2. The group reviewed the Major Investment Study process as approved by the Bi-State Policy Committee. Several members of the Working Group commented on the low attendance at the public meeting and the lack of coverage in the Southwest Times Record. Mr. Harold Beaver suggested that news releases be sent to Pat Halverson within days of the next public meeting. This was noted by Baker.

Mr. O.B. McKinney noted that the community and people he is representing would like the High Priority corridor to be a more direct route than would occur with the "Use of I-540 and I-40 as the Corridor" Investment Strategy.

3. The next topic was a continuation of the feasibility discussion of the last meeting. At the previous meeting, the Working Group felt that they needed additional traffic information in order to eliminate more alternatives. Since that meeting, Baker refined the traffic volumes and began defining the "scope" of the three major design concepts: Use I-540 and I-40 as the Corridor, Provide an Exclusive Through Travel Lane, and Build an Alternative Route East of I-540. The traffic examination is attached to these minutes.

Before the Working Group reviewed the traffic examination, Baker presented an overview that illustrated the magnitude of the traffic volumes anticipated for 2020. The daily traffic volume at which the level of service would drop from C to D was calculated for I-540 and I-40 under four lane, six lane, and eight lane conditions. Eight lanes would be needed between U.S. 71 and Old Greenwood Road, ten lanes would be needed between Old Greenwood Road and Rogers Avenue, eight lanes would be needed between Rogers Avenue and Grand Avenue, ten lanes would be needed between Grand Avenue and Kelley Highway, eight lanes would be needed between Kelley Highway and U.S. 64, and six lanes would be needed from U.S. 64 and I-40. I-40 would need a total of six lanes in the year 2020, if the existing routes are to be used as the High Priority corridor. Mr. Richard Haberman questioned the "reasonableness" of widening I-540 to 4 lanes in each direction particularly in an urban area where the interchanges are closely spaced.

The first set of traffic examination tables evaluated the "Use I-540 and I-40 as the Corridor" Investment Strategy. The first table provided the percentages of traffic reduction required to enable the strategy to operate at level of service C under 4 lane, 6 lane or 8 lane conditions. The second table presents the daily traffic volumes and the corresponding levels of service for four, six and eight lane conditions. The information demonstrated that reduction to traffic volumes in 4 segments would be necessary for I-540 to meet the traffic demand, even if 8 lanes were provided.

The second set of traffic examination tables evaluated the "Provide an Exclusive Through Travel Lanes" Investment Strategy. The result of this evaluation concluded that even if an exclusive through lane was provided, I-540 would need to be widened an additional 4 lanes to handle the traffic.

The final set of traffic examination tables evaluated the "Build an Alternative Route East of I-540" Investment Strategy. The forecasted traffic volumes on the new location were determined using an origin destination study conducted in the Fort Smith area in 1992. Using the travel patterns from that study, it was found that a new road east of I-540 would serve about 28,000 vehicles per day. This diversion would relieve most but not all of the traffic problems anticipated on I-540 for 2020.

4. After the presentation of the traffic information, the Working Group felt that a purely non-highway construction alternative would not be feasible. The Working Group reviewed the original list of Investment Strategies (including the transit alternative) and decided to remove the "Provide an Exclusive Through Travel Lane" Investment Strategy as a reasonable alternative. Discussions on elimination of the Investment Strategies continued, and the Working Group agreed that the "Widen I-540 and Use the Lane as a High Occupancy Vehicle Lane" was unreasonable. For this alternative to be affective, an unreasonably large amount of participation would be required in order to relieve traffic problems. However, a High Occupancy Vehicle program was retained as a valid non-highway construction strategy, to perhaps be used in conjunction with another strategy.
5. Based on this new traffic information, the Working Group felt that a refinement of the original Investment Strategies was needed. As the group began to refine the strategies, the overall purpose of the Major Investment Study was discussed. The primary responsibility of the Working Group is to make a recommendation for the design concept and scope of the High Priority corridor, not to solve the traffic deficiencies of I-540 unless I-540 is recommended as the High Priority corridor. If the Working Group recommends the "Build an Alternative Route East of I-540" Investment Strategy, the group will address any remaining I-540 traffic problems by recommending an action plan that would occur after the completion of this MIS.

The results of the refinement of the Investment Strategies yielded the following:

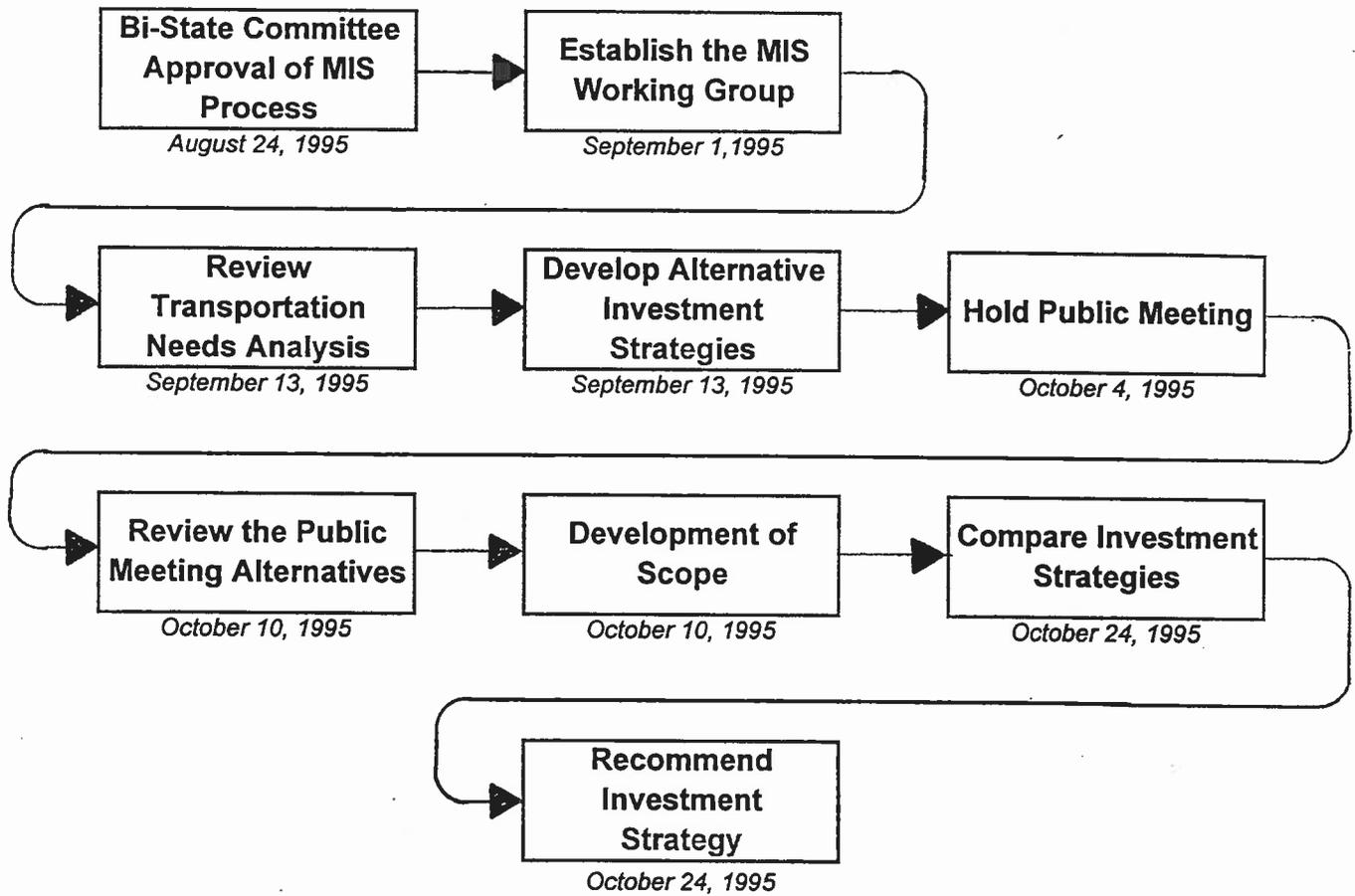
- 1.a Widen I-540 to 8 lanes and I-40 to 6 lanes and accept level of service D for the operations of I-540
 - 1.b Widen I-540 to 8 lanes and I-40 to 6 lanes and use a combination of non-highway construction strategies to reduce traffic to level of service C
 2. Build an interstate type highway east of I-540, through the western portion of Fort Chaffee and recommend an action plan to address the traffic problems that may remain on I-540.
6. The next topic of discussion was to address how these three Investment Strategies will be evaluated. Baker presented a list of Measurements of Effectiveness that fall within 6 categories: Purpose, Needs, Ease of Implementation, Impacts, Acceptance, and Relative Cost. The specific measurements are attached to these minutes. The Working Group agreed with these measurements but thought that some measurements were more important than others. Discussion of the importance of each category yielded the following results. The measurements within the Purpose category would make up 40 % of the decision, the measurements within the Needs category would make up 20 % of the decision, the measurements within the Ease of Implementation category would make up 10 % of the decision, the measurements within the Impacts and Acceptance categories were combined and would make up 15 % of the decision, and the measurements within the Relative Cost category would make up 15 % of the decision.

Baker will conduct the testing of the Measurements of Effectiveness on the refined Investment Strategies and the results will be sent to the Working Group for comments. Comments should be made quickly to enable the results to be finalized for the next meeting on October 24, 1995. At that meeting the Working Group will choose an Investment Strategy and draft a recommendation for the Bi-State Committee.

U.S. 71
MIS - Working Group Meeting Attendance

| Affiliation | September 13, 1995 | October 10, 1995 | October 24, 1995 |
|---|---|-----------------------------------|------------------|
| Arkoma Regional Planning Commission | Ken O'Donnell | Ken O'Donnell | |
| City of Fort Smith | Van Lee | Van Lee | |
| City of Van Buren | Carl Hines | | |
| City of Barling | Richard Haberman | Richard Haberman | |
| City of Greenwood | O. B. McKinney | O. B. McKinney | |
| Fort Smith Planning Commission | Lynn Snyder | Lynn Snyder | |
| Arkansas State Highway and Transportation Department | Lynn Malbrough and Virginia Porta | Lynn Malbrough and Virginia Porta | |
| Arkansas State Highway and Transportation Department District 4 | Joe Shipman | Harold Beaver | |
| Fort Chaffee | Mr. Warren L. Johnson and 1SG Inocencio Rodriguez | 1SG Inocencio Rodriguez | |
| Fort Smith Regional Airport | | Bob Johnson | |
| Federal Highway Administration | Gary DalPorto | | |
| Federal Transit Administration | Due to the nature of the project, FTA felt that their involvement could be kept to a minimum. Minutes from the meetings were sent to FTA for review and comment. | | |
| The Fort Smith Port Terminal | Buck Shell | | |
| The Port of Van Buren | Jerry Janson | | |
| Public Representative | Ed Craig | Ed Craig | |
| Public Representative Partners in Progress | Alan Lewis | Bobby Ferrell | |
| Sebastian County Judge | | | |
| Crawford County Judge | | | |
| Fort Smith Chamber of Commerce | Billy Dooly and Michael Tilley | Michael Tilley | |
| Van Buren Chamber of Commerce | | Marjorie Armstrong | |

The Major Investment Study Process



INVESTMENT STRATEGY: Use I-540 and I-40 as the Corridor

Required Reduction of 2020 AADT for LOS C

| FROM | TO | % REDUCTION | | |
|----------------------|-----------------------------|-------------|---------|---------|
| | | 4 lanes | 6 lanes | 8 lanes |
| U.S. 71 | S.H. 255 (ZERO STREET) | 40% | 9% | NONE |
| S.H. 255 | S.H. 45 (OLD GREENWOOD RD.) | 47% | 20% | NONE |
| S.H. 45 | PHOENIX AVE. ON-RAMP (EB) | 53% | 30% | 9% |
| PHOENIX AVE. ON-RAMP | LEIGH AVE. | 50% | 26% | 3% |
| LEIGH AVE. | S.H. 22 (ROGERS AVE.) | 52% | 29% | 7% |
| S.H. 22 | GRAND AVE. | 49% | 23% | NONE |
| GRAND AVE. | KELLEY HWY. | 51% | 27% | 5% |
| KELLEY HWY. | S.H. 59 | 41% | 12% | NONE |
| S.H. 59 | U.S. 71/ U.S. 64 | 34% | 1% | NONE |
| U.S. 71/ U.S. 64 | I-40 | 13% | NONE | NONE |
| I-40 | ALMA INTERCHANGE | 7% | NONE | NONE |

Source: Michael Baker Jr., Inc.

2020 Traffic Volumes and Levels of Service

| FROM: | TO: | DAILY TRAFFIC VOLUMES | LEVEL OF SERVICE | | |
|----------------------|-----------------------------|-----------------------|------------------|---------|-------------|
| | | | 4 lanes | 6 lanes | 8 lanes |
| U.S. 71 | S.H. 255 (ZERO ST.) | 71,100 | F | D | C or better |
| S.H. 255 | S.H. 45 (OLD GREENWOOD RD.) | 80,600 | F | D | C or better |
| S.H. 45 | PHOENIX AVE. ON-RAMP (EB) | 92,400 | F | E | D or worse |
| PHOENIX AVE. ON-RAMP | LEIGH AVE. | 86,700 | F | E | D or worse |
| LEIGH AVE. | S.H. 22 (ROGERS AVE.) | 90,400 | F | E | D or worse |
| S.H. 22 | GRAND AVE. | 83,500 | F | E | C or better |
| GRAND AVE. | KELLEY HWY. | 88,600 | F | E | D or worse |
| KELLEY HWY. | S.H. 59 | 73,300 | F | D | C or better |
| S.H. 59 | U.S. 71/ U.S. 64 | 65,000 | F | D | C or better |
| U.S. 71/ U.S. 64 | I-40 | 49,300 | D | C | C or better |
| I-40 | ALMA INTERCHANGE | 46,300 | D | C | C or better |

Source: Michael Baker Jr., Inc.

INVESTMENT STRATEGY: Provide an Exclusive Through Travel Lane

Required Reduction of 2020 AADT for LOS C

| FROM | TO | % REDUCTION | | |
|----------------------|-----------------------------|-------------|---------|---------|
| | | 4 lanes | 6 lanes | 8 lanes |
| U.S. 71 | S.H. 255 (ZERO STREET) | 30% | NONE | NONE |
| S.H. 255 | S.H. 45 (OLD GREENWOOD RD.) | 39% | 9% | NONE |
| S.H. 45 | PHOENIX AVE. ON-RAMP (EB) | 48% | 22% | NONE |
| PHOENIX AVE. ON-RAMP | LEIGH AVE. | 44% | 16% | NONE |
| LEIGH AVE. | S.H. 22 (ROGERS AVE.) | 47% | 20% | NONE |
| S.H. 22 | GRAND AVE. | 42% | 12% | NONE |
| GRAND AVE. | KELLEY HWY. | 45% | 18% | NONE |
| KELLEY HWY. | S.H. 59 | 32% | NONE | NONE |
| S.H. 59 | U.S. 71/ U.S. 64 | 22% | NONE | NONE |
| U.S. 71/ U.S. 64 | I-40 | NONE | NONE | NONE |
| I-40 | ALMA INTERCHANGE | 7% | NONE | NONE |

Source: Michael Baker Jr., Inc.

2020 Traffic Volumes and Levels of Service

| FROM: | TO: | VOLUMES ON EXCLUSIVE LANE | LEVEL OF SERVICE | VOLUMES REMAINING ON UNRESTRICTED LANES | LEVEL OF SERVICE | |
|------------------|-----------------------------|---------------------------|--------------------------|---|------------------|-------------|
| | | | 1 lane in each direction | | 4 lanes | 6 lanes |
| U.S. 71 | S.H. 255 (ZERO ST.) | 9,900 | adequate | 61,200 | F | C or better |
| S.H. 255 | S.H. 45 (OLD GREENWOOD RD.) | 9,900 | adequate | 70,700 | F | F |
| S.H. 45 | PHOENIX AVE. ON-RAMP (EB) | 9,900 | adequate | 82,500 | F | F |
| ON-RAMP | LEIGH AVE. | 9,900 | adequate | 76,800 | F | F |
| LEIGH AVE. | S.H. 22 (ROGERS AVE.) | 9,900 | adequate | 80,500 | F | F |
| S.H. 22 | GRAND AVE. | 9,900 | adequate | 73,600 | F | F |
| GRAND AVE. | KELLEY HWY. | 9,900 | adequate | 78,700 | F | F |
| KELLEY HWY. | S.H. 59 | 9,900 | adequate | 63,400 | F | C or better |
| S.H. 59 | U.S. 71/ U.S. 64 | 9,900 | adequate | 55,100 | F | C or better |
| U.S. 71/ U.S. 64 | I-40 | 9,900 | adequate | 39,400 | C or better | C or better |
| I-40 | ALMA INTERCHANGE | 0 | adequate | 46,300 | D | C or better |

Source: Michael Baker Jr., Inc.

INVESTMENT STRATEGY: Build an Alternative Route East of I-540

Required Reduction of 2020 AADT for LOS C

| FROM | TO | % REDUCTION | |
|----------------------|-----------------------------|-------------|---------|
| | | 4 lanes | 6 lanes |
| U.S. 71 | S.H. 255 (ZERO STREET) | NONE | NONE |
| S.H. 255 | S.H. 45 (OLD GREENWOOD RD.) | 18% | NONE |
| S.H. 45 | PHOENIX AVE. ON-RAMP (EB) | 33% | NONE |
| PHOENIX AVE. ON-RAMP | LEIGH AVE. | 26% | NONE |
| LEIGH AVE. | S.H. 22 (ROGERS AVE.) | 31% | NONE |
| S.H. 22 | GRAND AVE. | 20% | NONE |
| GRAND AVE. | KELLEY HWY. | 27% | NONE |
| KELLEY HWY. | S.H. 59 | 1% | NONE |
| S.H. 59 | U.S. 71/ U.S. 64 | NONE | NONE |
| U.S. 71/ U.S. 64 | I-40 | NONE | NONE |
| I-40 | ALMA INTERCHANGE | NONE | NONE |

Source: Michael Baker Jr., Inc.

2020 Traffic Volumes and Levels of Service

| FROM: | TO: | ON THE NEW ROAD | LEVEL OF SERVICE | ON I-540 AND I-40 | LEVEL OF SERVICE | |
|------------------|--------------------------------|--------------------|---------------------|----------------------|---------------------|---------|
| | | | 4 lanes | | 4 lanes | 6 lanes |
| U.S. 71 | S.H. 255 (ZERO ST.) | 28,200 | C or better | 42,900 | C | B |
| S.H. 255 | S.H. 45 (OLD GREENWOOD RD.) | 28,200 | C or better | 52,400 | D | C |
| S.H. 45 | PHOENIX AVE. ON-RAMP (EB) | 28,200 | C or better | 64,200 | F | C |
| ON-RAMP | LEIGH AVE. | 28,200 | C or better | 58,500 | E | C |
| LEIGH AVE. | S.H. 22 (ROGERS AVE.) | 28,200 | C or better | 62,200 | E | C |
| S.H. 22 | GRAND AVE. | 29,800 | C or better | 53,700 | D | C |
| GRAND AVE. | KELLEY HWY. | 29,800 | C or better | 58,800 | E | C |
| KELLEY HWY. | S.H. 59 | 29,800 | C or better | 43,500 | D | C |
| S.H. 59 | U.S. 71/ U.S. 64 | 29,800 | C or better | 35,200 | C | B |
| U.S. 71/ U.S. 64 | I-40 | 29,800 | C or better | 19,500 | B | A |
| I-40 | ALMA INTERCHANGE | 24,300 | C or better | 22,000 | B | A |

Source: Michael Baker Jr., Inc.

Measurements of Effectiveness

PURPOSE:

Provides a continuous interstate system that will operate at LOS C.

MEASUREMENT: +1: YES -1: NO

Provides a facility that serves the needs of the high priority corridor traveler.

MEASUREMENT: +1: highly effective 0: effective -1: not effective

Provides connections to the existing roadway network and intermodal facilities.

MEASUREMENT: +1: highly effective 0: effective -1: not effective

Provides for development potential as defined by the Working Group.

MEASUREMENT: +1: high potential 0: medium potential -1: low potential

Provides for future capacity needs or addition of alternative mode uses.

MEASUREMENT: +1: YES -1: NO

NEEDS:

Provides improved serviceability of I-540.

MEASUREMENT: +1: significant improvement 0: improvement -1: no improvement

Provides a facility with improved safety for the through traffic volume.

MEASUREMENT: +1: high probability 0: may improve -1: low probability

Meets the area's long range plans and ISTEA.

MEASUREMENT: +1: YES -1: NO

EASE OF IMPLEMENTATION:

Anticipated disruption to the community and to the users of I-540.

MEASUREMENT: +1: minor 0: moderate -1: major

Level of effort required to implement strategy (education, public relations and behavior changes of the current users of I-540).

MEASUREMENT: +1: minor 0: moderate -1: major

IMPACTS & ACCEPTANCE:

Potential probability of impacts to environment.

MEASUREMENT: +1: low 0: medium -1: high

Potential number of residential displacements.

MEASUREMENT: +1: low 0: medium -1: high

Potential number of business displacements.

MEASUREMENT: +1: low 0: medium -1: high

Potential probability of impacts to historic resources.

MEASUREMENT: +1: low 0: medium -1: high

Investment strategy will be supported by community.

MEASUREMENT: +1: most support 0: mixed support -1: least support

RELATIVE COST:

Relative cost of interchange construction or reconstruction.

MEASUREMENT: +1: lower 0: average -1: higher

Relative cost of Arkansas River bridge construction or reconstruction.

MEASUREMENT: +1: lower 0: average -1: higher

Relative cost of right of way acquisition. (businesses and land)

MEASUREMENT: +1: lower 0: average -1: higher

Relative cost of maintenance and protection of traffic during construction.

MEASUREMENT: +1: lower 0: average -1: higher

5. MEASUREMENTS OF EFFECTIVENESS EVALUATION

In preparation for the third meeting, Michael Baker Jr., Inc. evaluated the effectiveness of the remaining Investment Strategies. This evaluation was presented at the third meeting, where the Working Group had an opportunity to comment on the evaluation. Based on the comments made at the third meeting, minor adjustments were made.

Results of the Measurements of Effectiveness evaluation are attached.

Measurements of Effectiveness

| Investment Strategy: | | 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 | | |
| | AVERAGE | -0.8 | 40% | -0.32 | -0.2 | 40% | -0.08 | 0.8 | 40% | 0.32 |
| NEEDS: | Improved Serviceability of I-540 | -1 | | | 0 | | | 0 | | |
| | Improves Safety | -1 | | | -1 | | | 1 | | |
| | Meets Transportation Plans | -1 | | | -1 | | | 1 | | |
| | AVERAGE | -1 | 20% | -0.20 | -0.67 | 20% | -0.13 | 0.67 | 20% | 0.13 |
| EASE OF IMPLEMENTATION: | Disruption to the Community and I-540 Users | -1 | | | -1 | | | 1 | | |
| | Education and Public Relations Requirements | 0 | | | -1 | | | 1 | | |
| | AVERAGE | -0.5 | 5% | -0.03 | -1 | 5% | -0.05 | 1 | 5% | 0.05 |
| 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 | | |
| | AVERAGE | 0 | 15% | 0.00 | -0.2 | 15% | -0.03 | 0.4 | 15% | 0.06 |
| 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 | | |
| | AVERAGE | -1 | 20% | -0.20 | -1 | 20% | -0.20 | 0.5 | 20% | 0.10 |
| | | -0.75 | | | -0.49 | | | 0.66 | | |

6. THIRD MIS WORKING GROUP MEETING

The third meeting was held at 8:30 a.m., October 24, 1995, in the Fort Smith Chamber of Commerce Conference Room. In preparation for this meeting, additional traffic volumes that showed the yearly projected growth from 1994 to 2020 were calculated for the remaining Investment Strategies. Also prepared for this meeting was the Measurements of Effectiveness evaluation results and a draft recommendation. The Working Group commented on the Measurements of Effectiveness evaluation and the draft recommendation and made minor adjustments to both. These items were amended prior to the mailing of the minutes.

Attachments:

- The minutes from the third meeting
- The handouts from the third meeting.

**U.S. 71 Relocation - DeQueen to I-40
Location Study and Environmental Impact Statement**

Meeting Minutes

Subject: Major Investment Study Working Group Meeting 3

Attendees: See attached list

Time and Place: 8:30 a.m., October 24, 1995, Fort Smith Chamber of Commerce

1. The meeting began with a review of the minutes of the October 10, 1995 meeting. The Working Group approved the minutes.
2. The group reviewed the traffic information that considered traffic projections on a year by year basis for the two basic Investment Strategies (see attached). No questions were raised on the information presented.
3. The group next discussed the results of the measurements of effectiveness evaluation. A display board presenting environmental constraints for the project area was discussed. The constraints included wetlands, public parks, floodways and archaeological and historic sites (not shown). The group was informed of the potential relative effects to these resources, as well as the potential effects to farmlands and air and noise issues that must be assessed subsequent to the MIS. The discussion resulted in the addition of a measurement to consider the relative cost of facility maintenance. The results of this evaluation did not significantly change the overall outcome of the Measurements of Effectiveness.
4. After a short discussion period, the group came to a consensus to recommend the "Build an interstate type highway east of I-540 through the western portion of Fort Chaffee and recommend an Action Plan to address the traffic problems that may remain on I-540" Investment Strategy.
5. The group reviewed and refined a draft recommendation for this Investment Strategy which will be sent to the Bi-State Policy Committee. The final recommendation is attached.

U.S. 71
MIS - Working Group Meeting Attendance

| Affiliation | September 13, 1995 | October 10, 1995 | October 24, 1995 |
|---|---|-----------------------------------|-----------------------------------|
| Arkoma Regional Planning Commission | Ken O'Donnell | Ken O'Donnell | Ken O'Donnell |
| City of Fort Smith | Van Lee | Van Lee | Van Lee |
| City of Van Buren | Carl Hines | | |
| City of Barling | Richard Haberman | Richard Haberman | |
| City of Greenwood | O. B. McKinney | O. B. McKinney | O. B. McKinney |
| Fort Smith Planning Commission | Lynn Snyder | Lynn Snyder | Lynn Snyder |
| Arkansas State Highway and Transportation Department | Lynn Malbrough and Virginia Porta | Lynn Malbrough and Virginia Porta | Lynn Malbrough and Virginia Porta |
| Arkansas State Highway and Transportation Department District 4 | Joe Shipman | Harold Beaver | Harold Beaver |
| Fort Chaffee | Mr. Warren L. Johnson and 1SG Inocencio Rodriguez | 1SG Inocencio Rodriguez | 1SG Inocencio Rodriguez |
| Fort Smith Regional Airport | | Bob Johnson | Dave Krutsch |
| Federal Highway Administration | Gary DalPorto | | Gary DalPorto |
| Federal Transit Administration | Due to the nature of the project, FTA felt that their involvement could be kept to a minimum. Minutes from the meetings were sent to FTA for review and comment. | | |
| The Fort Smith Port Terminal | Buck Shell | | Buck Shell |
| The Port of Van Buren | Jerry Janson | | |
| Public Representative | Ed Craig | Ed Craig | |
| Public Representative Partners in Progress | Alan Lewis | Bobby Ferrell | Bobby Ferrell |
| Sebastian County Judge | | | Judge W. R. Harper |
| Crawford County Judge | | | |
| Fort Smith Chamber of Commerce | Billy Dooly and Michael Tilley | Michael Tilley | Michael Tilley |
| Van Buren Chamber of Commerce | | Marjorie Armstrong | Marjorie Armstrong |

U.S. 71 Relocation - DeQueen to I-40 Major Investment Study

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 | 90,300 | 83,500 | 88,600 | 73,300 | 65,000 | 49,300 | 46,300 |

Opening Year

-  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

U.S. 71 Relocation - DeQueen to I-40 Major Investment Study

I-540/I-40 Traffic Volumes by Year Under "Build an Alternative Route" Investment Strategy

| From: | US 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 |

Opening Year

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

Measurements of Effectiveness

| Investment Strategy: | | 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 | | | East of I-540 Through the Western Portion of Fort 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 | | |
| | AVERAGE | -0.8 | 40% | -0.32 | -0.2 | 40% | -0.08 | 0.8 | 40% | 0.32 |
| NEEDS: | Improved Serviceability of I-540 | -1 | | | 0 | | | 0 | | |
| | Improves Safety | -1 | | | -1 | | | 1 | | |
| | Meets Transportation Plans | -1 | | | -1 | | | 1 | | |
| AVERAGE | -1 | 20% | -0.20 | -0.67 | 20% | -0.13 | 0.67 | 20% | 0.13 | |
| EASE OF IMPLEMENTATION: | Disruption to the Community and I-540 Users | -1 | | | -1 | | | 1 | | |
| | Education and Public Relations Requirements | 0 | | | -1 | | | 1 | | |
| AVERAGE | -0.5 | 5% | -0.03 | -1 | 5% | -0.05 | 1 | 5% | 0.05 | |
| 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 | | |
| | AVERAGE | 0 | 15% | 0.00 | -0.2 | 15% | -0.03 | 0.4 | 15% | 0.06 |
| 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 | | |
| | AVERAGE | -1 | 20% | -0.20 | -1 | 20% | -0.20 | 0.2 | 20% | 0.04 |
| | | -0.75 | | | -0.49 | | | 0.60 | | |

Measurements of Effectiveness Explanation

INVESTMENT STRATEGY: Widen I-540 to 8-lanes and I-40 to 6-lanes and accept level of service D for the operations of I-540.

PURPOSE:

Provides a continuous interstate system that will operate at LOS C.

MEASUREMENT: +1: YES -1: NO

The strategy will allow operation at level of service D.

Provides a facility that serves the needs of the high priority corridor traveler.

MEASUREMENT: +1: highly effective 0: effective -1: not effective

Facility mixes trip purposes; through travelers mix with local trips and the many merge and diverge points associated with an urban facility.

Provides connections to the existing roadway network and intermodal facilities.

MEASUREMENT: +1: highly effective 0: effective -1: not effective

Provides the same connections that exist today.

Provides for development potential as defined by the Working Group.

MEASUREMENT: +1: high potential 0: medium potential -1: low potential

No new areas are opened to access with this strategy.

Provides for future capacity needs or addition of alternative mode uses.

MEASUREMENT: +1: YES -1: NO

Capacity of the facility will be exhausted and right-of-way will be pushed to the limits in order to construct two additional lanes in each direction.

NEEDS:

Provides improved serviceability of I-540.

MEASUREMENT: +1: significant improvement 0: improvement -1: no improvement

Yields a lower level of service on I-540.

Provides a facility with improved safety for the through traffic volume.

MEASUREMENT: +1: high probability 0: may improve -1: low probability

This strategy does not separate the through traffic from the local short trips. Through trips must deal with frequent merge and diverge areas. This strategy increases the volume on a facility currently operating with high accident rates.

Meets the area's long range plans and ISTEPA.

MEASUREMENT: +1: YES -1: NO

Long range plans call for separate facility.

EASE OF IMPLEMENTATION:

Anticipated disruption to the community and to the users of I-540.

MEASUREMENT: +1: minor 0: moderate -1: major

Construction congestion, right-of-way acquisition and decreased level of service will disrupt surrounding communities and users.

Level of effort required to implement strategy (education, public relations and behavior changes of the current users of I-540).

MEASUREMENT: +1: minor 0: moderate -1: major

Public must be made aware of construction delays and land/business acquisition procedures.

IMPACTS & ACCEPTANCE:

Potential probability of impacts to environment.

MEASUREMENT: +1: low 0: medium -1: high

Potential number of residential displacements.

MEASUREMENT: +1: low 0: medium -1: high

Many neighborhoods line the roadway segment (I-540); construction will require the purchase of additional right-of-way.

Potential number of business displacements.

MEASUREMENT: +1: low 0: medium -1: high

Interchange construction will displace businesses at the cross roads. Twenty-two businesses could be affected.

Potential probability of impacts to historic resources.

MEASUREMENT: +1: low 0: medium -1: high

Investment strategy will be supported by community.

MEASUREMENT: +1: most support 0: mixed support -1: least support

RELATIVE COST:

Relative cost of interchange construction or reconstruction.

MEASUREMENT: +1: lower 0: average -1: higher

Working within restricted areas will elevate the costs of design and construction.

Relative cost of Arkansas River bridge construction or reconstruction.

MEASUREMENT: +1: lower 0: average -1: higher

Restricted area may prohibit construction of a twin structure to carry the additional lanes. Doubling the size of the existing bridge may be the more expensive alternative.

Please note: unit cost estimates for construction of other Arkansas urban widening projects (I- 30 and I-67) were compared to actual unit cost of the newly opened Arkansas 540 (I-40 to Mountainburg). This comparison showed that the construction cost of widening could be 35% more than the cost of constructing a new highway.

Relative cost of right of way acquisition. (businesses and land)

MEASUREMENT: +1: lower 0: average -1: higher

Much of the land required for right-of-way has been developed. Acquiring businesses and commercial land may be cost prohibitive.

Relative cost of maintenance and protection of traffic during construction.

MEASUREMENT: +1: lower 0: average -1: higher

Traffic will need to be protected the entire length of the project, not just at cross roads. Maintaining traffic while constructing lanes will elevate the cost to insure safety to workers and drivers.

Relative cost of the facility maintenance costs.

MEASUREMENT: +1: low 0: average -1: high

This alternative would utilize a roadway surface that is 8 years old west of S.H. 22 and over 10 years old east of S.H. 22. Rehabilitation of these lanes may be done during the widening construction. However, It is likely that the existing lanes would require resurfacing prior to the design year 2020. Maintenance and Protection of traffic during this maintenance activity would add to the cost considerably.

INVESTMENT STRATEGY: 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 level of service C.

PURPOSE:

Provides a continuous interstate system that will operate at LOS C.

MEASUREMENT: +1: YES -1: NO

Provides a facility that serves the needs of the high priority corridor traveler.

MEASUREMENT: +1: highly effective 0: effective -1: not effective

Level of service C achieved but facility mixes trip purposes. Through travelers mix with local trips and the many merge and diverge points associated with an urban facility.

Provides connections to the existing roadway network and intermodal facilities.

MEASUREMENT: +1: highly effective 0: effective -1: not effective

Provides the same connections that exist today.

Provides for development potential as defined by the Working Group.

MEASUREMENT: +1: high potential 0: medium potential -1: low potential

No new areas are opened to access with this strategy.

Provides for future capacity needs or addition of alternative mode uses.

MEASUREMENT: +1: YES -1: NO

Capacity of the facility will be exhausted and right-of-way will be pushed to the limits in order to construct two additional lanes in each direction.

NEEDS:

Provides improved serviceability of I-540.

MEASUREMENT: +1: significant improvement 0: improvement -1: no improvement

Provides a facility with improved safety for the through traffic volume.

MEASUREMENT: +1: high probability 0: may improve -1: low probability

This strategy does not separate the through traffic from the local short trips. Through trips must deal with frequent merge and diverge areas. This strategy increases the volume on a facility currently operating with high accident rates.

Meets the area's long range plans and ISTEPA.

MEASUREMENT: +1: YES -1: NO

Long range plans call for separate facility.

EASE OF IMPLEMENTATION:

Anticipated disruption to the community and to the users of I-540.

MEASUREMENT: +1: minor 0: moderate -1: major

Construction congestion, right-of-way acquisition, and decreased level of service will disrupt surrounding communities and users.

Level of effort required to implement strategy (education, public relations and behavior changes of the current users of I-540).

MEASUREMENT: +1: minor 0: moderate -1: major

In addition to educating the public on traffic congestion during construction and right-of-way acquisition procedures, a large effort will be needed to implement non-construction traffic reduction measures such as car-pooling and transit usage.

IMPACTS & ACCEPTANCE:

Potential probability of impacts to environment.

MEASUREMENT: +1: low 0: medium -1: high

Potential number of residential displacements.

MEASUREMENT: +1: low 0: medium -1: high

Many neighborhoods line the roadway segment (I-540); construction will require the purchase of additional right-of-way.

Potential number of business displacements.

MEASUREMENT: +1: low 0: medium -1: high

Interchange construction will displace businesses at the cross roads. Twenty-two businesses could be affected.

Potential probability of impacts to historic resources.

MEASUREMENT: +1: low 0: medium -1: high

Investment strategy will be supported by community.

MEASUREMENT: +1: most support 0: mixed support -1: least support

Many of the non-construction strategies will require the voluntary participation in a community that is accustomed to driving in their own cars.

RELATIVE COST:

Relative cost of interchange construction or reconstruction.

MEASUREMENT: +1: lower 0: average -1: higher

Working within restricted areas will elevate the costs of design and construction.

Relative cost of Arkansas River bridge construction or reconstruction.

MEASUREMENT: +1: lower 0: average -1: higher

Restricted area may prohibit construction of a twin structure to carry the additional lanes. Doubling the size of the existing bridge will be a more expensive alternative.

Please note: unit cost estimates for construction of other Arkansas urban widening projects (I- 30 and I-67) were compared to actual unit cost of the newly opened Arkansas 540 (I-40 to Mountainburg). This comparison showed that the construction cost of widening could be 35% more than the cost of constructing a new highway.

Relative cost of right of way acquisition. (businesses and land)

MEASUREMENT: +1: lower 0: average -1: higher

Much of the land required for right-of-way has been developed. Acquiring businesses and commercial land may be cost prohibitive.

Relative cost of maintenance and protection of traffic during construction.

MEASUREMENT: +1: lower 0: average -1: higher

Traffic will need to be protected the entire length of the project, not just at cross roads. Maintaining traffic while constructing lanes will elevate the cost to insure safety to workers and drivers.

Relative cost of the facility maintenance costs.

MEASUREMENT: +1: low 0: average -1: high

This alternative would utilize a roadway surface that is 8 years old west of S.H. 22 and over 10 years old east of S.H. 22. Rehabilitation of these lanes may be done during the widening construction. However, It is likely that the existing lanes would require resurfacing prior to the design year 2020. Maintenance and Protection of traffic during this maintenance activity would add to the cost considerably.

INVESTMENT STRATEGY: Build an interstate type highway east of I-540, through the western portion of Fort Chaffee and recommend an Action Plan to address the traffic problems that may remain on I-540.

PURPOSE:

Provides a continuous interstate system that will operate at LOS C.

MEASUREMENT: +1: YES -1: NO

Provides a facility that serves the needs of the high priority corridor traveler.

MEASUREMENT: +1: highly effective 0: effective -1: not effective

Provides for a separate facility.

Provides connections to the existing roadway network and intermodal facilities.

MEASUREMENT: +1: highly effective 0: effective -1: not effective

Will provide access to existing roadway network and closer to the intermodal transfer points in Van Buren.

Provides for development potential as defined by the Working Group.

MEASUREMENT: +1: high potential 0: medium potential -1: low potential

Will open access to undeveloped lands and lands currently held by the military.

Provides for future capacity needs or addition of alternative mode uses.

MEASUREMENT: +1: YES -1: NO

2020 traffic volumes are such that the new facility will accommodate over 10,000 more vehicles a day and operate at level of service C.

NEEDS:

Provides improved serviceability of I-540.

MEASUREMENT: +1: significant improvement 0: improvement -1: no improvement

The new facility will remove most of the through traffic demand, however, additional actions will need to be taken to achieve level of service C under a 4-lane facility.

Provides a facility with improved safety for the through traffic volume.

MEASUREMENT: +1: high probability 0: may improve -1: low probability

Will separate trip purposes and provide an interstate with fewer merge and diverge points.

Meets the area's long range plans and ISTEPA.

MEASUREMENT: +1: YES -1: NO

EASE OF IMPLEMENTATION:

Anticipated disruption to the community and to the users of I-540.

MEASUREMENT: +1: minor 0: moderate -1: major

Disruptions will be limited to communities that are served by the cross roads.

Level of effort required to implement strategy (education, public relations and behavior changes of the current users of I-540).

MEASUREMENT: +1: minor 0: moderate -1: major

IMPACTS & ACCEPTANCE:

Potential probability of impacts to environment.

MEASUREMENT: +1: low 0: medium -1: high

Even though effort will be made to avoid and minimize impacts, potential to affect wetlands and floodplains are unknown.

Potential number of residential displacements.

MEASUREMENT: +1: low 0: medium -1: high

Potential number of business displacements.

MEASUREMENT: +1: low 0: medium -1: high

Potential probability of impacts to historic resources.

MEASUREMENT: +1: low 0: medium -1: high

More potential to disturb resources in Arkansas River floodplain.

Investment strategy will be supported by community.

MEASUREMENT: +1: most support 0: mixed support -1: least support

RELATIVE COST:

Relative cost of interchange construction or reconstruction.

MEASUREMENT: +1: lower 0: average 1: higher

Relative cost of Arkansas River bridge construction or reconstruction.

MEASUREMENT: +1: lower 0: average -1: higher

Relative cost of right of way acquisition. (businesses and land)

MEASUREMENT: +1: lower 0: average -1: higher

Relative cost of maintenance and protection of traffic during construction.

MEASUREMENT: +1: lower 0: average -1: higher

Relative cost of the facility maintenance costs.

MEASUREMENT: +1: low 0: average -1: high

This alternative could remove a large portion of the truck traffic from I-540. This could extend the service life of the 8 to 10 year old roadway surface. Maintenance of I-540 will still be required sometime between now and design year 2020. Because current pavement design will be used, it would be unlikely that the alternative route would need resurfaced prior to 2020.

**U.S. 71 RELOCATION
DEQUEEN TO I-40**

MAJOR INVESTMENT STUDY

Recommendation of the Working Group

As a result of the discussions and analysis performed during the Major Investment Study of the U.S. 71 Relocation project, the Working Group has reached a consensus to recommend the "Build an Alternative Route East of I-540 through the Western Portion of Fort Chaffee" Investment Strategy. Building a new facility best serves the purpose and need for the High Priority Corridor. It also best addresses the objectives set by the Working Group to provide flexibility in the year 2020 to accommodate more capacity or alternative transportation modes, to enable new connectivity to transportation facilities to the east of I-540 and to open access to more land. This Investment Strategy is also consistent with the Bi-State Transportation Study Year 2020 Transportation Plan. The culmination of the Working Group discussions and evaluations resulted in the attached measurements of effectiveness. Also attached are minutes from all Working Group meetings.

The primary objective of the Working Group was to study, evaluate, and recommend an Investment Strategy for the High Priority Corridor. However, by recommending a new location for the corridor, the Working Group has identified certain segments of I-540 in which serviceability problems may occur in the future. The Working Group found it prudent to include in its recommendation to the Bi-State Policy Committee an Action Plan to address the future of I-540.

Six segments of I-540 have been forecasted to operate below level of service C by the year 2004. If the opening of the High Priority Corridor occurs by 2005, all segments on I-540 could operate at or above level of service C. However, I-540 traffic would continue to increase and the same six segments that operate below level of service C in 2004, could again operate below level of service C by the year 2014. In the year 2020, one additional segment could operate below level of service C.

To address these conditions, this MIS Working Group recommends the following Action Plan for I-540:

- Form a task force to address the future of I-540
- Consider the connectivity between I-540 and the High Priority Corridor
- Monitor the traffic conditions as the year 2000 approaches
- Coordinate with any transit or bus system studies
- Implement a voluntary car pooling, van pooling, and/or flexible hour programs, and document the effectiveness of each
- Test other traffic management strategies that result from the task force discussions

This Action Plan will allow the Fort Smith Urbanized Area to evaluate the effectiveness of various traffic reduction strategies over the ten year period from 1995 to 2005. If the new highway opens in 2005, a traffic reduction could occur that will take some of the pressure off I-540. At that time the data obtained over the previous ten years would be evaluated and the ultimate recommendations of the task force could be implemented between 2005 and 2014.

October 24, 1995

7. BI-STATE POLICY COMMITTEE APPROVAL

Michael Baker Jr., Inc. prepared a draft resolution on which the Bi-State Policy Committee could act. This resolution was reviewed by representatives of the Arkhoma Regional Planning Commission and Arkansas State Highway and Transportation Department. A package of materials documenting the studies of the Working Group and including all meeting minutes and handouts was sent along with the resolution to the Bi-State Policy Committee prior to the meeting.

Attached as back-up are:

- Copy of the signed Bi-State Policy Resolution accepting the recommendation of the MIS
- The minutes from the meeting.

**BI-STATE STUDY AREA
MAJOR INVESTMENT STUDY RESOLUTION**

WHEREAS, the Arkansas State Highway and Transportation Department is proposing to construct an interstate type highway facility as part of the completion of the Shreveport, Louisiana to Kansas City, Missouri High Priority Corridor; and

WHEREAS, this highway is being studied under the U.S. 71 Relocation project from DeQueen, Arkansas to Interstate 40; and

WHEREAS, 23 CFR 450.318 of the Metropolitan Transportation Planning Regulations, requires a Major Investment Study (MIS) for projects traversing metropolitan planning areas and that could constitute a major investment of Federal transportation funds for construction or reconstruction; and

WHEREAS, an MIS Working Group was formed and the study process was approved by the Bi-State Policy Committee on August 24, 1995; and

WHEREAS, the MIS Working Group has evaluated and compared the following alternatives to:

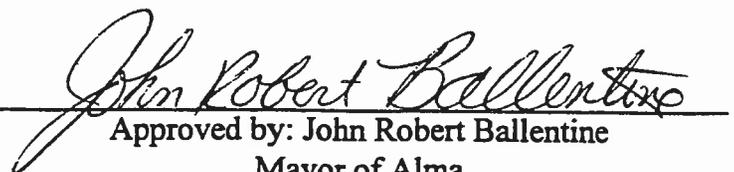
- 1.a Widen I-540 to 8 lanes and I-40 to 6 lanes and accept level of service D for the operations of I-540
- 1.b Widen I-540 to 8 lanes and I-40 to 6 lanes and use a combination of non-highway construction strategies to reduce traffic to provide level of service C for the operations of I-540
2. Build an interstate type highway east of I-540, through the western portion of Fort Chaffee and recommend an Action Plan to address the traffic problems that may remain on I-540; and

WHEREAS, the MIS Working Group has recommended alternative 2 based on the evaluation of existing and future traffic and community needs;

NOW, THEREFORE, BE IT RESOLVED, that alternative 2, "Build an interstate type highway east of I-540, through the western portion of Fort Chaffee", be selected for development of the High Priority Corridor within the Bi-State Study Area.

BE IT FURTHER RESOLVED that the Bi-State Policy Committee will consider the I-540 Action Plan recommended by the MIS Working Group.

Nov 14, 1995
Date of Approval


Approved by: John Robert Ballentine
Mayor of Alma
Bi-State Policy Committee Chairman

Western Arkansas Planning & Development District Inc.



December 8, 1995

Ms. Mara Pritchard
Michael Baker Company
Airport Office Park
420 Rouser Road
Coraopolis, PA 15108

Mara
Dear ~~Ms.~~ Pritchard:

Enclosed please find the minutes of the Bi-State Transportation Committee and the Technical Task Force joint meeting that was held on November 13, 1995.

If you see any changes, let me know.

Sincerely,

Rhonda
Rhonda Bell
Secretary

/rb

Enclosure

ARKHOMA REGIONAL PLANNING COMMISSION

**BI-STATE TRANSPORTATION COMMITTEE/
TECHNICAL TASK FORCE COMMITTEE MEETING**

Monday, November 13, 1995 - 11:30 a.m.

Golden Corral Restaurant, Fort Smith, Arkansas

MINUTES

I. CALL TO ORDER:

Mayor John Ballentine, Board President, opened the meeting of the Bi-State Transportation and Technical Task Force Committees.

The following members or their representatives were present:

II. ROLL CALL:

MEMBERS PRESENT FOR THE BI-STATE TRANSPORTATION COMMITTEE: Mayor John Ballentine, Alma, Paul Simms, AHTD, proxy for Tom Harrell and Harold Beaver; David Hudson, Sebastian County, proxy for Judge Bud Harper; and Bill Harding, City of Fort Smith, proxy for Ray Baker.

BI-STATE MEMBERS NOT PRESENT: Sam Shehab, ODOT; Mayor Jerry Barling, Barling; Mayor Harold Wallace, Central City; Mayor Leon Hicks, Greenwood, Mayor Loyd Farrar, Lavaca; Mayor John Riggs, Van Buren; Mayor John Peerson, Bonanza; Mayor Gary O'Kelly, Kibler; Mayor Billy Rogers, Rudy; Mayor Larry Vickers, Arkoma; Mayor David Carolina, Moffett; Mayor John Grizzle, Pocola; Mayor Joe Smith, Spiro; Bruce Tabor, Sequoyah County; Mayor David Morgan, Muldrow; Mayor Jack Williams, Roland; Judge Harold Loyd, Crawford County; and Donald Young, LeFlore County.

TECHNICAL TASK FORCE MEMBERS PRESENT: Virginia Porta, AHTD, also proxy for Joe Shipman, District 4; Bill Harding, City of Fort Smith; David Hudson, Sebastian County; and Charles Wiley, Crawford County Road Department; Billy Dooly, Fort Smith Chamber of Commerce, and Ken O'Donnell, ARPC.

TECHNICAL TASK FORCE MEMBERS NOT PRESENT: Marsha Woolsey, Alma; Mack Cochran, Greenwood; Steve Garrett, EODD; Sam Shehab, ODOT; Mayor Gary O'Kelly, Kibler; Mayor Billy Rogers, Rudy; Judy Davis, Spiro Chamber of Commerce; Mayor Jack Williams, Roland; Mayor David Morgan, Muldrow; Donald Young, LeFlore County, Bruce Taber, Sequoyah County; Chester Davis, Kaimichi EDD; Mayor John Grizzle, Pocola; Mayor David Carolina, Moffett; and Marjorie Armstrong, Van Buren Chamber of Commerce.

OTHERS PRESENT: Tim Smith and Patty Gesing, Michael Baker Jr., Inc.; Dave Hughes, Arkansas Democrat Gazette; Michael Tilley, Fort Smith Chamber; Van Lee, City of Fort Smith; Ellen Tynon, Rusty Myers and Rhonda Bell, WAPDD/ARPC.

III. APPROVAL OF AUGUST 24, 1995 MINUTES:

President Ballentine noted an amendment in the minutes regarding the Major Investment Study Process presented by Michael Baker. Virginia Porta made a motion to approve and accept the minutes of the August 24, 1995 meeting as amended. David Hudson seconded and the motion passed unanimously.

IV. MICHAEL BAKER, JR., INC., PRESENTATION OF U.S. 71 RELOCATION MAJOR INVESTMENT STUDY

Patty Gesing of Michael Baker, Jr., Inc., gave a brief overview of the Major Investment Study (MIS) process and findings. Ms. Gesing stated that the objective of the MIS process was to determine the best investment strategy for the High Priority Corridor through the Fort Smith metropolitan area. Within this area, there were two possible locations for the High Priority Corridor: use existing I-540 or place the High Priority Corridor on new location.

Ms. Gesing passed out a handout of the nine steps completed for the MIS process and reviewed each step, including a brief overview of the three Working Group meetings. At the October 24, 1995, the Working Group recommended that the investment strategy to be selected for the development of the High Priority Corridor within the Bi-State Study Area was, "Build an interstate type highway east of I-540 through the western portion of Fort Chaffee". In addition, the Work Group recommended an Action Plan to address future (2020) traffic issues on I-540.

Rusty Myers (WAPDD/ARPC) gave an overview of the Local Redevelopment Authority's involvement at Fort Chaffee. Mr. Myers stated that the Department of Defense could extend the comment period three months to change the footprint of the turnback property. He stated that a meeting was scheduled later that day at the Fort to discuss the corridor locations. The military looks favorably on this road project, but is looking to narrow the area of study. He stated that it may be a priority to examine this area before completing work in the southern portion of the study area.

Bill Harding asked for some clarification on the highway study process with respect to the corridors and future alignments. Ms. Gesing reviewed the study process and explained that broad two mile wide corridors have been developed and will be presented to the public during meetings this week. She stated that a preferred corridor would be selected by the end of the year or early 1996. Within this selected corridor, more specific alignment development would take place.

Paul Simms, AHTD, asked about the contents of the Action Plan. Ms. Gesing reviewed the six steps of the Action Plan and stated that it would be a decision of the Bi-State Committee as to how this Action Plan was implemented.

Rusty Myers asked if traffic diverting to the High Priority Corridor from I-540 had been quantified. Ms. Gesing stated that approximately 30,000 vehicles per day are expected to divert to the High Priority Corridor from I-540 by the design year (2020) or about a 30% reduction.

Paul Simms asked if this divergence allowed more time to address the I-540 traffic issues. Ms. Gesing replied that it could be as much as ten years.

V. U.S. 71 RELOCATION MAJOR INVESTMENT STUDY RESOLUTION:

Mayor Ballentine passed out a resolution to approve the results of the Major Investment Study (MIS) for the selected investment strategy and asked for a motion to approve this resolution. Due to attendance, a quorum was not achieved and additional members will need to be polled before this resolution is officially approved. David Hudson made a motion for suspension of the rules. Paul Simms seconded and the motion passed unanimously.

Paul Simms motioned for approval of the MIS recommendations. David Hudson seconded and the motion was unanimously accepted by those present. Due to attendance, a quorum was not achieved and additional members will need to be polled before this resolution is officially approved.

VI. ADJOURN:

There being no further business, the meeting adjourned.

Following the meeting, the Cities of Barling, Greenwood and Van Buren were polled by telephone to approve the resolution of the Major Investment Study for the selected investment strategy. The three cities unanimously agreed to approve the resolution.

Appendix C
AGENCY CORRESPONDENCE

Federal Highway Administration**Environmental Impact Statement:**

Sebastian, Crawford, Scott, Logan,
Polk, Howard and Sevier Counties, AR

AGENCY: Federal Highway
Administration (FHWA), DOT.

ACTION: Notice of intent.

SUMMARY: The FHWA is issuing this notice to advise the public that an environmental impact statement will be prepared for a proposed highway project in the Arkansas Counties of Sebastian, Crawford, Scott, Logan, Polk, Howard and Sevier.

FOR FURTHER INFORMATION CONTACT:

Wendall L. Meyer, Environmental and Design Specialist, Federal Highway Administration, 3128 Federal Office Building, Little Rock, AR 72201-3298, telephone: (501) 324-6430; or Reid Beckel, Consultant Coordinator, Roadway Design, Arkansas State Highway and Transportation Department, P.O. Box 2261, Little Rock, AR 72203, telephone: (501) 569-2163.

SUPPLEMENTARY INFORMATION: The FHWA, in cooperation with the Arkansas State Highway and Transportation Department, will prepare an environmental impact statement (EIS) on a proposal to construct a four-lane, divided, fully controlled access highway facility located on new alignment. Several alternatives and locations will be considered, including various types of improvements and combinations of improvements to the existing facility. The "no-action" alternative will also be considered, in which roads are constructed in accordance with the Statewide Transportation Improvement plan, with the exception of the proposed facility. The approximate length of the project is 206 kilometers (128 miles).

This Environmental Impact Statement will also include a Major Investment Study within the metropolitan area of Fort Smith, AR, as required by the Code of Federal Regulations, Section 23, Part 450.

The proposed improvements would improve the safety and capacity of the existing route and increase regional mobility along a proposed ultimate

route extending from Kansas City, MO to Shreveport, LA. This project is one of several projects identified as "high priority corridors" on the National Highway System that would provide a transportation corridor of national significance from Kansas City to Shreveport. The proposed improvements will draw new traffic through western Arkansas and serve as both a short-term and long-term economic stimulus, promoting development in this currently rural area.

The northern terminus of the proposed improvements will connect to Interstate 40 near Fort Smith, AR. The southern terminus will connect with the proposed improvements of U.S. 71 near DeQueen, AR, for which an EIS is currently being prepared.

Letters describing the proposed action and soliciting comments have been sent to appropriate Federal, state, and local agencies and to private organizations and citizens who have previously expressed or are known to have an interest in this project. A series of public meetings will be held within the study area beginning in the summer of 1995, with on-going public involvement activities. Scoping meetings with local officials and State and Federal resource agencies will also be held during the summer of 1995. The draft Environmental Impact Statement (EIS) will be available for public and agency review and comment prior to a public hearing. Public notice will be given of the time and place for all meetings and hearings.

To ensure that the full range of issues related to this proposed project are addressed and all significant issues identified, comments and suggestions are invited from all interested parties. Comments or questions concerning this proposed action and the EIS should be directed to the FHWA at the address provided above.

(Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.)

Issued on: July 12, 1995.

Wendall L. Meyer,
Environmental and Design Specialist, FHWA,
Little Rock, AR.

[FR Doc. 95-17561 Filed 7-17-95; 8:45 am]

BILLING CODE 4910-22-M

Baker

June 22, 1995

«NAME»
«TITLE»
«AGENCY»
«ADDRESS_1»
«ADDRESS_2»
«CITY», «STATE» «ZIP»

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-6340

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

RE: Request for Information and Attendance at Scoping Meeting
U.S. 71 De Queen to I-40
State Job No. 001747
FAP No. DPS-A015(7)

Dear «SALUTE»:

On behalf of the Arkansas Highway and Transportation Department, Michael Baker Jr., Inc (Baker) is pleased to invite your participation in the study of an important highway corridor. Baker has been retained by AHTD to perform location and environmental studies for a proposed interstate facility between De Queen, Arkansas and Interstate 40. This project is part of a high priority corridor, identified in the Intermodal Surface Transportation Efficiency Act, connecting Shreveport, Louisiana to Kansas City, Missouri. The study area encompasses all or portions of the following Arkansas Counties: Sebastian, Crawford, Scott, Polk, Logan and Sevier and is approximately 206 kilometers (128 miles) in length. The study area is shown on the enclosed map.

As part of this study, Baker will be investigating the environmental and socioeconomic issues related to the proposed construction in the above referenced area. At this time we request your assistance in identifying those issues that should be considered during this study. A Scoping Meeting will be held at 1:00 PM on July 10, 1995 in Room 1001 of the State Highway Department Building, Little Rock, Arkansas. The purpose of this meeting is to discuss the proposed study process and to identify specific concerns you may have relative to your area of expertise.

Your participation in providing current, relevant information will help in the production of a comprehensive Environmental Impact Statement. We look forward to meeting with you and to your continued input throughout the duration of this project. If you would like to contact us in advance, please do so at (412) 269-4603.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Reid Beckel - AHTD
William D. Richardson - FHWA



A Total Quality Corporation

**US 71 CORRIDOR LOCATION STUDY
MEETING MINUTES**

Topic: Baker Survey Efforts and Coordination with Fort Chaffee

| | | |
|-----------------|---------------------|----------------------------|
| Present: | Timothy Smith | Baker |
| | David Bednar | Baker |
| | Derrick Barker | Baker |
| | Lt. Col. Robert Dow | Ft. Chaffee Base Commander |
| | Charles Williams | Range Control Officer |
| | Dave Melancon | Public Affairs |
| | Richard Scott | GPS/GIS/Environmental |

Time and Place: June 6, 1995, 2:00 P.M., Fort Chaffee Base Headquarters

- 1). T. Smith distributed the Corridor flyers and presented a brief overview of how they were being distributed to the public.
- 2). At the Commander's request, T. Smith outlined the type of information Baker was hoping to obtain from the military and how this information was going to be used. He explained that Baker was interested in obtaining environmental constraints information such as wetland locations, wildlife and threatened and endangered species information, water quality and streams data, as well as GPS and survey benchmark locations.
- 3). Lt. Col. Dow stated that R. Scott would be our source for any available environmental and GPS data.
- 4). Lt. Col. Dow stated that a constraint of more critical importance was the presence of surface and subsurface ordinances (explosives). As the base has been in existence since the early 1940's, many areas remain extremely hazardous. Lt. Col. Dow pointed out three high risk areas that were off limits to civilian personnel due to ordinance hazards. He suggested we obtain a base map from R. Scott or C. Williams and that they would identify priority areas of concern. The one area that remains relatively clear is directly adjacent to and parallel with State Route 96.
- 5). C. Williams stated that removing the existing unexploded ordinances for a highway project could be very time consuming and costly.
- 6). T. Smith stated that it was important to identify these areas as early as possible so that potentially unusable or cost prohibitive areas (mine sweeping) could be avoided as the study progresses.
- 7). Lt. Col. Dow stated that within the next month the Dept. of Defense (DOD) would determine if Fort Chaffee would be retained as a training area. As such, several new weapons systems would be utilized on the Fort, one being the MLRS missile system. If this training designation is

- approved, an interstate highway through the Fort anywhere east of the existing A6 gridline (will outline on map,) would be incompatible with the Fort's mission.
- 8). Lt. Col. Dow stated that if the Fort were designated a training, a decision would ultimately need to be made as to which project would move forward as going through the base east of the A6 gridline would not be compatible with the training mission.
 - 9). Lt. Col. Dow asked if we would be needing access to base property and if so what would be the purpose of these field reviews.
 - 10). T. Smith stated that one particular area that may require field work would be wetland identification. The extent of this work would depend on preliminary studies. We would be using aerial photos and satellite data to identify wetlands prior to doing any detailed field work.
 - 11). Lt. Col. Dow stated that there were not many "official" wetlands on the base.
 - 12). Lt. Col. Dow state that C. Williams would be our point of contact for any access to base property. He can be reached at 484-2272 in Building 7102.
 - 13). Lt. Col. Dow stated that if given prior notice arrangements could be made for us to enter most of the base areas and even suggested that base maneuvers could be altered if particular area needed to be reviewed.
 - 14). Lt. Col. Dow asked if other areas were being considered for this project.
 - 15). T. Smith stated that Fort Chaffee was just one small portion of the entire study area and referred him to the diagram on the flyer.
 - 16). D. Melancon asked to receive the names and numbers of public affairs people for this project. He stated that the Fort had already received calls from individuals requesting information on the Fort and its relationship with this project and he would like to refer all calls to our representatives.
 - 17). T. Smith stated that he would obtain this information and forward it as soon as possible.
 - 18). Lt. Col. Dow stated that as the project progressed he would do whatever he could to move things forward. Again, he directed us to contact C. Williams and R. Scott for additional information.

State Job NO.: 001747



United States Department of the Interior

FISH AND WILDLIFE SERVICE
2525 South Frontage Road, Suite B
Vicksburg, Mississippi 39180-5269

IN REPLY REFER TO:

July 14, 1995

Ms. Patricia S. Gesing
Project Manager
Michael Baker Jr. Inc.
P.O. Box 12259
Pittsburgh, Pennsylvania 15231-0259

cc: Reid Beckel - AHTD

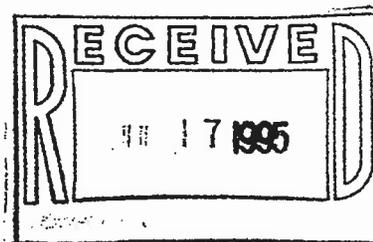
Dear Ms. Gesing:

The Fish and Wildlife Service (Service) has reviewed the information supplied with your letter dated June 22, 1995, concerning the proposed relocation of the U.S. Highway 71 corridor between De Queen and I-40 in Sebastian, Crawford, Scott, Polk, Logan, and Sevier Counties, Arkansas. Our comments are submitted in accordance with the Endangered Species Act (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Endangered or threatened species which may occur within the highway corridor include the endangered American burying beetle, (ABB) (*Nicrophorus americanus*) which is present in Sebastian, Scott, and Logan Counties. One of the largest populations of ABB is known to occur within the Fort Chaffee Military Garrison. The threatened leopard darter, (*Percina pantherina*) is known to occur in the Cossatot River, Robinson Creek, and Mountain Fork. The endangered interior least tern (*Sterna antillarum*) and threatened bald eagle (*Haliaeetus leucocephalus*) are known to occur in association with the Arkansas River. The endangered red-cockaded woodpecker (*picoidea borealis*) may occur within stands of mature pine trees within the highway corridor. Finally, the endangered Ouachita rock pocket book mussel (*Arkansia wheeleri*) is known to occur in the Ouachita River. Further consultation in accordance with the ESA would be required if it is determined that construction of the proposed highway may adversely affect any of these listed species.

Further, the Service recommends that areas which are unique or have high fish and wildlife resource values be avoided by any proposed highway examples of these areas include wetlands and any areas which are in public ownership such as natural areas and the Ouachita National Forest.

We appreciate the opportunity to provide these comments and look forward to working with you as this project progresses.



Sincerely,

A handwritten signature in cursive script that reads "Margaret Harney". The signature is fluid and elegant, with a large initial 'M' and a long, sweeping tail on the 'y'.

Margaret Harney
Environmental Coordinator

cc:

Arkansas Game and Fish Commission, Little Rock, AR

Attn: Dave Criner

Arkansas Natural Heritage Program

Attn: Cindy Osborne

Environmental Protection Agency, Dallas, TX

**US 71 Relocation
DeQueen to I-40
Meeting Minutes**

Topic: Fort Chaffee Constraints

| | | |
|-----------------|-------------------------|-------------|
| Present: | Timothy Smith | Baker |
| | David Bednar | Baker |
| | Bill Ables | Ft. Chaffee |
| | 1SG Inocencio Rodriguez | Ft. Chaffee |
| | Charles Williams | Ft. Chaffee |
| | COL. Ted Baer | 90th RSC |
| | CW3 Bill Gaston | 90th RSC |
| | MAJ. Bill Holmes | AR ARNG |
| | CPT. Tarry Marlard | AR ARNG |
| | LTC. Ronald Snead | AR ARNG |

Time and Place: July 27, 1995, 10:30 AM, Fort Smith, Arkansas

1. T. Smith opened the meeting and gave an overview of the project, description of the study area, and briefly reviewed the project process flowchart. He explained that Baker had met with a number of state and federal agencies to obtain their concerns and that this information was being used to develop a number of 1.5-2 mile wide corridors within the study area. He explained that it was important to understand the constraints involved at Fort Chaffee and that through this meeting Baker hoped to identify the area being released by the base and any other areas of concern.
2. Col. Snead asked how long this study process would take and when construction was to begin. T. Smith stated that the study process was scheduled for completion in two years and that this project was a high priority of the Highway Department. Col. Snead asked if a 3-5 year time frame for beginning construction was feasible. T. Smith stated that depending on funding availability that time frame did not seem unrealistic.
3. Col. Snead provided a map of Fort Chaffee that outlined the land that would be released due to the BRAC decision. He stated that it was important for the highway to stay within the outlined areas (see attached map).
4. T. Smith inquired about the use of the railroad tracks near Rt. 22. Col. Snead said that these tracks were used, but that a relocation of these tracks may be possible.
5. T. Smith asked about the existing structures within the outlined areas. Maj. Holmes said that these buildings would be turned over to whoever acquired the land and that the new land owners could demolish them if desired. (Note: Section 106 review would be required by DOD prior to turnover.)

6. Col. Baer expressed concern over a potential Arkansas River crossing and how that would affect continued training in this area. It is important to maintain access to this training area.
7. Maj. Holmes asked if the existing lock and dam bridge could be used. T. Smith explained that Baker engineers would consider this, but thought that upgrading or improving the existing bridge to accommodate interstate traffic would be difficult.
8. Col. Snead and C. Williams pointed out the location of a large Ammunition Depot approximately 2,000 meters east of Donahoe Ridge. A 1,500 meter buffer around this area is required for safety purposes and it is important to remain west of Donahoe Ridge with any highway alternatives. T. Smith inquired as to the possibility of relocating this depot. C. Williams stated that he estimated it would cost over 5 million dollars to do so, but more importantly it would remove a large area of land from active training capabilities by placing it elsewhere.
9. Col. Snead asked if it would be possible to route the highway through the Massard Creek floodplain and then turn south through Fort Chaffee. T. Smith explained that this would be difficult due to the regulatory nature of the associated floodplains and wetlands as well as the number of potential displacements in this area.
10. T. Smith asked if this cross-hatched area was finalized or if it could still change. Col. Snead stated that the effective date for new land use at the Fort is October 10, 1995. This is 45 congressional working days after the President signed the BRAC recommendations on July 13, 1995. Col. Snead was confident that these lines would not change.
11. C. Williams and Maj. Holmes stated that from an environmental standpoint the outlined area was the most user friendly on the base. Some cleanup work has been completed on underground storage tanks. This area also has a lower risk of unexploded ordinances due to the proximity to the cantonment area.
12. Col. Snead and all others asked to be kept informed as Baker moves forward in this process and would like to meet again in the future.
13. C. Williams stated that Fort Chaffee would be available to hold subsequent meetings.
14. The meeting was adjourned at 11:15 AM

State Job NO.: 001747

cc: PSG/Pfile, MRP, CGG, ELS

Reid Beckel - AHTD

Harold Beaver - AHTD

Larry Harrison - COE

William Richardson - FHWA



Harold K. Grimmett
Director

ARKANSAS NATURAL HERITAGE COMMISSION

1500 TOWER BUILDING
323 CENTER STREET
LITTLE ROCK, ARKANSAS 72201



Jim Guy Tucker
Governor

Date: August 21, 1995
Subject: U.S. 71 DeQueen to I-40
State Job No. 001747
FAP No. DPS-A015(7)
ANHC No. P-CF..-95-064

Mr. Timothy J. Smith
Michael Baker Jr., Inc.
2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

Dear Mr. Smith,

Staff members of the Arkansas Natural Heritage Commission have reviewed our files for records indicating the occurrence of rare plants and animals, outstanding natural communities or other elements of special concern within the corridor boundaries indicated on the topographic maps provided. Our records indicate the presence of five federally listed species (Endangered or Threatened), eleven species under review for possible federal listing, and forty-nine state concern elements within the designated boundaries. Known locations for these elements have been marked on the maps you provided. Please see the attached information sheet for a detailed discussion on the arrangement and interpretation of the data (Attachment A).

The following species listed by the U.S. Fish and Wildlife Service as either Endangered or Threatened are known to be present in the study area:

| | |
|---|------------|
| <u>Lampsilis powellii</u> , Arkansas fatmucket | Threatened |
| <u>Nicrophorus americanus</u> , American burying beetle | Endangered |
| <u>Percina pantherina</u> , leopard darter | Threatened |
| <u>Picoides borealis</u> , red-cockaded woodpecker | Endangered |
| <u>Sterna antillarum athalassos</u> , interior least tern | Endangered |

A summary of these species is attached (Attachment B). Descriptions are also provided for your reference (Attachment C). The following federal review species occur in the project area:

| | |
|---|----|
| <u>Gryllotalpa major</u> , prairie mole cricket | C2 |
| <u>Toxolasma lividus</u> , purple liliput | C2 |
| <u>Aimophila aestivalis</u> , Bachman's sparrow | C2 |

| | |
|---|----|
| <u>Myotis leibii</u> , eastern small-footed bat | C2 |
| <u>Polyodon spathula</u> , paddlefish | C2 |
| <u>Amorpha ouachitensis</u> , Ouachita leadplant | C2 |
| <u>Calamovilfa arcuata</u> , a sandgrass | C2 |
| <u>Carex latebracteata</u> , Waterfall's sedge | C2 |
| <u>Castanea pumila</u> var. <u>ozarkensis</u> , Ozark chinquapin | C2 |
| <u>Cypripedium kentuckiense</u> , southern lady's-slipper | C2 |
| <u>Streptanthus squamiformis</u> , a twistflower | C2 |

Print-outs detailing the occurrence of these, and state concern elements have been provided, except for purple liliput mussel (Toxolasma lividus). Purple liliput has been found in the Poteau River within project boundaries. However, it is not currently tracked by our program. According to Dr. John Harris (pers. comm.) its distribution in Arkansas is fairly widespread, though it is never found in large numbers. A list of all elements occurring in the project area is enclosed (Attachment D). During planning stages, efforts should be made to route corridors to avoid known high quality areas supporting special elements. As alignment alternatives are considered, habitats which are likely to support special species should be inventoried at the appropriate time of year. Final highway alignments should seek to avoid or minimize impacts to significant areas.

Boundaries for several managed areas have been placed on your maps: Cossatot River State Park-Natural Area, Iron Mountain Natural Area, Cherokee Prairie Natural Area, and Poteau Mountain Wilderness Area. Site descriptions for each of the Natural Areas are included. Areas owned by the Natural Heritage Commission are managed to protect their natural features. The Natural Areas within the study boundaries were purchased using Land and Water Conservation Fund (LWCF) money and would require formal action by both the Natural Heritage Commission and the U.S. Department of the Interior to change their current use. The segment of the Mountain Fork River designated as Critical Habitat has been mapped. Two state Wildlife Management areas extend into project boundaries: Fort Chaffee Wildlife Management Area and Howard County Wildlife Management Area (WMA). A large scale map of these areas is enclosed (Attachment E). Additional information on WMAs may be obtained from the Arkansas Game and Fish Commission. Several of the streams within the project area have been designated as "Ecologically Sensitive Waterbodies" under Regulation No. 2 which establishes water quality standards for surface waters in the state (Arkansas Department of Pollution Control and Ecology). These rivers are Cossatot, Mountain Fork, Robinson Fork and Ouachita. These streams provide habitat for Endangered or Threatened species. Obtaining Corps of Engineers permits to cross stream segments with this designation may require special consideration. A roadcut area along Highway 71 near Greenwood has been included. This area has been recognized by geologists in the state as unique.

The Arkansas Natural Heritage Commission has conducted some natural community inventory in the southern portion of the project area. Our efforts have identified several "potential natural areas". These are areas which have been identified from aerial photo interpretation and limited ground survey to potentially possess high natural quality. These locations have been marked on your maps and descriptions of features provided.

There are several general areas of concern to this agency within the study zone:

- (1) Limestone glades near the southern end of project
- (2) Rich Mountain
- (3) Fourche Mountain
- (4) Red-cockaded Woodpecker habitat
- (5) Prairie remnants near the northern end of project

A detailed discussion of these concerns is made on Attachment F.

Please keep in mind that the project area may contain important natural features of which we are unaware. Staff members of the Arkansas Natural Heritage Commission have not conducted a field survey of the study area. Our review is based on data available to the program at the time of the request. It should not be regarded as a final statement on the elements or areas under consideration, nor should it be substituted for on-site surveys required for environmental assessments. Because our files are updated constantly, you may want to check with us again at a later time.

Because some of this information is sensitive, we ask that exact locations not be published. If the information presented here is used in any publication, please cite the Arkansas Natural Heritage Commission, an agency of the Department of Arkansas Heritage as the Source. If you have questions or need additional information, please feel free to contact me.

Sincerely,



Cindy Osborne
Data Manager

Enclosures: Arrangement & Interpretation of Data (Attach. A)
E & T Species Summary (Attach. B)
E & T Species Descriptions (Attach. C)
Element Summary List (Attach. D)
Map of State WMAs (Attach. E)
Discussion of ANHC concerns (Attach. F)
44 File folders with Maps and print-outs
Fee schedule and Invoice



STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

Hazardous Waste Division
8001 NATIONAL DRIVE, P.O. BOX 8913
LITTLE ROCK, ARKANSAS 72219-8913
PHONE: (501) 562-6533
FAX: (501) 562-2541



August 21, 1995

Mr. David Bednar
Michael Baker Jr., Inc.
2912 Rogers Avenue
Fort Smith, AR 72901

RE: Requested Material

Dear Mr. Bednar:

Enclosed please find the list of State and National Priority sites in Arkansas and the Arkansas CERCLIS list per your request of August 21, 1995.

If you have any further questions don't hesitate to give me a call at (501)570-2870.

Sincerely,

Belinda L. Healey

Belinda L. Healey
Administrative Assistant II
Superfund Branch

Enclosures

MENA WATER & SEWER DEPARTMENT

701 MENA STREET
MENA, ARKANSAS 71953

Michael Baker Jr., Inc.
Mr. David Bednar, Jr.
2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

Date: August 23, 1995

Re: Highway 71, Irons Fork Lake

Dear Mr. Bednar,

Enclosed are the aerial topography photographs of the Irons Fork Lake Watershed. These maps will provide you with the information along highway 71 from 'Y' City to south of Mena. This should include all the watershed for Irons Fork Lake.

If you have any question or comments concerning this issue, please contact Marvin Brewer at 394-1132. Thank you!!

Sincerely,

A handwritten signature in cursive script, appearing to read "Marvin Brewer", with a long horizontal line extending to the right.

Marvin Brewer, Mgr.
Irons Fork Water Treatment Plant



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

SEP 07 1995

Mr. David Bednar, Jr.
Geologist
Michael Baker Jr., Inc.
2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

Dear Mr. Bednar:

This letter is in response to your August 30, 1995, Freedom of Information request, which we have numbered (6)RIN-95-1846, for a listing of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Information System (CERCLIS) sites for the Arkansas counties of Crawford, Sebastian, Scott, Polk, and Sevier.

The subject Arkansas counties, Crawford and Scott, are not listed in CERCLIS. Enclosed is a printout from CERCLIS for the Arkansas counties of Sebastian, Polk, and Sevier, as of September 6, 1995. Your request has also been directed to other Divisions in Region 6 for review and response to your inquiry. CERCLIS is a list of potential and confirmed hazardous waste sites at which the Environmental Protection Agency (EPA) Superfund program has some involvement. CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

As of February 15, 1995, CERCLIS no longer includes sites which EPA has assessed and designated "No Further Remedial Action Planned" (NFRAP). A NFRAP designation means, to the best of the EPA's knowledge, Superfund completed its assessment at a particular site, and has determined no further steps to list this site on the National Priorities List (NPL) will be taken unless information indicating this decision was not appropriate or other considerations make a recommendation for listing appropriate at a later time. A NFRAP decision does not necessarily mean that there is no hazard associated with a given site; it means only that based upon available information, the location is not judged to be a potential NPL site.

Historically, even sites the EPA classified as NFRAP were maintained in CERCLIS to document that the evaluations took place at these particular sites, and to preclude the possibility that these evaluations would be needlessly repeated in the future. This policy led to unintended barriers to the redevelopment of these properties and the EPA decided to remove these sites from CERCLIS. NFRAP sites are archived as historical records so the EPA does not needlessly repeat the investigations in the future. These NFRAP sites are being reviewed by the States in which they are located. The States will coordinate with EPA to determine if any sites should be returned to CERCLIS because of newly identified contamination problems at the site.

It is important to note the sites on CERCLIS and the NFRAP archived list will change as the sites are being investigated or, as new information becomes available.

To obtain paper or diskette copies of the NFRAP archived list, contact the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. For telephone orders or further information on placing an order, call NTIS at (703) 487-4650 for regular service or (800) 533-NTIS for rush service. To access this document electronically for ordering or downloading via FedWorld, dial (703) 321-8020 with a modem or Telenet fedworld.gov. For technical assistance to access FedWorld, call (703) 487-4608.

If you have further questions, please call me at (214) 665-6484.

Sincerely yours,



Mava L. Elliott
Freedom of Information Coordinator
Superfund Division
Program Management Branch (6SF-P)

Enclosure



United States Department of the Interior

NATIONAL PARK SERVICE

INTERMOUNTAIN FIELD AREA

Southwest System Support Office

P. O. Box 728

Santa Fe, New Mexico 87504-0728

In reply refer to:

L7619 (SW-PQS)

SEP 11 1995

Mr. Wendell L. Meyer
Environmental and Design Specialist
Federal Highway Administration
3128 Federal Office Building
Little Rock, Arkansas 72201-3298

Dear Mr. Meyer:

We are responding on behalf of the Midwest Field Office to the notice of intent to prepare an environmental impact statement for a proposal to construct a 128-mile four-lane controlled access highway facility on new alignment in Sebastian, Crawford, Scott, Logan, Polk, Howard, and Sevier Counties, Arkansas (ER-95/552). The following comments are provided on a technical assistance basis.

The proposal is in the vicinity of Fort Smith National Historic Site which is located in the City of Fort Smith in Sebastian County. If it appears that the proposal would directly or indirectly affect Fort Smith National Historic Site resources, please contact:

Superintendent
Fort Smith National Historic Site
Post Office Box 1406
Fort Smith, Arkansas 72902
Telephone: 501-783-3961

The proposal is also in the vicinity of several rivers which are components, or potential components, of the National Wild and Scenic Rivers System. These include:

Cossatot River - a 20.1-mile segment within the Ozark National Forest is a component of the National Wild and Scenic Rivers System and 10.4 miles of the Cossatot River and 0.3 miles of Brushy Creek within the Cossatot River State Park-Natural Area are state-administered components of the national system (the 26-mile Nationwide Rivers Inventory segment in Howard and Polk Counties runs from the north end of Gillham Reservoir upstream to the headwaters near Baker Mountain);

Little Missouri River - a 15.7-mile segment within the Ouachita National Forest is a component of the National Wild and Scenic Rivers System (the 29-mile Nationwide Rivers Inventory segment in Pike, Montgomery, and Polk Counties runs from upper Lake Greeson upstream to headwaters south of the town of Big Fork);

Ouachita River - the 70-mile Nationwide Rivers Inventory segment in Montgomery and Polk Counties runs from upper Lake Ouachita upstream to the headwaters near the town of Acorn.

If the proposal would cross or closely parallel any of these rivers within the counties affected, please coordinate further with the Rivers and Trails Program Leader, Midwest Field Office, National Park Service, 1709 Jackson Street, Omaha, Nebraska 68102, and with:

Director, Arkansas Natural and
Scenic Rivers Commission
1500 Tower Building, 323 Center Street
Little Rock, Arkansas 72201

The appropriate managing agency for each river should also be contacted. For the Cossatot River, please contact the Ozark National Forest Supervisor, Post Office Box 1008, Russellville, Arkansas 72811-1008 and the Director, Arkansas Natural Heritage Commission, 1500 Tower Building, 323 Center Street, Little Rock, Arkansas 72201. For the Little Missouri River, please contact the Ouachita National Forest Supervisor, Box 1270, Federal Building, Hot Springs, Arkansas 71902.

Project plans should consider potential impacts on recreation resources. In particular, there are numerous recreation projects in the counties affected which have received funding from the Land and Water Conservation Fund (L&WCF). These include, but are not limited to, such projects as: Lake Fort Smith State Park, Sodie Davidson County Park, Blue Mountain Camping Area, Queen Wilhelmina State Park, Iron Mountain Natural Area, and Cossatot Falls Acquisition.

The L&WCF was established in 1965 to provide matching grants for acquiring and developing public outdoor recreation lands and waters and is administered in each state by a Governor-appointed State Liaison Officer (SLO). The Arkansas SLO is Mr. Richard W. Davies, Executive Director, Department of Parks and Tourism, One Capitol Mall, Little Rock, Arkansas 72201. The SLO and local park administrators should be contacted to determine effects on recreation resources in the area of environmental impact and to devise mitigation strategies, if needed.

In order to protect this public investment in recreation, the L&WCF Act, Section 6(f)(3), stipulates that no property acquired or developed with assistance from the L&WCF shall be converted to other than public outdoor recreation uses without the approval of the Secretary of the Interior. If a conversion of use cannot be avoided, the SLO should be contacted to initiate the process for meeting Section 6(f)(3) stipulations, which includes providing replacement lands of at least equal fair market value and of reasonably equivalent usefulness and location.

Planning for the proposed project should include consideration of potential impacts on historical and archeological resources in accordance with cultural resource preservation regulations. To comply with these requirements, project plans should be coordinated with the State Historic Preservation Officer (SHPO) to determine if locally significant cultural resources and cultural resources which may be listed on or eligible for the National Register of Historic Places are located within the affected area. The SHPO's opinion on the adequacy of present knowledge of cultural resources in the area to be affected and on the type and level of resource inventory that may be needed should also be solicited. The SHPO in Arkansas is Ms. Cathy Buford-Slater, Director, Arkansas Historic Preservation Program, 1500 Tower Building, 323 Center Street, Little Rock, Arkansas 72201.

The proposed highway project could require the "use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance . . . or any land from an historic site of national, State, or local significance." If this is the case, then the draft statement should contain documentation addressing the provisos of Section 4(f) of the Department of Transportation Act of 1966, as amended, that:

- (1) there is no feasible and prudent alternative to the use of such land, and
- (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use.

The Arkansas Natural Heritage Program is a systematic statewide natural resource inventory. This inventory would be useful in identifying significant natural resources which should be considered in planning for the proposal. The program is administered by Mr. Harold Grimmett, Executive Director, Natural Heritage Commission, 1500 Tower Building, 323 Center Street, Little Rock, Arkansas 72201.

It should be noted that there is a National Natural Landmark which may be in the project vicinity in Polk County. This significant natural resource, Roaring Branch Research Natural Area, is administered by the Ouachita National Forest and is located four miles north of the Village of Athens. If impacts on Roaring Branch Research Natural Area are anticipated, project plans should be coordinated with the Ouachita National Forest Supervisor (Box 1270, Hot Springs, Arkansas 71902) and with the National Natural Landmarks Coordinator at the letterhead address.

We appreciate the opportunity to review this proposal.

Sincerely,



Acting
Stewardship and Partnership
Team Coordinator,
Southwest System Support Office

cc:
Superintendent, Fort Smith

Mr. Glenn B. Sekavec
Regional Environmental Officer
Office of Environmental Policy and Compliance
U.S. Department of the Interior
Post Office Box 649
Albuquerque, New Mexico 87103

Mr. Willie R. Taylor
Director, Office of Environmental
Policy and Compliance
Office of the Secretary
U.S. Department of the Interior
Washington, D.C. 20240

Mrs. Jane Jones
Director, Arkansas Natural and
Scenic Rivers Commission
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201



STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 NATIONAL DRIVE, P.O. BOX 8913
LITTLE ROCK, ARKANSAS 72219-8913
PHONE: (501) 682-0744
FAX: (501) 682-0707



September 11, 1995

Mr. David Bednar, Jr.
Michael Baker Jr., Inc.
2912 Rogers Ave
Suites A&B
Ft. Smith, AR 72901

Dear Mr. Bednar:

I have added additional location information as you requested. I hope this will help. Sorry to have taken so long but our offices moved last week and information was unavailable for a few days. Our new FAX is not connected yet so I am forwarding this by mail. If you need any further information, give me a call.

Crawford County

- 1) Section 1 - T9N-R31W: Alma, Highway 64 west of Alma (this is a business David's Recycling)
- 2) Section 36 - T10N-R32W: Van Buren, Highway 59 North at Gene's Auto Salvage
- 3) 1/4 SW 1/4SW-T9N-R31W: I 540 Bridge east & south of Arkansas River
- 4) Section 16 - Range 31 - Township 9N: Van Buren, Cabanna Estates, 3rd Street, Highway 64 East

Polk County

- 3) Section 6 - R30W-T2S At Ark. Hgwy 8: Mena, Green Acres Trailer Park

Constance

Constance Gwinn
Illegal Dump Program Coordinator



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

September 13, 1995

Mr. David Bednar, Jr.
Geologist
Michael Baker Jr., Inc.
2912 Rogers Avenue
Suites A & B
Fort Smith, AR 72901

Re: Freedom of Information Request (6)RIN-95-1846

Dear Mr. Bednar:

This is in response to your Freedom of Information request dated August 30, 1995, concerning Crawford, Sebastian, Scott, Polk, and Sevier counties, located in Arkansas.

The Environmental Protection Agency (EPA), Region 6, RCRA records center and/or the RCRA Information System does not have the information requested.

EPA has authorized the States located in Region 6 to operate the RCRA program. Additional information may be available from records maintained by the State. For your convenience, we have taken the liberty of enclosing a list of State contacts.

Should you have any questions concerning the information provided, please contact Terrie Head, at (214) 665-8534. You may receive a final billing from the Freedom of Information Officer.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Cathy Carter".

for
Cathy Carter, Chief
RCRA Information Management
Section

Enclosure

cc: Reid Beckel - AHTD



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

10 19 95

Mr. David Bednar, Jr.
Michael Baker Jr., Inc.
2912 Rogers Avenue
Suites A & B
Fort Smith, Ar 72901

Dear Mr. Bednar:

This is in response to your Freedom of Information Act request which we have numbered (6) RIN-01846-95. Your request has also been sent to the RCRA Information Management section of the Environmental Protection Agency regarding your other concerns. An extension of time required to comply with your request is necessary for collecting the underground storage tank and solid waste information.

The reason for this extension is the need to search for, collect, and appropriately examine a voluminous amount of separate and distinct records involved in your request. (40 CFR 2.112(e)(2)).

You may expect a reply by October 3, 1995.

Sincerely yours,

A handwritten signature in cursive script that reads "Willie Kelley".

Willie Kelley, Chief
UST/Solid Waste Section

cc: Mr. Jim Shell
Arkansas Department of Pollution
Control and Ecology

cc: Reid Beckel - AHTD



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CADDO TRIBE NAGPRA OFFICE

Post Office Box 487
Binger, Oklahoma 73009
405-656-2344 405-656-2345
Fax # 405-656-2892



September 21, 1995

Timothy J. Smith, Sr. Environmental Scientist
Michael Baker Jr, Inc.
2912 Rogers Avenue
Suites A&B
Fort Smith, Arkansas 72901

Dear Mr. Smith

The Caddo or ancestors of the Caddo have occupied western Arkansas for thousands of years. You are very likely to run into cultural or human remains in the study area you have outlined in your letter. Most of the Caddo moved or were moved out of Arkansas by the early part of the nineteenth century.

The Caddo Tribe is concerned that the resting places of our ancestors stay intact and are avoided as much as possible. If you do come across human remains or cultural material, Federal Law stipulates that the Caddo Tribe be notified.

Please contact Tom Green of the Arkansas Archaeological Survey for more detailed information concerning known sites in your study area.

I hope this information is helpful and thank you for contacting us.

Sincerely,

David M. Scholes
NAGPRA Director
Caddo Tribe of Oklahoma



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

OCT 03 1995

Mr. David Bednar, Jr.
Michael Baker Jr., Inc.
2912 Rogers Avenue
Suites A & B
Fort Smith, Ar 72901

Dear Mr. Bednar:

We are in receipt of your Freedom of Information Request which we have numbered (6) RIN-01846-95 requesting underground storage tank information. Future correspondence concerning sites in Crawford, Sebastian, Scott, Polk and Sevier counties should contain the assigned number.

The Environmental Protection Agency (EPA) Region 6 office does not have the information you requested regarding underground storage tanks. Your letter has additionally been sent to our Resource Conservation Recovery Act Management branch to address your other concerns.

The Arkansas Department of Pollution Control and Ecology is the principle implementing agency for the underground storage tank program. You can contact Jim Shell, Arkansas Department of Pollution Control and Ecology, P.O. Box 9583, Little Rock, Arkansas 72209 or phone him at: (501) 570-2800 for information on the sites. EPA Region 6 office does not maintain this type of information.

If I can be of further assistance, please feel free to contact me at (214) 665-6760.

Sincerely yours,

Willie Kelley
Willie Kelley, Chief
UST/Solid Waste Section

cc: Mr. Jim Shell
Arkansas Department of Pollution
Control and Ecology

cc: Reid Beckel - AHTD



Arkansas Soil and Water Conservation Commission

J. Randy Young, P.E.
Executive Director

101 E. CAPITOL
SUITE 350
LITTLE ROCK, ARKANSAS 72201

PHONE 501-682-1611
FAX 501-682-3991

October 13, 1995

David Bednar
Michael Baker Jr Inc
2912 Rogers Ave
Fort Smith AR 72901

Dear Mr Bednar

SUBJECT: DATA BASE SEARCH

Here is the information on the registered ground water users in Crawford, Polk, Scott, Sebastian, Sevier counties of Arkansas that you requested on August 23, 1995.

The information on the enclosed list is easy to follow. The headings at the top of the page tell what each column is. Each time that an owner's name appears on the list represents a different measurement point for that owner.

If I can be of any further assistance, please feel free to contact me at (501) 682-3966. Thank you for your request.

Sincerely

A handwritten signature in cursive script that reads "Mike A. Guess".

Mike A. Guess
Engineer Technician

Enclosure

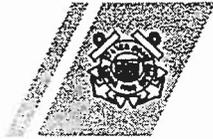
cc: Reid Beckel

REGISTERED GROUND WATER USER
IN CRAWFORD, POLK, SCOTT, SEBASTION, & SEVIER COUNTIES
OF ARKANSAS

| WATER USER ID. | OWNER NAME | WATER USE | COUNTY | LAT./LONG. | YEAR | AMOUNT OF WATER USED |
|-------------------|---------------------------|--------------|----------|---------------|------|-------------------------|
| 8018 | J W FLOYD | IR | CRAWFORD | 3523000940800 | 1993 | |
| 14280 | LARRY CRAWFORD | IR | CRAWFORD | 3523300941430 | 1993 | |
| 14280 | LARRY CRAWFORD | IR | CRAWFORD | 3523100941345 | 1993 | |
| 14280 | LARRY CRAWFORD | IR | CRAWFORD | 3522200941340 | 1993 | |
| 14280 | LARRY CRAWFORD | IR | CRAWFORD | 3522300941415 | 1993 | |
| 14281 | JAMES A ARNOLD | IR | CRAWFORD | 3524100941222 | 1993 | |
| 14281 | JAMES A ARNOLD | IR | CRAWFORD | 3523250941241 | 1993 | |
| 14281 | JAMES A ARNOLD | IR | CRAWFORD | 3523270941243 | 1993 | |
| 14281 | JAMES A ARNOLD | IR | CRAWFORD | 3524230941353 | 1993 | |
| 14281 | JAMES A ARNOLD | IR | CRAWFORD | 3521570941718 | 1993 | |
| 3840 | MIKE WILLIAMS | IR | CRAWFORD | 3522000941600 | 1993 | |
| 8048 | TOM COPELIN | IR | POLK | 3435500942017 | 1993 | |
| 13923 | QUEEN WILHELMINA STATE PK | CO | POLK | 3441070942228 | 1993 | 12.70 |
| 6117 | HORATIO WATERWORKS | WS | SEVIER | 3356150942115 | 1993 | |
| 6161 | LOCKESBURG WATERWORKS | WS | SEVIER | 3358060941001 | 1993 | 44.40 |
| 6161 | LOCKESBURG WATERWORKS | WS | SEVIER | 3358040941011 | 1993 | 62.50 |

U.S. Department
of Transportation

United States
Coast Guard



Commander
Second Coast Guard District

1222 Spruce St.
St. Louis MO 63103-2832
Staff Symbol: (ob)
Phone: (314) 539-3724

16591.1/300.0 ARWW
October 18, 1995

Mr. Patricia S. Gesing, P.E.
Michael Baker Jr., Inc.
PO Box 12259
Pittsburgh, PA 15231-0259

Subj: PROPOSED I-540 HIGHWAY BRIDGE, REPLACEMENT/REHABILITATION,
MILE 300.0 +/-, ARKANSAS WATERWAY

Dear Ms. Gesing:

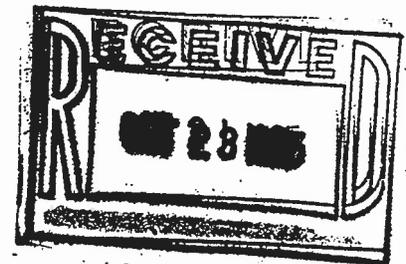
We have received copies of all correspondence to date, for the proposed replacement of the subject bridge at Fort Smith, Arkansas.

The General Bridge Act of 1946 requires that the location and plans for bridges over navigable waters of the United States be approved by the Commandant, U.S. Coast Guard prior to commencing construction. The Arkansas River is considered to be a navigable waterway of the United States for bridge administration purposes at the bridge site.

Applications for bridge permits should be addressed to Commander, Second Coast Guard District, 1222 Spruce Street, St. Louis, Missouri 63103-2832 Attention: Bridge Branch. The application must be supported by sufficient information to permit a thorough assessment of the impact of the bridge and its immediate approaches on the environment, including navigation. We recommend that the impacts of procedures for constructing cofferdams, sand islands, and falsework bents, etc., that will be employed to build the bridge and demolish the old bridge be discussed. The environmental assessment (EA) should contain also data on the number, size and types of vessels currently using the waterway. This information should be compared with past and projected future trends on the use of the waterway.

We agree to serve as a Cooperating Agency for the project from navigational standpoint. We should be given the opportunity to review the EA and be consulted before a decision is made to prepare a FONSI in lieu of an EIS.

cc: Reid Beckel - AHTD



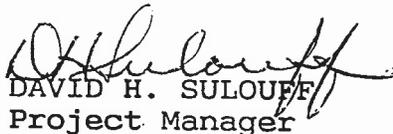
16591.1/300.0 ARWW
October 18, 1995

Subj: PROPOSED I-540 HIGHWAY BRIDGE, REPLACEMENT/REHABILITATION,
MILE 300.0 +/-, ARKANSAS WATERWAY

If the old bridge is eligible for the National Register of Historic Places, a Memorandum of Agreement (MOA), signed by the Federal Highway Administration and the Coast Guard requires the preparation of an EIS for demolition of an historic bridge, unless the structure is not considered important for preservation. A copy of the MOA is enclosed for your consideration. You will note that documentation and coordination beyond Section 106 and 4(f) requirements are necessary in order for us to accept a FONSI for such projects.

We appreciate the opportunity to comment on the project in this early stage. Please contact me at 314-539-3724 if additional information is needed.

Sincerely,



DAVID H. SULOUFF
Project Manager

By direction of the District Commander

Encl: (1) FHWA/USCG MOA

Western Arkansas Planning & Development District Inc.



October 25, 1995

Ms. Patti Geising
Michael Baker Jr., Inc.
2912 Rogers Avenue
Fort Smith, AR 72901

Dear Patti:

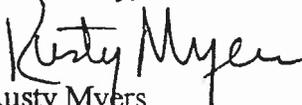
Enclosed is the map recently released by the Department of Defense showing those areas of Fort Chaffee, as highlighted in yellow, that DoD considers as excess property. As you know, it is the excess property that will become available for non-military uses, such as the proposed new highway route which your firm is in the process of studying.

As we discussed, a concern of the Local Redevelopment Authority (LRA), which is responsible for overseeing the development of a surplus property reuse study, is that adequate rights-of-way will be available through what is now Fort Chaffee for the new highway. Mr. Warren Johnson, Base Transition Coordinator at Fort Chaffee, tells me that opportunities to effect changes in the excess property boundaries will exist well into the planning process period which we expect to continue through 1997. This means that as the corridor study progresses through next year, we will have the opportunity to discuss with DoD - more specifically the National Guard - possible adjustments to the excess property boundaries. Obviously, it is to all parties best interests that the highway's route through this area be accommodated and I am confident all parties will work together to accomplish this.

On November 15 at 9:00 a.m. at the Fort Headquarters Building, I have scheduled a meeting for you and any others from your office with Warren Johnson and other executives at Fort Chaffee regarding this matter. I will be glad to give you a ride from your Rogers Avenue office to the Fort - I'll be at your office at about 8:45 a.m.

Should you have any questions regarding this matter in the meantime, let me know.

Yours truly,


Rusty Myers
Asst. Exec. Dir.

c: Hon. Bud Harper, Seb. Co. Judge and LRA Chairman
Mr. Warren Johnson, Base Transition Officer
Mr. Ken O'Donnell, WAPDD

cc: Reid Beckel - AHTD

November 16, 1995

Rusty Myers
Local Redevelopment Authority
1109 South 16th Street
P.O. Box 2067
Fort Smith, AR 72902

2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

(501) 783-7790
FAX (501) 783-7091

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40

Dear Rusty:

Thank you for arranging the meeting Monday with Fort Chaffee officials relative to the location of the proposed highway through the Fort. We felt the meeting was productive and an essential start to the cooperative effort necessary for such an endeavor. We have attached minutes of the meeting as prepared from our notes. Although we have sent these to all parties receiving a copy of this letter, please feel free to review and revise them if necessary.

We understand the significance of the Fort property along the river in that it is the only area in the United States in which the military owns both sides of a navigable waterway in which to conduct river crossing training. However, it is likely that Springhill Park will be regarded as a Section 4(f) property under FHWA regulations. Before property can be taken from the park, it must be demonstrated that no prudent and feasible alternatives exist to taking that land. We have specified below the information we will need from military officials in order to develop and compare alignment alternatives in this area:

- ◆ A map delineating the approximate training area along the north and south banks of the river, including areas needed for staging the maneuver and specifying the four crossing sites
- ◆ A diagram explaining the sequencing of the operation and the locations used for the various tasks of a given training session relative to the location of the constructed crossing
- ◆ The critical distance from highway bridge piers that is necessary for your training to proceed safely
- ◆ Whether or not a highway bridge could be located anywhere within the reach of river that encompasses the four crossing sites, or if the critical distance given above is from the upstream-most or downstream-most site
- ◆ Information or requirements regarding the smoke creation aspects of your training activities including normal time of day smoke is created, any data on the extent of smoke dissipation during normal wind conditions, and whether this aspect of the training can be curtailed should wind conditions indicate possible drifting of smoke across the highway
- ◆ Any other requirements that the military feels may be necessary for us to consider.



We would appreciate the above information by November 30, 1995.

As discussed at the meeting, we will provide you with a map showing the recommended adjustments necessary to the property release area in order to accommodate the highway corridor through Fort Chaffee.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in cursive script, appearing to read "Patricia S. Gesing".

Patricia S. Gesing, P.E.
Project Manager

Attachment

PSG/mew

cc: Reid Beckel - AHTD
William D. Richardson - FHWA
Lt. Col. Robert Dow - Fort Chaffee
Warren Johnson - Fort Chaffee
Major Tarry Marlal - AR ARNG



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY GARRISON
FORT CHAFFEE, ARKANSAS 72905-5000

December 5, 1995

Office of the Commander

Mr. Rusty Meyers
Local Redevelopment Authority
1109 South 16th Street
P.O. Box 2067
Fort Smith, Arkansas 72902

Dear Mr. Meyers:

Enclosed is an Information Paper with pictures, maps, and diagrams that describes Fort Chaffee's Water Obstacle Training Area and explains the factors that enter into the many different scenarios a river crossing operation may take. This includes current Army Doctrine for different types of bridging and rafting equipment, concurrently bridging both sides of the river, helicopter support of bridging operations, and smoke support of river crossings.

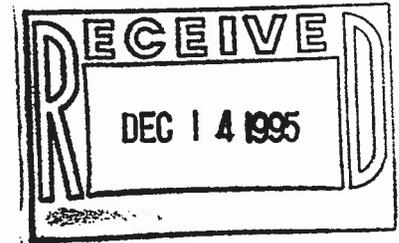
Based on the safety factors of the data reviewed, it is our recommendation that the best location for the Highway 71 Bridge would be West of gridline 84, (Map enclosed).

Should you have additional questions, please contact Mr. Warren Johnson or myself at 501-484-2282/2083.

Sincerely,

Robert A. Dow, Jr.
Lieutenant Colonel, U.S. Army
Commanding

Enclosures



cc: Reid Beckel - AHTD
William D. Richardson - FHWA
Major Tarry Marljar - National Guard

MEMORANDUM FOR COMMANDER, USAG

SUBJECT: Arkansas River Water Obstacle Training Area - Decision Paper

1. This is a Decision Paper.
2. Purpose. To provide the Local Redevelopment Authority (LRA) the Army's safety concerns on the construction of an interstate highway bridge in proximity to the Water Obstacle Training Area.
3. Recommendations. That you approve the information paper in the Enclosure, and forward it to the LRA.
4. Discussion. A review of current Army doctrine for bridging operations resulted in the following major safety factors concerning proximity to the major highway bridge:
 - a. Based on current and width of the Arkansas River two companies of boats and bays are required to cross the river. Per doctrine, 500 meters from the centerline is required to safely maneuver boats and bays.
 - b. The doctrinal use of smoke to cover a river crossing is required during training. Though Fort Chaffee's prevailing winds normally blow from West to East at 6.7 miles per hour, any shifts in winds could create a hazard to motorists. Smoke should doctrinally be employed 200 meters upwind to cover boats, bays, and the crossing site.
 - c. CH-47 Helicopters are used to transport bridging bays. For safety purposes, the aircraft should not overfly troops or equipment and major civilian thoroughfares should be avoided. This would require flights 300-500 meters upstream from the centerline, based on wind and smoke.
 - d. Aircraft, smoke, boats, bays, and the bridge construction will draw the attention of drivers on the bridge. The "rubbernecking" should be considered for safety purposes and the bridge sited appropriately.
6. Point of contact for this issue is the undersigned at extension, 2466.

Enclosure

EARL R. MASSEY, JR
LTC, MI
Chief, Operations Division

COORDINATION:
SAFETY
ENGINEER SCHOOL
LR COE

| | | |
|------------------|----------------------|-----------------------|
| Concur/Nonconcur | <u>Don Byars</u> | Date: <u>6 Dec 95</u> |
| Concur/Nonconcur | <u>Joe Speilman</u> | Date: <u>5 Dec 95</u> |
| Concur/Nonconcur | <u>MAJ Muehlberg</u> | Date: <u>6 Dec 95</u> |

APPROVED *RCS*
 DISAPPROVED _____
 SEE ME _____

INFORMATION PAPER

1. General: The Arkansas River Water Obstacle Training Area consists of four improved river crossing sites and requires an area three kilometers wide by four kilometers deep with an adequate road access to and from both sides of the river for safe operations. The crossing distance at each site is dependent on the water level, although during normal conditions minimum distance is 800' with a maximum of 1300'. During periods of high rainfall these distances may increase to 2000' plus. River crossing sites consist of rock and shale surfaced roads and ramps on the south bank. Sites are easily accessible from the cantonment area by roads and tank trails. Sites on the north bank are less improved, but fully usable with a connecting road network to Highway 59. Staging areas on both sides of the river are excellent. The current velocity ranges from 4 to 12 Feet Per Second (FPS), although average velocity is 6 FPS.

2. Discussion:

a. Sites are located from 200-500 meters apart to avoid collisions of rafts on adjacent center lines:

| <u>SITE</u> | <u>SOUTH BANK</u> | <u>NORTH BANK</u> |
|-------------|-------------------|-----------------------------|
| #1 | Grid: 84601167 | Grid: 84471190 and 84571195 |
| #2 | Grid: 84901187 | Grid: 84821211 |
| #3 | Grid: 85211220 | Grid: 85071235 |
| #4 | Grid: 85791255 | Grid: 85601287 |

b. A minimum of two Bridge Companies of equipment are required to span the river. The crossing is separated into six distinct control measures (Enclosure 1): staging area, holding area, call forward areas, crossing site, holding area, and attack positions. A staging area photo is shown on Enclosure 2. These control measures are shown in black on Enclosure 3. A strong road, network shown in red, is required for traffic.

c. Once boat companies are deployed in the river they require a 200 meter front to prepare section bays. Two boat companies assemble their bays (Enclosure 4) along the river sides and then push them along the river for assembly. Often CH-47 Chinook Helicopters ferry pieces of the bridge to the river for construction (Enclosure 5). Appropriate fly areas are required for the round-trip to the river which is clear of troops and vehicles as the CH-47 may jettison the bay in an emergency. A completed ribbon bridge is shown on Enclosure 6.

d. River Crossing doctrine also requires smoke to be dispensed during a river crossing to prevent the enemy from observing and calling fires on the site. Planners should coordinate this effort but prevent smoke from drifting across Lock and Dam 13, the proposed highway bridge, and from rising into the Fort Smith Regional Airport flight path. Smoke area is shown in hash marks on the map (Enclosure 7).

Baker

November 10, 1995

«NAME»
«TITLE»
«AGENCY»
«ADDRESS_1»
«ADDRESS_2»
«CITY», «STATE» «ZIP»

«ATTENTION»

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
CORRIDOR FEASIBILITY STUDY

Dear «SALUTE»:

A preliminary copy of the *Corridor Feasibility Study* for the U.S. 71 Relocation project between DeQueen, Arkansas and I-40 is enclosed for your review. This document presents the development and comparison of several 3 kilometer (2 mile) wide corridor alternatives. The location of these corridors is based on the critical environmental constraints identified during our meeting of July 10, 1995 and through community and local officials' input received at the July and October series of public meetings.

Environmental constraint data obtained from various resource agencies was entered into a geographic information system (GIS) in order to develop a constraint map for the entire study area. This constraint map allowed engineers and scientists to develop corridors based on an assessment of the overall environmental resources known to exist within the study area. The resulting corridors all contain some important environmental resources, as reflected by the *resource inventory* data provided in the report. The presence of a resource within a corridor is not an indication that this resource would be affected by the proposed highway. The 3 kilometer corridor width will enable avoidance and minimization of sensitive resources within the selected corridor during the alignment development process, the next phase of study.

We encourage your attendance at a meeting on December 7, 1995 at 1:00 PM in Room 1001 of the State Highway Department Building, Little Rock, Arkansas. The purpose of this meeting is to provide the opportunity for your review of the corridor constraint mapping and to discuss any concerns you may have relative to your area of expertise. Following the meeting, we request any written corridor comments by December 15, 1995 in order for the project to remain on schedule. Corridor selection is anticipated by year end or early 1996.

Thank you for taking the time to review this document in preparation for the upcoming meeting. Your continued input throughout the duration of this project is appreciated. If you have any questions or need additional information, please contact us at 412-269-4603, or 501-783-7790.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Reid Beckel - AHTD; William D. Richardson - FHWA



A Total Quality Corporation

STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

8001 NATIONAL DRIVE, P.O. BOX 8913
LITTLE ROCK, ARKANSAS 72219-8913
PHONE: (501)682-0744
FAX: (501)682-0798

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P. O. Box 12259
Pittsburgh, PA 15231-0259

RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40

Dear Ms. Gesing:

The agency staff have reviewed the preliminary Corridor Feasibility Study for U.S. 71 Relocation - DeQueen, Arkansas to Interstate 40 and agree with the early assessments that Corridor B seems to best address the identified issues. We look forward to working with you in the development of the alignment alternatives.

If you have any questions or comments regarding this response, please contact Mr. John Giese at (501)565-7424.

Sincerely,



Randall Mathis
Director

RM:or
015

cc: Reid Beckel - AHTD

Arkansas Game & Fish Commission
2 Natural Resources Drive Little Rock, Arkansas 72205

David E. Miller
Chairman
Melbourne

Jr. James E. Moore, Jr.
Vice Chairman
Little Rock

Kirk Dupps
Eureka Springs

V.R. "Witt" Stephens, Jr.
Little Rock



Steve N. Wilson
Director

Bill Bridgforth
Pine Bluff

Rick Evans
Calion

Marion McCollum
Stuttgart

Professor Dwight Talburt
University of Arkansas
Fayetteville

December 8, 1995

Ms. Patricia S. Gesing, P.E.
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

Dear Ms. Gesing:

Thank you for your letter of November 10, 1995 regarding Job 1747, U.S. 71 relocation, DeQueen to I-40, Corridor Feasibility Study.

David Criner of my staff attended your meeting on December 7, and based upon information provided at this meeting, I have no concerns with your preferred alternative, Corridor B.

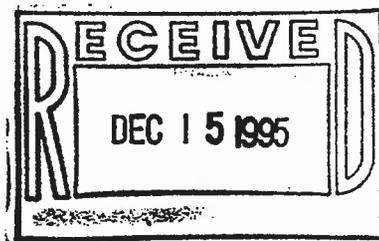
I understand that residents in the Waldron area prefer that the route be located to the west of their City. I see no reason to object to their preference.

We look forward to further cooperative work with planners from the relevant agencies.

Cordially

STEVE N. WILSON,
Director

SNW:DGC:ac



cc: Reid Beckel - AHTD



United States Department of the Interior

FISH AND WILDLIFE SERVICE
2524 South Frontage Road, Suite B
Vicksburg, Mississippi 39180-5269

IN REPLY REFER TO:

December 13, 1995

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker, Jr. Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

Dear Ms. Gesing:

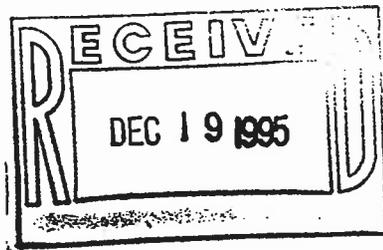
The Fish and Wildlife Service (Service) has reviewed your letter dated November 10, 1995, and the accompanying information concerning the corridor feasibility study for the U.S. 71 Relocation project. Our comments are submitted in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661-667e).

At this time, three alternative corridors are being considered for the relocation of Highway 71 between DeQueen, Arkansas to Interstate 40. The Service has not identified any concerns with corridor B, which at this time appears to be the alignment most likely to be selected, that would eliminate this alternative from further consideration. However, additional consultation with the Service would be required regardless of the corridor selected concerning potential impacts to wetlands and to endangered species.

We appreciate the opportunity to provide these comments.

Sincerely,

Margaret Harney
Arkansas Highlands Coordinator



cc: Reid Beckel - AHTD



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

DEC 14 1995

Construction-Operations Division
Regulatory Branch

FILE ID No. 13110

Patricia S. Gesing, P.E.
Project Manager
Transportation Planning Department
Michael Baker, Jr., Inc.
P.O. Box 12259
Pittsburgh, Pennsylvania 15231-0259

Dear Ms. Gesing:

This is in regard to a meeting held at the Arkansas State Highway Department Building on December 7, 1995, concerning a Corridor Feasibility Study for the relocation of U.S. Highway 71 between DeQueen and I-40 near Alma in Arkansas.

During the meeting, you indicated a selection of a preferred corridor for the relocation of the highway. Also, it was revealed in the meeting that any alternative alignment in the selected corridor would require a crossing of Fort Chaffee Military Reservation where several potential wetland areas exist, impact Little Rock District (LRD) Corps of Engineers public use areas, and require a new bridged crossing of the Arkansas River. At the conclusion of the meeting, you indicated the need to expedite all comments on the selection of the preferred corridor from all in attendance by December 15, 1995.

We cannot furnish the information in the specific time frame you requested. The relocation of the highway in the specific corridor would involve the interest of several LRD elements. All the District's elements will need to assemble to discuss all the issues before their comments could be gathered and combined for submittal. This would require more time than you have allotted for a response. You have agreed to meet with the different elements of the LRD on December 14, 1995, to answer any questions they may have about details of the project. The meeting will be held at 10:00 a.m. in Room 7208 (District Engineer's Conference Room) of the Federal Office Building, Little Rock, Arkansas. A combined response from the LRD concerning the preferred corridor will be forthcoming after this meeting.

-2-

Your cooperation in the Regulatory Program is appreciated. If you have any questions, please contact Mr. Larry Harrison at (501) 324-5295.

Sincerely,

A handwritten signature in cursive script, appearing to read "Louie C. Cockmon, Jr.", written in dark ink.

Louie C. Cockmon, Jr., P.E.
Chief, Regulatory Branch

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

**U.S. 71 Relocation - DeQueen to I-40
Meeting Minutes**

Subject: Corps of Engineers and Military Concerns at the Arkansas River area of Corridor B

Attendees: See attached list

Time and Place: December 14, 1995, 10:00 a.m.
Corps of Engineers District Offices
Little Rock, Arkansas

1. Larry Harrison opened the meeting and provided an update on the overall ISTEA High Priority Corridor from Shreveport, Louisiana to Kansas City, Missouri for which this project is a part. Larry summarized his involvement in the study to date and that the Corps was being asked to provide comments on the preferred Corridor B (and A in Waldron). This corridor was not identified specifically as the preferred in the Corridor Feasibility Study provided to the Corps for review in mid-November. Larry stated that the purpose of the meeting was to gain an understanding from the various Corps divisions involved as to any comments on the preference of Corridor B for the project. Larry then turned the meeting over to Patty Gesing.
2. Patty asked that each party give their name and function while the attendance sheet was being circulated. She briefly explained Baker's role in the study to conduct engineering and environmental studies and to prepare the Draft and Final EIS. Patty then reviewed the purpose of the project to construct a regional interstate highway, connect major population centers and provide additional access, as stated in ISTEA. She explained how the project would fit into the regional interstate system and provide a north south route through Arkansas that falls between I-35 and I-55 in neighboring states.
3. The size and scope of the study area was explained to cover over 1,000 square miles and varies from 0 to 12 miles at the south end to nearly 20 miles at the north end. Patty explained how the corridor approach works on a large project; that the corridors would be 2 miles in width and that alignments would be developed in detail within one of these corridors. These corridors had been evaluated based on broad input and compared based on their *feasibility*. In this context, Baker's meaning of feasibility is that a corridor can accommodate alignments developed within it that 1) meet the purpose and need of the project, 2) meet the design criteria for interstate design, 3) are constructable and 4) can avoid or minimize impacts to sensitive resources known to exist within it. Patty noted that all corridors contain some sensitive resources but that the corridors were developed to avoid as many of these constraints as possible. This type of approach can minimize study efforts by not locating a corridor (or a future alignment) through a known sensitive resource that would rule the corridor out later. The approach results in fewer, better alternatives (corridors) that meet the purpose and need.
4. Patty reviewed the project study process adopted for this project. The study is currently at the point of selecting a corridor and much work has gone into the development of these corridors. Project efforts leading up to corridor development include the Scoping Process, the Transportation Needs Analysis and the Major Investment Study. Patty summarized each of these aspects as noted below.
5. Scoping - The scoping phase of the project included meeting with several state and federal resource agencies, the public and local elected officials. The most important environmental issues to be considered in the corridor phase (and the future alignment phase) were developed at a meeting of resource agencies in

July 1995. These constraints are all shown on the GIS maps of the project and evaluated in the corridor feasibility study. In addition, a series of public meetings led to the additional requirement that the highway (if possible) be located within 2 miles of the communities that U.S. 71 currently serves. This need was identified as well by local elected officials. (A group of nearly 80 elected officials and other community leaders were invited to a total of three meetings throughout the summer and fall of 1995.)

6. Needs - The Transportation Needs Analysis stated the purpose of the project and also evaluated whether other needs exist along the route. This study found that currently 62% of U.S. 71 does not operate at an acceptable level of service and that by 2020, 97% of the route would not operate acceptably. Safety is a concern along the route with several segments experiencing accident rates that exceed (on I-540 they are double) the statewide rate. Also determined is the need to serve a growing population and to accommodate the social needs of having to travel nearly 50 miles to reach a major medical facility. Emergency services would also be able to respond more quickly with the proposed project as a route.
7. MIS - Patty described the regulatory requirement, work efforts and results of the major investment study in the Fort Smith/ Van Buren metropolitan area. She described in detail the following, which was provided to all attendants in the form of excerpts from the MIS:
 - a) The make-up of the MIS Working Group
 - b) The simplified objective of the MIS (to determine whether or not the High Priority Corridor could be carried on I-540, or whether it needed to be on new location.)
 - c) Additional needs and objectives of the High Priority Corridor through Fort Smith
 - d) Results of the initial brainstorming session of the Working Group which resulted in three apparently viable investment strategies: 1. Widen I-540; 2. Construct an interstate highway on new location and through the western portion of Fort Chaffee; 3. Construct cantilevered through lanes above I-540; (strategy 3 was eventually thrown out)
 - e) The future traffic volumes listed by year from 1994 to 2020 along I-540 and I-40. It was noted that currently one section of I-540 needs to be six lanes, by 2010 several sections need to be 8 lanes, and by 2020 four sections need to be 10 lanes to operate acceptably.
 - f) The section by section 2020 traffic volumes and the required reduction in traffic volumes in order for I-540 to operate at level of service C (acceptable). Patty noted that such a detailed study was conducted for each of the three strategies noted in item d) above but not reviewed in the interest of time. This information is in the excerpt package. Patty noted that I-540 volumes of over 90,000 by 2020 demonstrate the urban, local use aspect of this roadway, compared to I-40 volumes of 46,000 by 2020, more typical of an interstate serving regional traffic.
 - g) The I-540 and I-40 2020 traffic volumes by year under the "Build an alternative route investment strategy". Patty noted that the Working Group was clearly aware that the High Priority Corridor would not solve all the traffic congestion problems of Fort Smith. It was recognized that this is not the purpose of the High Priority Corridor, but it certainly makes sense to not further compound traffic issues in the city. The Working Group recognized that opening the High Priority Corridor actually afforded the city several additional years to monitor traffic volumes and determine the appropriate measures to be taken.
 - h) The measurements of effectiveness evaluation to determine the most effective investment strategy
 - i) The resolution passed by the Bi-State Policy Committee (the Metropolitan Planning Organization) as recommended by the Working Group

8. Patty then reviewed a summary of the basis for the elimination of an investment strategy or corridor along I-540. This summary was prepared for the Corps and is attached to the minutes.
9. Mr. Cockman inquired as to how the MIS would be covered in the EIS. Patty responded that it would be summarized, but sufficient detail provided to document the consensus reached. Mr. Cockman added that this would be important.
10. Mr. Cockman inquired if a corridor west of Fort Smith had been considered. Patty responded that this was not evaluated because it did not provide development potential for the City of Fort Smith and would add considerable length to the highway. It would also require widening I-40 to six lanes in the future. By connecting directly at Alma, traffic traveling north do not have to utilize the I-40 east-west facility, so I-40 continues to function at an acceptable level of service beyond 2020 (the design year). Mr. Rains added that Alma has been identified as the logical terminus for the project because this provides the most direct, cost effective and feasible route for the High Priority Corridor.
11. Larry asked Patty to review the corridors developed and the constraints in the Arkansas River area specifically. Patty noted the constraints of Springhill Park, the military river crossing training area (the only one in the U.S.), the bald eagle nest site, wetlands, the Fort Smith landfill and the property release of the Fort (that it is desirable to go through), as well as the dense urban development of the area. Another concern is the need to cross the river at a relatively narrow point and to do so in a perpendicular fashion. Patty explained that the I-540 corridor would compound the problems of limited developable land in Fort Smith because it displaces many businesses and there may not be anywhere for these businesses to relocate in the Fort Smith area.
12. Mr. Jack Johnson asked Patty to clarify how a cantilevered through lane would work and was it like those he has seen in Oakland. Patty explained that piers would be located just outside the shoulder to support a "bridge" of lanes that would cantilever back over the highway. This minimizes right-of-way and displacements but was found not to be functional because these lanes are not available at all for local use and therefore would not be effective.
13. Mr. Miles Johnson inquired about the expected right-of-way width through Springhill Park. Patty responded 300 feet would be a good estimate to use. Patty noted that the park would likely be bridged due to its proximity to the floodplain and this would still be an estimate in the EIS. She also explained that it looked like the narrowest point of the park would also provide a good crossing of the river. Major Muehlberg noted that an elevated structure would appear to be a minimal impact to the park, and perhaps only affect the boat ramp. Mr. Johnson added that perhaps only the boat ramp and rest rooms would need to be relocated to the west end of the park. There was also some discussion as to the current and future use of the park land in this vicinity. It first appeared that it is not developed. It was then confirmed that the narrowest point of the park was near the turnaround. Patty added that it was first thought that the highway could be located at the extreme eastern end of the park. However, a bald eagle nest was discovered in this area and this portion of the park would also be very close to the military river training area. Fish and Wildlife Service guidance require a distance of 1,500 feet around a nest site. Relative to the military training area, smoke is released during the training which raises concerns about motorist safety.
14. Patty noted that Baker would like to hear about any types of guidance or methods to minimize impact to the park, as well as comments on the preferred Corridor B in this area. She noted that the alignment development work would use the COE guidance to prevent developing alternatives that are not feasible.
15. The length of the bridge was briefly discussed. Mr. Burrough noted that other bridges on the Arkansas River went from levee to levee.

16. Larry Harrison asked Wendall Meyer about 4(f). Wendall responded that the Section 4(f) evaluation would document that alternatives east or west of Corridor B were not prudent and feasible due to other known constraints, and that alternatives to avoid use of the 4(f) property (implied within Corridor B) would involve extraordinary factors. Larry asked if the 4(f) alternatives then would only be within Corridor B. Wendall reiterated that the Draft EIS/4(f) document would address why alternative corridors to the east or west could not be developed. Wendall noted however that Corridor B would offer the ability to minimize impacts to the park and that the mitigation measures would replace the functions and values affected.
17. Mr. Burrough noted that this is how we should document why an alternative west of Fort Smith was not developed.
18. Larry noted that with all the constraints within Corridor B, it may only be possible to develop one alternative and would this satisfy NEPA and the 404(b)(1). It was noted that more than one alternative could likely be developed in this area.
19. Larry noted that the project would require an individual Coast Guard permit.
20. Mr. Miles Johnson asked how we would handle protection of the public from noise and hazardous spills. Patty responded that this had not yet been addressed, but that if the Corps felt it was a serious concern, that it could be discussed. Mr. Woolfolk commented that this may not be an issue as many highway bridges cross over areas used by the public in Little Rock and elsewhere.
21. Larry asked Patty to mention the Coast Guard's comments. Patty explained that the Coast Guard would like to see the bridge in a straight segment of the river, but added that one does not exist in the area. She noted that Baker had already considered the Coast Guard concern about crossing in a perpendicular fashion. The Coast Guard will as usual provide horizontal clearance requirements based on where the alternatives cross and consider issues such as river current, prevailing winds and the types of vessels using the waterway navigation system. The Coast Guard suggested crossing very close to the lock and dam to avoid involvement with the river traffic. Patty noted that the area close to the dam was not feasible for a number of other reasons, namely going straight through the City of Barling.
22. Mr. Battreal noted that the floodways and floodplains are dynamic because the Corps is continually doing studies. He specifically mentioned that the floodway for the Arkansas River does not continue past Dam 13. Mr. Battreal cautioned that we be sure to address the smaller streams. He noted that FEMA does not always have the most recent information. He suggested requesting the most current information from his office. Patty said that Baker would do so.
23. Larry noted that the Corps would like to issue a joint public hearing on the Draft EIS and 404 permit application for this project and that the Corps could permit all the alternatives so that we could go with any of them. In order to do so, Larry noted that it is important that the Draft EIS document all alternatives (including those considered in the MIS) to satisfy the 404 (b)(1) alternatives analysis.
24. Mr. Burrough noted that the Draft EIS should cover all the bases to satisfy 404, 401, NEPA and 4(f) so that nothing would need to be revisited. He emphasized that this would take a lot of cooperation and coordination.
25. Mr. Harris emphasized that the Corps' concerns with respect to documenting the MIS and other corridor alternatives eliminated was so that they could refer the public to the Draft EIS if questions on the permit application arose.

26. A discussion then arose about practicability and the Section 404(b)(1) guidelines. Patty noted that even if an alternative involves less impact to aquatic resources, the guidelines do not require the use of such an alternative if it involves other significant adverse environmental (non-aquatic) impacts. It was noted that widening I-540 as an alternative to wetland impacts does not meet the purpose and need of the project and for reasons of cost and logistics is not considered practicable.
27. Major Marlar noted that the Pentagon had already thoroughly evaluated the property that is considered the minimal essential to the military operations of the Fort. This should be considered with respect to using the area east of Springhill Park for avoidance of the park and thereby impacting the river training area. He further explained that even though the Fort would be administered by the National Guard, it would continue to serve as a training area for the active-duty army, the National Guard and the Army Reserves.
28. A question was raised as to whether Fort property was available north of Springhill Park, which was answered affirmatively. This piece of Fort property is bounded on the east by an access road used during the river crossing training.
29. Larry Harrison said that he would provide copies of information and maps to the various Corps elements so that he could get a comment letter back to Baker by December 22. Mr. Burrough noted that all comments should be back to Larry by close of business on Tuesday, December 19.
30. Larry inquired as to the expected date for the Draft EIS. Patty responded that it would be out late next year, and earlier if it was possible.
31. Mr. Myers stressed the importance of the corridor decision with respect of the Local Redevelopment Authority's requirement to finalize the Fort Chaffee property release by March 11, 1995. Mr. Myers discussed the importance of expediting alignment work at the Fort. Patty noted however that only the corridor decision affected the final property release, and that Baker had already identified the areas that needed some slight revision to accommodate Corridor B in this area. This information will be presented to the Local Redevelopment Authority upon final corridor selection.
32. The meeting was adjourned at 12:05 p.m.

U.S. 71 Relocation - DeQueen to I-40
Meeting Attendance Sheet

Corps of Engineers - Little Rock District
December 14, 1995

| NAME | AFFILIATION | PHONE NUMBER |
|-----------------------|---|-------------------|
| 1 Lou Cockmon | Regulatory Br, COE, Little Rock | 501 324 5295 |
| 2 MAJ TARRY L. MARLAR | AR NAT. GUARD | 501-484-2501 |
| 3 LTC EARL Massey | USAG, Chief Ops Div, Ft. Chaffee | 501 484-2466/2041 |
| 4 DAVID BURROUGH | DEPUTY DISTRICT ENGR - LITTLE ROCK DIST | 501-324-5053 |
| 5 MAS. S.E. MUEHLBERG | DEPUTY DISTRICT CDR | 501 324 5531 |
| 6 Jack Woolfolk | Ch, Engineering Div | 501 324 5566 |
| 7 Conrad Battreal | Flood Plain Mgt. | 501-324-5037 |
| 8 JOE CRAIG | COE, REAL ESTATE DIV. | 501-324-5716 |
| 9 MARGARET Boismier | COE REAL ESTATE DIV | 501-324-5716 |
| 10 Jerry Harris | COE, Regulatory Br | 501-324-5396 |
| 11 JACK JOHNSON | COE, NATIONAL RESOURCES | (501) 324-5674 |
| 12 Miles S. Johnson | COE, Russellville Project Office | (501) 968-5008 |
| 13 Donald Bratton | COE, Con-Ops Div - Maint. Eng. Sect | (501) 324-5730 |
| 14 Larry Harmon | COE, Regulatory Branch | (501) 324-5294 |
| 15 Rod Beckel | AHTD | 569 2103 |
| 16 Tom H. Rains | FED. Hwy Adm. | 324-6439 |
| 17 Wendall Meyer | FHWA | 324-6430 |
| 18 John Harris | AHTD | 569-2281 |
| 19 Lynn Malbrough | AHTD | 569-2281 |
| 20 Rusty Myer | West. Ark. PDD - Ft. Chaffee Redew. Authn. | 785-2651 |
| 21 Vicky Gering | Baker | 412-269-4603 |
| 22 David Bednar | Baker | 501-783-7720 |
| 23 | | |
| 24 | | |
| 25 | | |



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

OEO

Construction-Operations Division
Regulatory Branch

FILE ID No. 13110-1

Patricia S. Gesing, P.E.
Project Manager
Transportation Planning Department
Michael Baker, Jr., Inc.
P.O. Box 12259
Pittsburgh, Pennsylvania 15231-0259

Dear Ms. Gesing:

This is in regard to meetings held at the Arkansas State Highway Department Building on December 7, 1995, and the Federal Office Building on December 14, 1995. The two meetings were held to discuss a Corridor Feasibility Study for the relocation of U.S. Highway 71 between DeQueen and I-40 near Alma, in Arkansas.

In the meeting at the Highway Department, you indicated the selection of a preferred corridor B (except A around Waldron, Arkansas) for the relocation of the highway. The selected corridor would require a crossing of Fort Chaffee Military Reservation where several potential wetland areas exist, impact Little Rock District (LRD) Corps of Engineers public use areas, and require a new bridged crossing of the Arkansas River. Also, you requested comments from all in attendance on the selection of the preferred corridor by December 15, 1995.

You were informed in the meeting discussed above and in a letter dated December 13, 1995, that we could not furnish the requested information in the specified time frame. The selection of the specific corridor involves the interest of several LRD elements. They needed to assemble to discuss all the issues before their comments could be gathered and combined for submittal. After the meeting, you agreed to meet with the various elements of the District to answer any questions about the selection of the corridor and its constraints, to expedite a combined response.

As agreed, you met with the various elements of the LRD at the Federal Office Building on December 14, 1995. Also, representatives from the Federal Highway Administration, Arkansas State Highway and Transportation Department, Fort Chaffee Military Reservation, and the Local Redevelopment Authority were in attendance. During the meeting, you outlined the sequencing of events in the selection of the preferred corridor, pointed out

different constraints, and discussed vital issues. At the conclusion, we agreed to submit a District response regarding the preferred corridor by December 22, 1995.

Our comments and concerns regarding the Corridor Feasibility Study and selection of a preferred corridor are as follows:

a. We are concerned about selecting a corridor at this phase of the project that would provide only one alternative study alignment for a highway crossing of the Arkansas River without a complete Section 404/NEPA evaluation. Because of the constraints identified by elements of the LRD and Fort Chaffee Military Reservation in the preferred corridor, an alignment for a bridged crossing of the Arkansas River would be limited to one specific crossing of an undeveloped section of a Corps' public use area (Springhill Park), without additional impacts to existing Corps and military facilities. Other alternative alignments for a bridged crossing of the river on the west side of the corridor would require specific construction alternatives to protect or replace facilities in a fully developed section of the park (addressed below). Fort Chaffee has indicated their river crossing site on the east side of the corridor is essential to their operation and should be avoided.

Also, by considering the existing I-540 as Corridor C instead of bringing it forward as an alternative study alignment in the Draft Environmental Impact Statement (DEIS), the only other potential crossing of the Arkansas River in the total study area has been eliminated at this stage without considering the Section 404 requirements. Your review has revealed that Corridor C through Fort Smith would have the least impact on "waters of the United States," but with other major impacts on the human environment. Therefore, we recommend that this section of Corridor C be included in the DEIS as an alternative study alignment to determine its "practicability" along with all other distinct alternative alignments in the preferred Corridor B. We feel this would more fully address the alternative analysis requirements of the Section 404 (b)(1) guidelines, as well as allowing full public comment on a reasonable array of alternatives.

b. In preparing the final DEIS, we recommend that a map be included showing the specific locations and approximate dimensions of all wetlands and other waters of the United States, in relation to the alternative alignments being studied. Also, a short narrative, about the quality and calculated impacts of wetlands that would be impacted, is recommended directly below each alternative alignment exhibited in the DEIS. This would give all reviewing the DEIS a complete wetland impact comparison

up front for each alternative alignment, and clearly define the selection of a preferred alignment that would comply with the Environmental Protection Agency's (EPA) 404(b)(1) Guidelines.

We further recommend that potential mitigation sites, and plans to develop or enhance wetland parameters on each of them, be included in the DEIS. This would provide essential information for us to determine the project's compliance with the final phase of the Guidelines when processing of a Department of the Army (DA) permit for the required fills in wetlands and other waters of the United States to relocate the highway. Also, the selection of these sites should be coordinated with the Corps and the U.S. Fish and Wildlife Service for approval, prior to their inclusion in the DEIS.

c. It appears that the proposed relocation of the highway in the preferred corridor would bisect Springhill Park in the immediate vicinity of the downstream boat launching ramp. In conjunction with the ramp, the waterborne restroom with showers, and the four camp sites located near the cul-de-sac would no longer be serviceable to the park, due to noise and potential bridge construction. Should the final highway alignment be through this specific area, minimum mitigation should be to replace all facilities adversely impacted by the project to another portion of the park prior to the construction of the highway. Additional concerns may surface when the final alignment of the highway is refined or aligned through another section of the park.

Also, the following concerns will need to be addressed when the final alignment is selected for the highway, to maintain the park's function:

- (1) Future access to the park.
- (2) Signage on the new highway notifying travelers of the park.
- (3) Change in use of the park from being oriented toward campers and fishermen to stop-over for travelers using the highway.
- (4) The proximity of the new roads that would be required to provide access to the cemetery in the park.
- (5) Impacts on the 29 full service sites and restroom in "B" loop of the park.
- (6) Measures to be taken along the new highway and bridged crossing of the river to protect the public.

d. If the final alignment of the proposed highway or bridge over the Arkansas River crosses any lands which were acquired in fee or easement for the McClellan-Kerr Arkansas River Navigation System, appropriate real estate instruments would be required from our Real Estate Division prior to any work.

e. Construction in a floodplain for the highway project must not adversely affect flood heights. Executive Order 11988 and local flood ordinances must be complied with for any work in the floodplain. Any cities or counties participating in the National Flood Insurance Program will require a permit for work in the floodplain/floodway. The floodplains are continually being updated by the Corps of Engineers and other Federal Agencies. The latest floodplain information must be used for hydrologic and hydraulic analysis.

We appreciate your assistance and cooperation in addressing these concerns in the DEIS to expedite a Section 404 evaluation on the subject project pursuant to the Intermodal Surface Transportation Efficiency Act (ISTEA). If you have any questions, please contact Mr. Larry Harrison, Project Manager, at (501) 324-5295. He will coordinate any questions you may have with the appropriate District element and provide you with a timely response.

Sincerely,



P.S. Morris
Colonel, Corps of Engineers
District Engineer

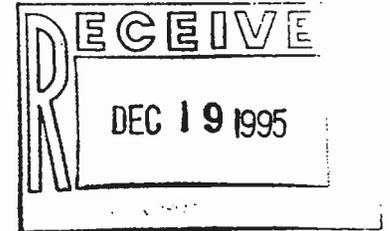
Enclosures

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Date: December 14, 1995
File: 1950/7700

Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
Corridor Feasibility Study



Dear Mrs. Gesing:

This letter is in response to a meeting held on December 7, 1995 in Little Rock, Arkansas. At this meeting you discussed the pros and cons of three alternative corridors. Your recommendation was Corridor B with the exception of Corridor A west of Waldron. The Forest concurs with this selection.

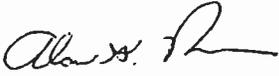
Earlier in this process we gave you a list of issues. Many of these issues need to be addressed as you enter the next stage of this project, developing alternative alignments and the EIS. Our concerns are summarized as follows:

- 1) Access from US 71 to forest land.
- 2) Access to the Ouachita National Recreation Trail where it crosses US 71.
- 3) Visual Impacts from US 71 as seen along the road as well as seen from the Ouachita National Recreation Trail and Talimena Scenic Drive. Corridor B is presently proposing 200 foot cut slopes in Fourche Mountain which could have major visual impacts.
- 4) The effects on wildlife and wildlife habitat.
- 5) The effect the highway development will have on the short-leaf pine bluestem community and red-cockaded woodpecker. The widening of the road may further fragment this habitat.
- 6) Any effects on Threatened, Endangered or Sensitive Species and Cultural Resources will need to be addressed. The Forest hosts some 42 species of sensitive plants.
- 7) The effect the widening of the road will have on the water quality of Irons Fork Reservoir and the Fourche Lafave River system needs to be addressed.
- 8) Corridor B shows 158 acres of Poteau Mountain Wilderness being impacted. This would require declassification of these acres within the road right of way.

9) Increased usage of recreation facilities.

cc: Reid Beckel - AHTD

We are looking forward in the months ahead to work with you. Please continue to contact John Cleeves with any questions you may have.

A handwritten signature in cursive script, appearing to read "Alan G. Newman".

ALAN G. NEWMAN
Forest Supervisor



Arkansas Soil and Water Conservation Commission

J. Randy Young, P.E.
Executive Director

101 EAST CAPITOL
SUITE 350
LITTLE ROCK, ARKANSAS 72201

PHONE 501-682-1611
FAX 501-682-3991

December 22, 1995

Ms. Patricia S. Gesing, P.E.
Michael Baker Jr., Inc.
Post Office Box 12259
Pittsburg, PA 15231-2048

RE: CORRIDOR FEASIBILITY STUDY

Dear Ms. Gesing:

Thank you for the opportunity to review and provide comments on the preliminary Corridor Feasibility Study and corridor selection for the U.S. 71 Relocation Project between DeQueen, Arkansas and I-40.

The Arkansas Soil and Water Conservation Commission has no objections to the selection of Corridor A around Waldron and Corridor B for the remainder of the segment below Fort Smith. We understand that the selection of a corridor for the segment connecting I-40 to the one below Fort Smith is yet to be determined, pending discussions with the Department of the Army.

The Commission has some concerns, however, that could affect alignment considerations. One concern would be the potential impact the alignment could have on the ground water quality. It appears that the southern most portion of the project may touch on a vulnerable ground water area that is susceptible to surface impacts from construction or accidental spill. Another concern would be the potential impact the alignment could have to domestic and/or municipal water wells. Other Commission concerns are on potential impacts to streams and rivers in the area due to construction of stream crossings and stormwater runoff from the roadway, and the potential impacts to wetlands due to the alignment passing through these areas.

The Commission appreciates your consideration and attention to the above-mentioned items. Details on the above concerns can be furnished by calling Mr. Joseph Krystofik at (501) 682-1608.

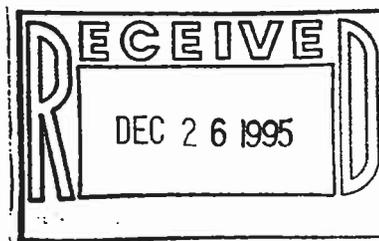
Sincerely,

A handwritten signature in black ink, appearing to read "J. Randy Young".

J. Randy Young, P.E.
Executive Director

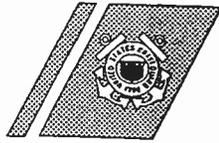
JRY:JK:ps

cc: Reid Beckel - AHTD



U.S. Department
of Transportation

United States
Coast Guard



Commander
Second Coast Guard District

1222 Spruce St.
St. Louis MO 63103-2832
Staff Symbol: (ob)
Phone: (314) 539-3724

165991.1/290-292 ARWW
January 11, 1996

Ms. Patricia S. Gesing, P.E.
Michael Baker, Jr., Inc.
P. O. Box 12259
Pittsburgh, PA 15231-0259

Subj: PROPOSED I-540 HIGHWAY BRIDGE, MILE 290.0 - 292.0 ARKANSAS
WATERWAY

Dear Ms. Gesing:

The following is provided as discussed during the December 7, 1995 meeting in Little Rock.

The preferred Alternative B for the subject project involves a river crossing between Miles 290.0 and 292.0 of the Arkansas Waterway.

It is important to emphasize Coast Guard jurisdiction for all issues dealing with the bridge, from abutment to abutment. This includes pier placement, horizontal & vertical navigational clearances, 303/4(f) and 106 properties within those boundaries, navigational impacts during and after construction, and all applicable environmental issues directly or indirectly impacted by the bridge during construction and operation of the structure. Listing the Coast Guard in the Environmental Impact Statement (EIS) as a Cooperating Federal Agency will allow our adoption of the EIS once the Federal Highway Administration (FHWA) has approved the document. We wish to review and comment on the Draft EIS, however there is no requirement that we sign the EIS.

Since navigation is a portion of the affected environment that is typically overlooked during preparation of the EIS, we require permit applicants to give this area additional attention during the scoping process. It is important to give this area the same attention given to land transportation. Enclosure (1) is a list of navigational issues that should be addressed in the Final EIS. Items that absolutely cannot be determined during the DEIS may be coordinated with our office before completion of the FEIS. Environmental impacts resulting from demolition or alteration of an existing bridge must be addressed in the FEIS. Development of Alternate C in the DEIS should address these impacts.

cc: Reid Beckel - AHTD

165991.1/290-292 ARWW
January 11, 1996

Subj: PROPOSED I-540 HIGHWAY BRIDGE, MILE 290.0 - 292.0 ARKANSAS
WATERWAY

A separate, state issued, Water Quality Certification (WQC) under Section 401 of P.L. 92-500 & Title 40 Code of Federal Regulations, specifically citing compliance with Sections 301, 302, 303, 306 and 307 of the Clean Water Act, or a waiver will be required to complete processing of the bridge permit. A Corps of Engineers 404 associated WQC is not sufficient for processing bridge permits. This issue also has potential for causing delays during permit application processing. Enclosure (2) is a sample format of a WQC that may be adapted and signed by the WQC issuing authority for Arkansas.

We are reviewing the proposed Arkansas Waterway crossing alternates A, B, and C for horizontal and vertical navigational clearance requirements and pier placement. If selection of Alternate C results in replacing or altering the existing I-540 bridge, the new horizontal and vertical clearances may change from the existing clearances depending upon the needs of navigation. Alternates A and B include approximately 2 miles of river and will require additional time to determine accurate clearance requirements.

Please contact me at 314-539-3900 extension 382, if additional information is needed.

Sincerely,



DAVID H. SULOUFF
Project Manager

By direction of the District Commander

Encl: (1) Navigational Issues
(2) Sample WQC

Copy: AHTD
AR FHWA
USACOE Little Rock
AR Game & Fish Comm.
AR ARNG



January 16, 1996

ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

cc: Reid Beckel - AHTD

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

RE: Multi-County - General
Section 106 Review - FHWA Tracking No. #24867
Proposed U.S. 71 Relocation - DeQueen To I-40
(State Job No. 001747)

Dear Ms. Gesing:

This letter is written in response to your inquiry, regarding properties of architectural, historical, or archeological significance in the area of the proposed referenced project.

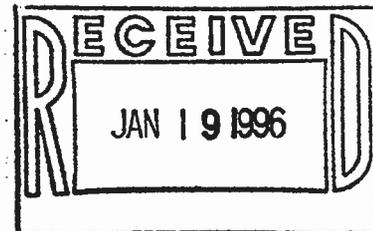
In order for the Arkansas Historic Preservation Program (AHPP) to complete its review of the proposed project, we will need the additional information checked below:

- 7.5 minute topographic maps of the selected highway corridor. These maps should indicate the project route and boundaries.
- a project description detailing all aspects of the proposed project.
- the location, age, and photographs of structures (if any) to be removed or demolished, as a result of this project.
- photographs of any structures on property directly adjacent to the project area.

Once we have received the above information, we will complete our review as expeditiously as possible. If you have any questions, please contact me at (501) 324-9880.

Sincerely,

George H. McCluskey
Senior Archeologist



CS\GM\ss

1500 Tower Building • 323 Center • Little Rock, Arkansas 72201 • Phone (501) 324-9880
Fax (501) 324-9154

A Division of the Department of Arkansas Heritage



Baker

February 16, 1996

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
Arkansas Historic Preservation Program
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

Michael Baker Jr., Inc.
319 Washington Street, West
P.O. Box 2148
Charleston, West Virginia 25328

(304) 346-0821
FAX (304) 346-0822

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Corridor Feasibility Study

Dear Mr. McCluskey:

Thank you for your letter of January 16, 1996 regarding the *Corridor Feasibility Study* for the subject project. As we discussed by telephone on February 2, we are at the initial stages of the project. I understood from our conversation that you would not need the information requested in your letter at this time, nor do you need a list of all known sites within the various corridors considered in the *Corridor Feasibility Study*. Instead, we will forward the Cultural Resources Report (discussed below) to you upon completion. The following outlines the manner in which cultural resources are being evaluated on this project and agrees with our discussions in Little Rock on August 21, 1995.

The study area (Exhibit 2 in our *Corridor Feasibility Study*) for the project covers over 1,500 square miles and over 40 USGS quadrangle maps. This area is roughly 12 miles wide and 130 miles long. The approach for this project was to first identify all critical cultural and environmental resources within this broad area of coverage. The "corridors", which are two miles wide, were then developed to avoid these resources to the extent possible (please refer to page 7 and Exhibit 4 of the *Corridor Feasibility Study*). With respect to cultural resources, the *Corridor Feasibility Study* evaluated the potential for the various corridors under consideration to affect known cultural resources, and also the potential effect on areas identified as high probability for the presence of archeological resources. This evaluation was conducted by obtaining the computer files for the AMASDA database maintained by the Arkansas Archeological Survey, as well as a review of records on file at your office. All sites were plotted on USGS quadrangle maps and reviewed by SPEARS, Inc., Baker's subconsultant for cultural resources on this project. SPEARS, Inc. also established the high probability areas to be considered. The corridors were then compared as to their relative effect on known sites and high probability areas. (Please refer to the Appendix of the *Corridor Feasibility Study*.) The selection of the preferred corridor was based on agency comment, public involvement and the analyses contained in the *Corridor Feasibility Study*.



A Total Quality Corporation

Now that a preferred corridor (Corridor B from DeQueen to Waldron, Corridor A in Waldron, and Corridor B from Waldron to I-40 as shown on Exhibit 4) has been identified, our studies will continue and become more detailed. We have enclosed for your reference 21 USGS quadrangle maps that cover the preferred corridor. These maps were generated by Baker's GIS and show all known cultural resources sites. (Be assured that this information has been held strictly confidential.) SPEARS, Inc. will study all the sites shown within the preferred corridor, identify through research any other sites that may be important, and complete a full literature review. Baker will establish alternative highway "alignments" (about 500' wide on average) within this corridor that attempt to avoid all known sites and any new information identified by SPEARS, Inc. The results of this work will be contained in the Cultural Resources Report, a separate document, but part of the project's environmental impact statement (EIS). SPEARS, Inc. will also provide a summary of findings and comparative analysis for the alignments that are evaluated in the draft EIS. Also, any structures directly adjacent to the highway alignments that may be historic will be photographed and forwarded to your office for technical assistance.

During the time between the draft and the final EIS, a complete Phase I archeological survey will be conducted by SPEARS, Inc. Any subsequent efforts required to complete the Section 106 Review will be conducted accordingly.

We hope this summary better explains our study efforts, but please give me a call if you have any questions. We look forward to your review of this project and appreciate your continued involvement.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Reid Beckel - AHTD
William D. Richardson - FHWA
Carol Spears - SPEARS, Inc.



Arkansas

THE NATURAL STATE®

February 9, 1996

**DEPARTMENT OF
PARKS & TOURISM**

One Capitol Mall
Little Rock, AR 72201
Phone: 501-682-7777
FAX: 501-682-1364
History Commission:
501-682-6900 (V/TT)
Personnel Section:
501-682-7742 (V/TT)
State Parks Division:
501-682-1191 (V/TT)
Tourism Division:
501-682-7777 (V/TT)

Jim Guy Tucker
GOVERNOR

Richard W. Davies
EXECUTIVE DIRECTOR

**STATE PARKS,
RECREATION
& TRAVEL
COMMISSION:**

Montine McNulty
CHAIRMAN

Donna Kay Matteson
VICE-CHAIRMAN

Jane Christenson

Steve Chyrchel

Ed Falwell

Danny Ford

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Billy Lindsey

Dean Murphy

Billy St. James

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D. "Bud" Shamburger

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ADMINISTRATION

Greg Butts
STATE PARKS

Joe David Rice
TOURISM

Nancy Clark
GREAT RIVER ROAD

John L. Ferguson
HISTORY COMMISSION

**KEEP ARKANSAS
BEAUTIFUL:**

Anita Middleton
DIRECTOR

**AN EQUAL
OPPORTUNITY/
AFFIRMATIVE ACTION/
AMERICANS WITH
DISABILITIES ACT
EMPLOYER**

Mr. Tim Smith
Michael Baker, Jr., Inc.
2912 Rogers Avenue
Fort Smith, AR 72901

RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
Corridor Feasibility Study

Dear Mr. Smith:

I have reviewed the above referenced project to relocate U.S. Highway 71 from DeQueen to Interstate 40 and its potential impact on the environment and recreational resources.

Our Department does not foresee any major direct impacts to recreational facilities due to the relocation of U.S. Highway 71 at this time. However, we do have some concerns pertaining to potential noise levels and the possible affect on drainage near the Cossatot River State Park-Natural Area (CRSP-NA). After reviewing the Preliminary Corridor Study, I found no mention of these issues as factors in the selection of a corridor. Although the project appears to be approximately four miles from the CRSP-NA, we urge that careful consideration be given to these issues.

Thank you for the opportunity to comment on this project. If you have any questions or need additional information, contact Stan Graves or Randy Roberson at 682-1633. Please keep us informed of further developments.

Sincerely,

Greg Butts, Director
Arkansas State Parks

GB:vt

cc: Stan Graves
Randy Roberson
Bryan Kellar

Baker

Michael Baker Jr., Inc.

A Unit of Michael Baker Corporation

March 28, 1996

2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

Mr. Greg Butts, Director
Arkansas State Parks
Department of Parks and Tourism
One Capitol Mall
Little Rock, AR 72201

(501) 783-7790
FAX (501) 783-7091

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Letter dated February 9, 1996

Dear Mr. Butts:

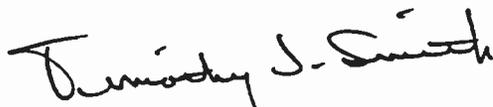
Thank you for your letter dated February 9, 1996. You indicated that you had some concerns regarding potential noise levels and the possible effect on drainage near the Cossatot River State Park-Natural Area (CRSP-NA). During our Scoping Meeting on July 10, 1995, several resource agencies identified the Cossatot River and the State Park and Natural Area as being important sensitive resources. While no specific types of impacts were identified or addressed at this meeting, corridors were developed that could avoid or minimize all potential impacts including noise and drainage.

While the corridor selected for more detailed study is approximately 4 miles from the CRSP-NA, several tributaries to the Cossatot River including Pryor and Flat Creeks are crossed by this corridor approximately 5 to 7 miles (actual stream length) from their confluence with the Cossatot River. The actual highway alignments that have been developed in this area are further upstream from the eastern corridor edge near the far western reaches of the Cossatot watershed. During construction at all creek and river crossings, site specific erosion and sedimentation control measures would be implemented. These could include but are not limited to straw bales, silt fencing, check dams, and seeding and mulching. Adherence to a properly designed erosion and sedimentation control plan should minimize construction impacts to these water resources.

A more detailed discussion of environmental impacts including water resource and noise impacts will be presented in the Draft Environmental Impact Statement. If you would like to discuss these topics further, please contact us at (501) 783-7790.

Sincerely yours,

MICHAEL BAKER JR., INC.



Timothy J. Smith
Sr. Environmental Scientist

cc: Reid Beckel - AHTD



A Total Quality Corporation



Harold K. Grimmert
Director

ARKANSAS NATURAL HERITAGE COMMISSION
1500 TOWER BUILDING
323 CENTER STREET
LITTLE ROCK, ARKANSAS 72201



Jim Guy Tucker
Governor

Date: February 21, 1996
Subject: Highway 71
Corridor Study
ANHC No. P-CF..-96-009

Mr. Tim Smith
Michael Baker Jr., Inc.
2912 Rogers Avenue
Fort Smith, Arkansas 72901

Dear Mr. Smith,

Staff members of the Arkansas Natural Heritage Commission have received materials describing the proposed corridor for the relocation of U.S. Highway 71 between DeQueen and Interstate 40. This information is currently under review by our staff. We hope to have representatives attending some of the proposed field surveys. We have no comments on the proposed corridor at this time.

We appreciate being included in the review process.

Sincerely,

A handwritten signature in cursive script that reads "Cindy Osborne".

Cindy Osborne
Data Manager



Baker

January 30, 1996

Rusty Myers
Fort Chaffee Redevelopment Authority
1109 South 16th Street
Fort Smith, AR 72902

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Dear Rusty:

We are pleased to provide you with our recommendations on the Fort Chaffee excess property boundaries. As we have discussed at some length, this map identifies modifications to the proposed excess property boundaries in order to best accommodate the relocation of U.S. 71 within the preferred Corridor B.

The areas shown in amber are the excess property as determined by the Department of the Army, the Army Reserves and the National Guard. The areas shown in blue are those that we recommend be added to the excess property to facilitate alignment development within Corridor B. These areas (in blue) were discussed with you and the Post Commander during our November 13, 1995 meeting and appeared to be acceptable at the time.

During alignment development, we will work within Corridor B but endeavor to work within the amber and blue areas. Although it is not shown on the map to maintain clarity, information provided to us by the Army with respect to the river crossing training areas and smoke release areas would also be avoided. We intend to work closely with you during our studies and will be in contact when this work is in progress.

Please give me a call when you receive this package so that we can discuss.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Reid Beckel - AHTD (w/o att)
William D. Richardson - FHWA
Lt. Col. Robert Dow - Fort Chaffee
Major Tarry Marljar - AR ARNG



A Total Quality Corporation



William R. Harper, Jr.

Sebastian County Judge

County Court House
35 South 6th Street
Fort Smith, Arkansas 72901
(501) 783-6139
FAX (501) 784-1550

February 29, 1996

Mr. Jesse Gatlin, III
Colonel, U.S. Army
Director, Operations
Base Realignment and Closure Office
Department of the Army
U.S. Army Training and Doctrine Command
Fort Monroe, VA 23651-5000

RE: Requested Surplus Properties Changes

Dear COL Gatlin:

The Fort Chaffee Redevelopment Authority met on February 15 and proposed changes in the boundaries of the properties at Fort Chaffee determined as surplus by the Federal Government. The following proposed changes to the Fort Chaffee surplus areas have been coordinated with the Military Department of Arkansas, Office of the Adjutant General, and reviewed by the U.S. Army Base Commander at Fort Chaffee. We understand our proposed changes are acceptable to the Base Commander and are consistent with changes proposed by the Office of the Adjutant General to the Chief of the National Guard Bureau. The Authority requests the following changes in the determination of properties at Fort Chaffee that are surplus and available for reuse:

Parcel A:

The Authority proposes that this parcel be removed from the excess property list and remain within the RC Enclave. (Please refer to the attached map)

Parcels B & C:

The Authority proposes that these parcels be removed from the excess property list and remain within the RC Enclave.

Parcel D:

The Authority proposes that this parcel be determined surplus. This parcel consists of a Liquid Fuel Fire Training Pit. Interest has been expressed by the state fire academy and others in utilizing this unique facility to provide training to fire departments in the state and region.

Parcel E:

The Authority proposes that this parcel be determined surplus. This parcel contains a historic school house that is the only remaining pre-Chaffee structure within the excessed area. The Authority hopes to identify interest and support for the preservation of this structure.

Parcel F:

The Authority proposes that this parcel be determined surplus. This area has been identified by Michael Baker, Inc. as within the planning corridor for a new interstate-type highway through this area. The Baker firm has been engaged by the Arkansas Highway and Transportation Department to conduct a study for the new highway which will traverse the entire length of western Arkansas from Missouri to Louisiana. Release of this parcel as surplus will facilitate the planning and location of the new highway, which will benefit significantly this entire region and will be an major asset for the reuse of the surplus properties.

Parcel G:

The Authority requests that this parcel be determined surplus. As with parcel F, this area is needed to support the highway project. The Authority understands that this area is currently being utilized as a Military training area and that it is the Military's desire to continue utilizing it as such until the highway is constructed. We understand the Military considers the area inappropriate for continued Military usage once construction of the highway begins and would be willing to relinquish the area at that time.

Recognizing the significance of parcel G to the Military until the highway is constructed and its significance to the Authority and the region as a highway corridor, the Authority requests that this parcel be determined surplus at this time, with appropriate arrangements made to allow the Military to retain exclusive use of the property until the highway is constructed. We understand an allowable arrangement may be transfer of the property to the Authority and a lease back to DoD at no cost, as provided by P.L. 104-106, Section 2838.

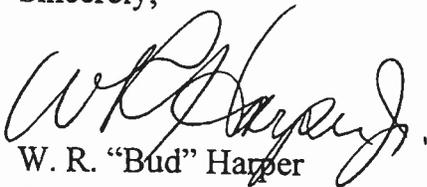
For the Military to wait until construction of the highway to determine this area excess is of considerable concern to the Authority. This matter bears significantly on the Authority's ability to plan effectively for the reuse of all the surplus areas. Should the parcel not be released as surplus at this time under the BRAC process, considerable indefiniteness will exist about this parcel's future and ultimate uses and thus its impact on and compatibility with the uses of the other released properties.

Parcel H:

The Authority requests that this parcel be determined surplus. As with parcels F and G, this area is needed to support the highway project. We anticipate that upon construction of the highway, a replacement, alternative road-way to accommodate the Military's needs will be created.

Your consideration of our request in this matter is appreciated. Should you have any questions or require further information, please contact the Authority's staff contact, Mr. Rusty Myers with Western Arkansas Planning & Development District, phone number 501-785-2651.

Sincerely,



W. R. "Bud" Harper
Chairman

Fort Chaffee Redevelopment Authority

- c: LTC Robert Dow, U.S. Army at Fort Chaffee
- LTC Ronald Snead, Arkansas National Guard at Fort Chaffee
- MAJ Tarry Marlar, Arkansas National Guard at Fort Chaffee
- Mr. Warren Johnson, BTC at Fort Chaffee
- Mr. Billy Qualls, U.S. Corps of Engineers at Little Rock
- Mr. Anthony Ragar, U.S. Corps of Engineers at Little Rock
- Ms. Peggy Boismier, U.S. Corps of Engineers at Little Rock
- Mr. Reid Beckel, Arkansas Highway and Transportation Department
- Ms. Patti Guesing, Michael Baker, Inc.
- Mr. William Richardson, Federal Highway Administration
- Mr. Ken O'Donnell, WAPDD
- Mr. Rusty Myers, WAPDD



STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
1220 West 2nd Street
RUSSELLVILLE, ARKANSAS 72801
PHONE: (501) 968-7339



SURFACE MINING AND RECLAMATION DIVISION

February 5, 1996

Mr. David M. Bednar, Jr.
Michael Baker Jr., Inc.
2912 Rogers Avenue, Suites. A&B
Fort Smith, AR 72901

Dear Mr. Bednar:

Please find enclosed maps of the underground and surface mines in the delineated corridor of the Greenwood Quadrangle. Permit P386-M-CO is the only state-issued permit in the corridor; it has been reclaimed.

If you have any questions, do not hesitate to call me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Wayne".

Wayne Van Buren, Geology Supervisor
Surface Mining and Reclamation Division

enclosures



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

April 23, 1996

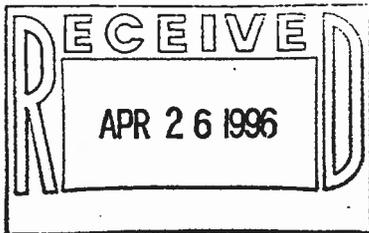
Planning Division

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker, Jr., Inc.
P.O. Box 12259
Pittsburgh, Pennsylvania 15231-0259

Dear Ms. Gesing:

We have completed our review of the proposed U.S. Highway 71 relocation corridor. A portion of the corridor, as shown on the enclosed map, is located in the Vicksburg District, Corps of Engineers. We have forwarded your letter and map for that portion to the Vicksburg District for their review and comments.

The Little Rock District is not aware of any additional studies within the proposed corridor that would supersede the data you referenced in your letter. If we can be of any other assistance, please contact Mr. Conrad Battreal of my staff at (501) 324-5037.



Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth W. Carter".

Kenneth W. Carter
Chief, Planning Division

Enclosure

cc: Larry Harrison - COE
Reid Beckel - AHTD

United States
Department of
Agriculture

Forest
Service

Ouachita
National Forest

P. O. Box 1270
Hot Springs, AR 71902

File Code: 1950/7700

Date: May 14, 1996

Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

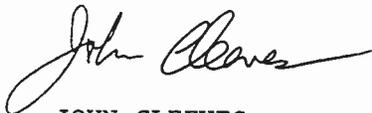
RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40

Dear Mrs. Gesing:

Thank you for sending us the preliminary alignment maps and the mylar overlays at quad sheet coverage. Our transportation planner Bev Allen has closely reviewed these maps and in close consultation with the Poteau and Mena districts has written a report that includes many of our recommendations related to the road access issue. In this report Bev has also included a few comments related to a roadless area and wildlife ponds.

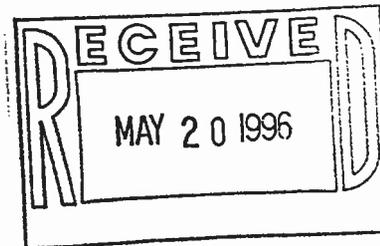
The Forest generally prefers the blue route over the other two alignments, especially from Mena to Y City.

If you have any questions please give me a call at 501-321-5251. We look forward to the release of the DEIS and will provide additional comments at that time.



JOHN CLEEVES
Forest Planner

cc: Dan Nolan
Nick Finzer





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

MAY 24 1996



David Bednar, Jr., Geologist
Michael Baker Jr., Inc.
2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

Dear Mr. Bednar:

Thank you for your letter of May 14, 1996, requesting our assistance in the identification of sole source aquifers and wellhead protection areas within the study corridor for relocation of U.S. 71 from DeQueen to I-40. There are no EPA designated sole source aquifers within the study corridor. At this time no sole source aquifers have been designated in Arkansas.

We are not able to comment authoritatively on the presence of local wellhead protection areas within the corridor. The State of Arkansas administers the Arkansas Wellhead Protection Program which is involved at the local level with development of wellhead protection programs. By copy of this letter we are forwarding your letter to Mr. Robert Cordova of the Arkansas Department of Health. Mr. Cordova, who has primary responsibility for implementation of the program in Arkansas, will be able to provide the information you seek. In case you would like to contact him directly he can be reached as follows:

Robert Cordova
Wellhead Protection Program Coordinator
Division of Engineering, Slot #37
Arkansas Department of Health
4815 West Markham
Little Rock, AR 72205
(501) 661-2890

If I can be of any further assistance, please call me at
(214) 665-7165.

Sincerely yours,

A handwritten signature in cursive script that reads "Larry Wright".

Larry Wright
Chief
Ground Water/UIC Section

cc: Robert Cordova
Arkansas Department of Health

June 7, 1996

2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901Ms. Margaret Harney
Environmental Coordinator
U.S. Fish and Wildlife Service
2525 South Frontage Road, Suite B
Vicksburg, MS 39180-5296(501) 783-7790
FAX (501) 783-7091RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
Bald Eagle Nest Monitoring

Dear Ms. Harney:

We have recently completed our monitoring of the bald eagle nest located in Springhill Park near the Arkansas River. Two aerial surveys and four ground monitoring sessions were conducted to determine the status of this nest. Aerial surveys were conducted on March 20 and April 29, 1996 using a Cessna 172 fixed wing aircraft at an approximate altitude of 500 feet. Ground monitoring was conducted for approximately 2 hours per visit on March 18, and April 1, 8, and 24, 1996 from a stationary vehicle located on an existing road approximately 200 feet from the nest site.

Results

During the six monitoring events, no bald eagles were observed at the nest site. On the March 20, 1996 aerial survey, one adult bald eagle was observed perched along the Arkansas River approximately 2,000 feet from the nest site. Also during this survey, both sides of the Arkansas River with potential suitable nesting habitat were surveyed from Lock and Dam 13 to Vache Grasse Park to locate any additional nest sites in this area (see attached map). No additional nests were observed.

During the April 24, 1996 monitoring, the area beneath the nest tree was searched for prey remains and other signs of eagle use. No indicators of use were observed at this time.

Other observations of adult bald eagles includes a report by the Dogwood Trails (Fort Smith) Audubon Society of two adult eagles near the nest site in late February and my observation of one adult bald eagle near the Lock and Dam in late December.

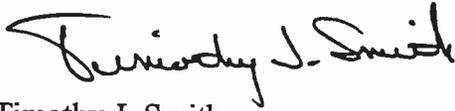
Conclusions

Based on our survey results, this nest was inactive during the 1996 breeding season. The observation of adult bald eagles from December through March, followed by no observations in April, suggests that this area is being used by migratory eagles wintering in the Arkansas River area.

The alignment alternatives currently being developed in this area range from approximately 2,100 to 3,400 feet from this nest site. If this nest site becomes active in the future, the distance from the alignment alternatives should be sufficient to minimize any potential impacts from the proposed highway.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in black ink that reads "Timothy J. Smith". The signature is written in a cursive style with a large initial 'T'.

Timothy J. Smith
Sr. Environmental Scientist

Attachment

cc: Reid Beckel - AHTD
William D. Richardson - FHWA
Larry Harrison - ACOE



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

JUN 1996

Construction-Operations Division
Regulatory Branch

FILE ID No. 13110

Patricia S. Gesing, P.E.
Project Manager
Transportation Planning Department
Michael Baker, Jr., Inc.
P.O. Box 12259
Pittsburgh, Pennsylvania 15231-0259

Dear Ms. Gesing:

Please refer to your letter dated June 17, 1996, regarding your agency's request for the Little Rock District (LRD) to be a cooperating agency in preparation of an Environmental Impact Statement (EIS) for the relocation of U.S. Highway 71 between DeQueen and I-40 near Alma, Arkansas.

The LRD would appreciate being made a cooperating agency in the preparation of the EIS. This will be coordinated by our Regulatory Branch, and Mr. Larry Harrison, Project Manager, will be your point of contact in regard to environmental documentation for a Department of the Army Section 404 permit.

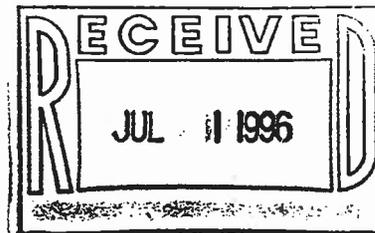
If you have any questions, please contact Mr. Larry Harrison at (501) 324-5295 and refer to Permit No. 13110.

Sincerely,

Louie C. Cockmon, Jr., P.E.
Chief, Regulatory Branch

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

cc: Reid Beckel - AHTD





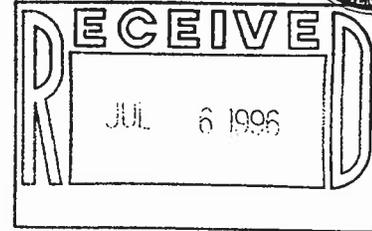
DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY RESERVE COMMAND
3800 NORTH CAMP CREEK PARKWAY SW
ATLANTA, GA 30331-5099



REPLY TO
ATTENTION OF

June 28, 1996

Deputy Chief of Staff, Engineer



Mr. Rusty Myers
Assistant Executive Director
Western Arkansas Planning & Development District, Inc.
1109 south 16th Street
P.O. Box 2067
Fort Smith, Arkansas 72902

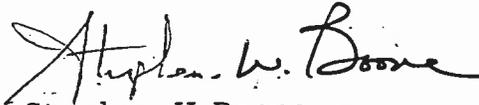
Dear Mr. Myers:

I received your correspondence asking for comments to the preliminary design for highway construction on the periphery of Fort Chaffee.

From the maps provided, it is difficult to decipher the extent of impact on the U. S. Army Reserve (USAR) facilities. I am particularly concerned with infringement on the Darby USAR Center.

Therefore, please provide me detail on how far each option extends on USAR property. This includes overpass, right of way boundaries, easement requirements, and highway construction specifics, such as inclusion of sound walls or barriers.

I must share with you that, should the highway prevent us from continued training at the Darby Center, the City will be responsible for providing a replacement facility.


Stephen W Boone
Colonel, U.S. Army
Deputy Chief of Staff,
Engineer

Copies Furnished:

Michael Baker Company
Office, Chief Army Reserve

Baker

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

July 3, 1996

Stephen W. Boone
Colonel, U.S. Army
Deputy Chief of Staff, Engineer
Headquarters, U.S. Army Reserve Command
3800 North Camp Creek Parkway SW
Atlanta, GA 30331-5099

RE: U.S. 71 Relocation - DeQueen to I-40
Location Study and Environmental Impact Statement

Dear Colonel Boone:

Michael Baker Jr., Inc. is under contract to the Arkansas Highway and Transportation Department to prepare an engineering location study and environmental impact statement (EIS) for an interstate-type highway known as the U.S. 71 Relocation. This project is part of a congressionally designated High Priority Corridor which runs from Shreveport, Louisiana to Kansas City, Missouri.

We understand that you were recently made aware of the project through the Fort Chaffee Redevelopment Authority. We have been working with the Redevelopment Authority in the early phases of the project because their redevelopment efforts depend on the construction of this facility. We had delayed contacting the Army Reserve until we had complete information as to the locations that were feasible through the Fort's released land. We have been well aware of your facility located on S.H. 22 in Barling and had been working to minimize impact to the use of and access to your property.

We have enclosed an enlarged map of the project area around the USAR facility. As you can see, all three alignments do cross the Army Reserve property towards the east end, but the highway at this point would be bridged over S.H. 22 and over your property. We have moved the alignments as far east as possible. Because we have proposed an interchange with S.H. 22, it may be necessary to relocate access into your facility from S.H. 22 to the north-south street which borders your western property line. Details of the interchange and any associated changes in property access would be completed during the final design phase of the highway, following the EIS.



A Total Quality Corporation

Please review the information enclosed and contact us directly. We are the main contact for this project, as opposed to the Local Redevelopment Authority. Although we have established an office in Fort Smith for this project, we would prefer you contact the undersigned at 412-269-4603 at our corporate offices in Pittsburgh. If your staff in Fort Smith would like to meet with us, we would be more than happy to set up a meeting there. We look forward to hearing from you.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in black ink, appearing to read "Patricia S. Gesing". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Reid Beckel - AHTD

United States
Department of
Agriculture

Forest
Service

Ouachita
National Forest

P. O. Box 1270
Hot Springs, AR 71902

File Code: 1950/7700

Date: July 5, 1996

Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40

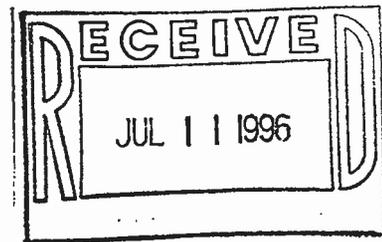
Dear Mrs. Gesing:

In response to your June 17, 1996 letter the Ouachita National Forest agrees to participate as a Cooperating Agency in the preparation of the Environmental Impact Statement.

For 
ALAN G. NEWMAN
Forest Supervisor

cc: Dan Nolan
Nick Finzer

cc: Reid Beckel - AHTD



July 17, 1996

Mr. Mike Curran
Forestry Supervisor
Ouachita National Forest
P.O. Box 1270
Hot Springs, AR 71902

RE: State Job No. 001747
FAP No. DPS-015(7)
U.S. 71 Relocation - DeQueen to I-40

ATTN: Mr. John Cleaves

Dear Mr. Curran:

Thank you for your review and comments on the preliminary alignments of the U.S. 71 Relocation through the Ouachita National Forest. We have reviewed your comments, discussed them with the Highway Department and in general find your requests reasonable. In most cases, however, the detail required to definitively determine how access will be provided to certain areas of the forest must be deferred until the final design of the project. Also, these details are more appropriately handled for the selected alignment rather than all alternatives.

We provide the following responses:

1. Access to forest roads south of Mena will be addressed in the final design phase of the project should the selected alternative traverse forest land.
2. At this time it is expected that the existing highway would remain open as far south as necessary to provide access to the Ouachita National Recreation Trail. Forest roads intersecting the existing highway in this reach would therefore not be affected.
3. An underpass is not possible in the trail crossing area due to the grade of the proposed highway and the grade of existing U.S. 71. At the station suggested by the forest service, the proposed highway is in a cut situation and it would not be possible for the trail to go under at this point.
4. Forest roads M40C, Q21, 823, 823A, 823B, 823C, P71, P71D, 758, 758A and P47 will be evaluated during the final design of the highway. Because minor shifts in the selected alignment during the design phase of the project could actually keep the roads open, details for all three lines need not be developed at this time. The Highway Department will coordinate with the Forest Service during the final design of the highway.
5. Wildlife ponds directly taken by the highway will be replaced on forest service property at locations agreeable to the Highway Department and the Forest Service.

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108



A Total Quality Corporation

We have noted the Forest Service's preference for Line 3 in the Fourche Mountain area, as stated in your May 14, 1996 response as well as informally discussed with you and Forest Service representatives during our field trip in April.

Thank you again for your time at the field trip and in conducting this review. We appreciate your assistance.

Sincerely yours,

MICHAEL BAKER JR., INC.



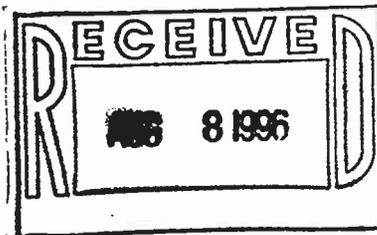
Patricia S. Gesing, P.E.
Project Manager

PSG/mew

cc: Bob Walters - AHTD
William D. Richardson - FHWA

EW

Baker



FHWIA
28658

July 18, 1996

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Request for Technical Assistance

Date 8/2/96
This undertaking will have no effect
on significant cultural resources.
Cathy Buford Slater:
State Historic Preservation Officer

Dear Mrs. Slater:

We are requesting technical assistance from your office in the review of structures adjacent to the alternative highway alignments to be evaluated in this project's environmental impact statement (EIS). As you recall, AHTD and Baker identified a preferred corridor (3 kilometers wide) for the proposed highway in January 1996 based on known cultural resource sites and other important environmental and engineering parameters. Within the preferred corridor, we have developed three alignments (500' in average width) for detailed consideration in the EIS. SPEARS, Inc., our subconsultant, has done additional research within the preferred corridor to assist us in locating the alignments and is currently completing her report.

Based on your previous request, we have photographed all structures that are within or adjacent to the construction limits that are approximately 50 years old or older. We would like your assistance in evaluating the architecture of these structures. For each structure we have provided a color photograph and an excerpt from the appropriate USGS quadrangle map. The location data shown on the attachments is keyed to our detailed alignment maps, such as the engineering station and the alignment nearest the structure, and is provided for Baker and AHTD use.

We would like to provide additional information that we have obtained for the following structures:

- Structure No. 1339 - this is the Excelsior Community Center and appears to be an old church building
- Structure No. 1362 - the public has informed us that this house is a log cabin (substantially altered) built in the 1840's that was the site of a stage coach stop
- Structure No. 1678 - structure may be shown on an 1846 Government Land Office map

cc: Bob Walters - AHTD



A Total Quality Corporation

Mrs. Cathy Buford Slater
Page 2
July 18, 1996

We would like to hear back from you by August 19, 1996. Please contact us at 412-269-4603 if you need additional information. Thank you for your assistance.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in cursive script, appearing to read "Patricia S. Gesing".

Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Bob Walters - AHTD w/att
William D. Richardson - FHWA w/o att
Carol Spears - SPEARS, Inc. w/o att



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

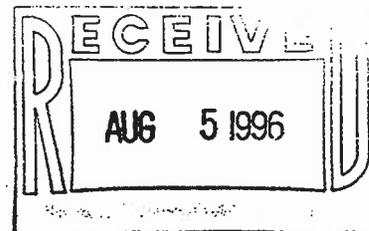
REPLY TO
ATTENTION OF

JUL 3 1996

Construction-Operations Division
Regulatory Branch

FILE ID No. 13110-2

Patricia S. Gesing, P.E., Project Manager
Transportation Planning Depart.
Michael Baker, Jr., Inc.
P.O. Box 12259
Pittsburgh, Pennsylvania 15231-0259



Dear Ms. Gesing:

This is in regard to the proposed relocation of U.S. Highway 71 between DeQueen and I-40 near Alma in Arkansas.

A meeting was held at the Arkansas State Highway Department building on June 21, 1996, between you and other representatives from your office, the Arkansas State Highway and Transportation Department, the Federal Highway Administration, the U.S Coast Guard, and the Corps of Engineers. The meeting was held to discuss and consider measures to minimize the loss of functions in a section of Spring Hill Park by three of four alternative alignments being studied for the relocation of the subject highway. Each of these alignments would require a bridged crossing over a section of the park that is currently closed or undeveloped and the Arkansas River.

The Little Rock District has specific concerns about the alternative alignments across the park having an adverse impact on the use of its existing developed section and future use of its closed and undeveloped sections. In preparing the Draft Environmental Impact Statement (DEIS) and selecting a preferred alignment for the highway, which might cross the park, we recommend that the following measures be considered, to minimize adverse impact on its present and future use by the public:

- a. A closed drainage system should be provided as the bridge crosses the park in order to protect the public from accidental spills.
- b. Screens or other measures to protect the public from objects thrown or falling from the bridge should be provided.
- c. The four camp sites and water fountain (currently not in use) located just west of the cul-de-sac at the extreme eastern area of the park should be relocated to another section within Springhill Park at the Corps' direction to mitigate for noise impacts.

cc: Bob Walters - AHTD

d. Access to all existing park facilities must be maintained during all construction phases.

e. Signing on the proposed highway directing the public to the park should be provided at the state highway 22 interchange or the now tentative State Highway 59 connector interchange north of the Arkansas River. If proposed, the highway 59 interchange is preferred for the signing. Also, signing should be provided at the appropriate state highways, either highway 22 or highway 59.

f. 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 a highway constructed through the park. The main paved road through the park which currently ends as the cul-de-sac must be relocated, if necessary, so that it may be extended east of the proposed highway.

g. Prior to bridge construction, fencing must be installed to prevent public access to the construction area. A gate must be provided in the fence, preferably near the cul-de-sac for Corps access to the undeveloped area of the park.

h. Access to the construction site to be used by construction vehicles, construction workers, materials deliveries, and any other construction-related activities must not be through the developed areas of the park. Contractor access roads and work areas will be subject to Corps approval.

i. The cleared area through the park for the bridge should be minimized.

j. Access for mowing must be of minimal width and gated from the public.

k. Any preconstruction activities, such as core borings, would require right-of-entry authorization from the LRD Real Estate Division prior to any work.

l. The park would be entirely bridged so that the only land used in it is for bridge substructure.

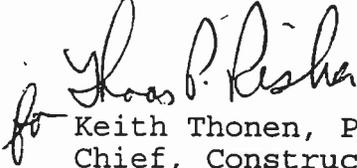
m. All areas outside of the permanent easement which are disturbed during construction activities must be restored to their previous grades and revegetated with native species. Disturbed areas within the easement must be restored and seeded. Nonsuitable materials from substructure excavation would be disposed of outside of the park in accordance with other disposal requirements.

n. Any temporary items constructed for bridge erection would be removed in their entirety.

Also, a question was raised in the meeting as to the type of real estate transaction that would be required from the LRD for a bridged crossing of Government property owned in fee (Spring Hill Park) and the Arkansas River. An Easement for the crossing of Government property owned in fee and a Consent to Easement for a crossing of property over which the Government has acquired a flowage easement would be required from the LRD Real Estate Division prior to any work.

We appreciate your assistance and cooperation in addressing these concerns in the DEIS to expedite a Section 404 evaluation on the subject project pursuant to the Intermodal Surface Transportation Efficiency Act (ISTEA). If you have any questions, please contact Mr. Larry Harrison, Project Manager, at (501) 324-5295. He will coordinate any questions you may have with the appropriate District element and provide you with a timely response.

Sincerely,


Keith Thonen, P.E.
Chief, Construction-
Operations Division

Enclosures

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Patricia Gesing
Michael Baker Jr., Inc.
420 Rouser Road
Coraopolis, PA 15108

Dear Ms. Gesing,

Attached is the Ouachita Trail map you requested. I have marked the locations of existing trail bridges with a red pen. The bridge over Irons Fork Creek (C13 on the map) is a 65' concrete structure. The other 6 bridges are 20' to 30' long wooden or wood over steel I-beam structures. There are no protection devices at any road or highway crossings currently on the trail.

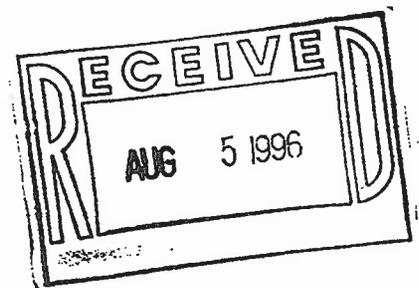
Trail use is reported by trail segment with a rating of 1 to 4. The Ouachita Trail from Talimena State Park to the Arkansas state line is reported as a 2 which is 10-50 users on a weekend day or holiday during the use season. The segment from the state line to Highway 7 is reported as a 1 which is 1-10 users on a weekend day or holiday during the use season. This is the segment the proposed highway will cross. The segment from Highway 7 to the east end of the trail is reported as a 2. These figures are estimates only. This past year we began collecting data from trail traffic counters at various locations but data has not been tabulated at this point. Our higher use at each end is a result of access and proximity to population areas. The west end in Oklahoma is part of the Winding Stair Mountain National Recreation Area (forest service) which contains Cedar Lake and Winding Stair campgrounds, a system of trailheads, and numerous other trail opportunities for hiking and horseback riding as well as Talimena State Park in Oklahoma and the Queen Wilhelmina State Park in Arkansas. The east end of the trail is only a few miles from Little Rock with easy access to Pinnacle Mountain State Park and Lake Sylvia, a popular forest service campground and day use site. The Ouachita Trail also passes through two wilderness areas in these segments, the Upper Kiamichi River on the west and Flatside on the east. All these factors add up to more use on each end than in the middle. I would expect the interstate, by providing easier access to the middle segment, might be a factor that would increase use but I could not say by how much.

I hope this information is helpful to you. If you need more information I can be reached at (501) 321-5253. I am working on your request for comments on mitigation measures and will send a reply soon.

Sincerely,


Darrel Schwilling

cc: Bob Walters - AHTD



Baker

July 25, 1996

Mr. Mike Curran
Forestry Supervisor
Ouachita National Forest
P.O. Box 1270
Hot Springs, AR 71902

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

ATTN: Mr. John Cleaves

RE: State Job No. 001747
FAP No. DPS-015(7)
U.S. 71 Relocation - DeQueen to I-40

Dear Mr. Curran:

We are writing to initiate correspondence on the Ouachita National Recreation Trail. All highway alignments proposed for this project cross the trail as it travels along the ridge of Fourche Mountain. Due to the 192-mile length of the trail, alternatives for this north-south freeway that avoid the trail are not available. As the managing agency for this Section 4(f) resource, we would like you to comment on measures to mitigate trail impacts for the three proposed alignments. During our field trip in April 1996, Forest Service members discussed various ways to address trail impacts. We have summarized these below for each alignment, recognizing that those informal discussions were not commitments by the Forest Service or AHTD on any particular item. Please refer to the maps that we previously provided to the Forest Service.

Line 1 and Line 2

Lines 1 and 2 are both new location alignments and cross Fourche Mountain approximately 850 meters east of the trail crossing of existing U.S. 71. Anticipated depth of cut at the trail crossing is 74 meters.

For either Line 1 or Line 2, the trail would be shifted approximately 100 meters in a northerly direction. The length of this relocation would be approximately 2 kilometers. This relocation is necessary to provide a suitable location for a pedestrian bridge to carry the trail over the proposed highway. The depth of cut at the proposed pedestrian bridge location is 24 meters on Line 1 and 34 meters on Line 2. The length of the pedestrian bridge would be approximately 200 meters on Line 1 and 250 meters on Line 2.

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

Line 3 would reconstruct the existing route of U.S. 71 through Foran Gap in Fourche Mountain and would therefore cross the trail at very nearly the same location as the existing route. Anticipated depth of cut at the trail is 6 meters.



A Total Quality Corporation

Mr. Mike Curran
Page 2
July 25, 1996

For Line 3, the trail would be carried over the proposed highway on a pedestrian bridge that would be about 150 meters in length. Your May 14, 1996 letter suggested that the trail be carried under the highway rather than over it. This cannot be done at the existing trail crossing because the proposed

highway is in a cut situation at this location. This would only be possible if the trail were relocated parallel to the proposed highway for a considerable distance until a point at which the proposed highway is in a fill situation. An examination of our current information has not identified a satisfactory location.

In order to maintain access to the trail at existing U.S. 71, Line 3 has been located such that existing U.S. 71 could remain open from the north until it reaches the pedestrian bridge crossing the proposed highway. A trailhead could be established in this area to carry hikers from the terminus of the existing road to the existing trail near the pedestrian bridge.

At present, it appears that Line 3 in this area will be the preferred alignment in the Draft EIS, although this has not been finalized. We realize that the Forest Service also prefers this line. You may want to focus your mitigation suggestions on this alignment, although it will be important that the Forest Service provide their opinion on minimization of impacts to the trail.

Please review this summary and provide us with a response by August 30, 1996. We will contact you in about two weeks to see if you would like to discuss any of the above items. Thank you.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

PSG/mew

cc: Bob Walters - AHTD
William Richardson - FHWA

Baker

August 22, 1996

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Request for Technical Assistance

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Dear Mrs. Slater:

Thank you for your prompt response to our July 18, 1996 request for technical assistance. Since our initial request, two additional historic properties have come to our attention and we need further assistance from your office.

Civil War Skirmish in the vicinity of Devils' Backbone Ridge - SB0461

This property was being studied in your office at the time of SPEARS' last visit in late July. We have attached an aerial map showing the outline of the core area as shown on USGS quadrangle maps in your office. Also shown on the aerial map are the three proposed highway alignments in this area. We have provided several photographs of the area for your information and have shown the location and direction of these photos on the enclosed map. We hope these photos are helpful. The dense vegetation in the area made it difficult to photograph.

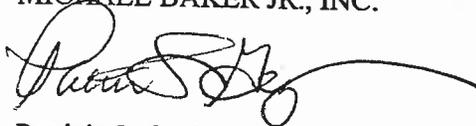
Lutrell House - SV0033

This property is shown on the attached structure identification form and could be taken by the proposed highway.

We would appreciate a response from your office as soon as possible. Thank you.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Robert L. Walters - AHTD w/att
William D. Richardson - FHWA w/att
Carol Spears - SPEARS, Inc. w/att



A Total Quality Corporation

File Code: 1950/7700

Date: September 3, 1996

Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40

Dear Mrs. Gesing:

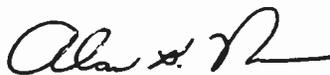
In your July 25, 1996 letter you requested our comments on measures to mitigate impacts on the Ouachita National Recreation Trail for the three proposed alignments to Highway 71. The Forest agrees with the mitigation measures recommended in the above letter.

Other mitigation measures that will need to be discussed during the design phase include the following: 1) The use of coloring in the concrete could reduce the visual contrast of the bridge. 2) A cage covering the bridge would be needed to prevent the possibility of a person from falling off or objects being thrown from the bridge to the Highway. 3) Being an elevated structure there will be a problem of ice during winter months which will cause hazardous footing. Some measure will be needed to prevent this.

Parking, bridge access and etc. are other concerns that will need to be addressed during the design phase.

We are still concerned about the effects line 1 and line 2 will have on visual quality with the cut slopes being in the 150 foot to 200+ foot range. As discussed earlier this would cause unacceptable negative impacts. Line 3 would create the least impacts to the visual resource as the vertical cuts would be much less and could be bench cut allowing for easier revegetation. The cut walls could be shaped to appear more natural by irregular blasting.

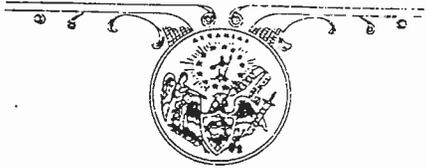
If you have any further questions please contact John Cleaves. We apologize for the late response but we have been short of personnel with the fires out West.



ALAN G. NEWMAN
Forest Supervisor

cc: Dan Nolan
Nick Finzer

ARKANSAS STATE HIGHWAY COMMISSION



L.W. "BILL" CLARK, CHAIRMAN
LITTLE ROCK

BOBBY HOPPER, VICE CHAIRMAN
SPRINGDALE

HERBY BRANSCUM, JR.
PERRYVILLE

P. O. Box 2261
LITTLE ROCK, ARKANSAS 72203-2261
TELEPHONE No. (501) 569-2000
FAX No. (501) 569-2400

JOHN "M" LIPTON
WARREN

J.W. "BUDDY" BENAFIELD
NEWPORT

DAN FLOWERS
DIRECTOR OF
HIGHWAYS AND TRANSPORTATION

September 9, 1996

Fort Chaffee Redevelopment Authority (FCRA)
The Honorable W. R. Harper
Sebastian County Judge
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas 72901

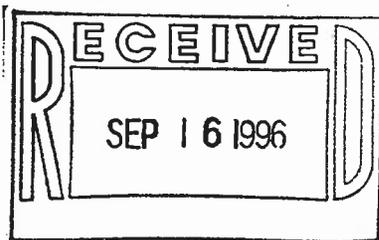
Re: Notice of interest in surplus Fort Chaffee property. (Response to Federal Register notice published on May 10, 1996.)

Dear Judge Harper:

The Arkansas Highway and Transportation Department (AHTD) has an interest in acquiring Fort Chaffee property identified as surplus property under the provisions of the Federal Property and Administrative Services Act of 1949 and the Base Closure Community Redevelopment and Homeless Assistance Act of 1994. This request is in addition to the initial request for surplus property dated June 18, 1996.

The initial property request (June 18, 1996) is for the proposed relocation of U. S. Highway 71 and a site for AHTD's District Four Headquarters. The additional property requested would be used as wetland mitigation sites for the proposed U. S. Highway 71 relocation and other future roadway and bridge projects in the area. The request is for 200 acres of surplus property that are wetlands or have some wetland characteristics such as hydric soils or hydrologic properties that would allow conversion of the property to functional wetlands. The U. S. Highway 71 relocation will probably require approximately one-third of the acreage requested with the remainder to be used as a wetland bank for future AHTD projects.

If you have any questions or need additional information regarding this request, please contact me.



Sincerely,

A handwritten signature in cursive script, appearing to read "Dan Flowers".

Dan Flowers
Director of Highways
and Transportation

DF:LPM:pb

cc: Commissioner Hopper
Deputy Director and Chief Engineer

bc: Assistant Chief Engineer for Planning
Western Arkansas Planning and Development District

Baker

September 11, 1996

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Robert L. Walters, P.E.
Assistant Chief Engineer - Design
Arkansas State Highway and Transportation Department
10324 Interstate 30
Little Rock, Arkansas 72203

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40

Dear Mr. Walters:

Enclosed are the minutes from the September 10, 1996 meeting with the Corps of Engineers for purpose of discussing wetland mitigation.

Sincerely yours,

MICHAEL BAKER JR., INC.

Patricia Gesing/mew

Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Larry Harrison - COE



A Total Quality Corporation

**U.S. 71 Relocation - DeQueen to I-40
Meeting Minutes**

Subject: Wetland Mitigation

Attendees: Bill Richardson - AHTD
Lynn Malbrough - AHTD
Larry Harrison - Corps of Engineers
Patty Gesing - Baker
Tim Smith - Baker

Time and Place: September 10, 1996 9:00 a.m.
AHTD Environmental Division Conference Room
Little Rock, Arkansas

1. The purpose of the meeting was to discuss mitigation for wetland impacts. Baker distributed a table presenting wetland impacts in each of the river basins crossed by the project. The ratios suggested were applied to each of the wetland types to determine the size of the wetland mitigation site for each basin. The tables are attached. After reviewing the information, the ratios and replacement figures were agreed to by Larry Harrison. Two mitigation sites are proposed, one of about 43 acres for the Arkansas River Basin, and one for about 26 acres for the Ouachita and Red River basins.
2. AHTD has requested 200 acres of the released Fort property for the Arkansas River basin mitigation for the project as well as for a mitigation bank. This general request was made September 6 in order to comply with the closing date for letters of interest on released property. In order to specify the property that would be suitable for mitigation sites, Baker will provide AHTD with a map showing the two possible locations on the Fort that Tim has identified and discussed with AHTD. AHTD will then write to the FCRA and forward the map.
3. The locations of the mitigation sites were discussed. It was agreed that the Draft EIS will discuss the general locations of the mitigation sites but not provide specific locations, particularly in the Fort released property. For mitigation in the Ouachita and Red River basins, a general discussion will be provided in the Draft regarding the identification and possible use of uneconomical parcels of land for wetland mitigation. The Final EIS will, if possible, provide specific information about the location of both wetland mitigation sites.
4. Larry noted that many of the wetland impacts may be covered under nationwide permits or general permits but that he will take care of this in the Public Notice. This may also be the case for many of the stream crossings and Larry will handle this as well. It was agreed that fill quantities at bridges could not be determined at this time, but that the information provided was sufficient for issuance of the permit.
5. Larry was provided a copy of the Appendix containing the Section 404 permit application. Larry and AHTD will review this over the next week. At that point, Larry will begin to prepare the Public Notice and Baker will make any necessary revisions to the application package. The draft public notice should be ready for AHTD review by early to mid-October so that it can be distributed by mid-November with the Draft EIS.
6. The duration of the permit was discussed and Larry asked that, prior to issuance, AHTD provide the Corps with their estimated construction schedule for which to base the duration of the permit.
7. Patty inquired as to the sufficiency of the package for Larry to prepare his report on 404 (b)(1). Larry stated that he believed that the information was sufficient but would call should he need anything else.
8. The meeting was adjourned at 9:45 a.m.

| SUMMARY OF WETLAND IMPACTS ARKANSAS RIVER BASIN | | |
|--|--------------|----------------|
| Site ID | Wetland Type | Impact Acreage |
| 500 | Herbaceous | 0.8 |
| 501 | Herbaceous | 2.1 |
| 502 | Herbaceous | 2.0 |
| 506 | Herbaceous | 1.6 |
| 614 | Scrub/Shrub | 0.3 |
| 615 | Herbaceous | 2.9 |
| 616 | Herbaceous | 2.2 |
| 618 | Herbaceous | 0.6 |
| 620 | Herbaceous | 0.4 |
| 700 | Herbaceous | 0.4 |
| 701 | Herbaceous | 0.4 |
| 702 | Forested | 0.7 |
| 705 | Herbaceous | 0.3 |
| 708 | Herbaceous | 2.3 |
| 801 | Herbaceous | 1.1 |
| 818 | Forested | 0.4 |
| 819 | Forested | 1.7 |
| 904 | Forested | 8.8 |
| 1003 | Herbaceous | 0.5 |
| 1015 | Forested | 1.0 |

| Wetland Type | Impact Acreage | Replacement Ratio | Replacement Acreage |
|--------------|----------------|-------------------|---------------------|
| Herbaceous | 17.6 | 1:1 | 17.6 |
| Scrub/Shrub | 0.3 | 2:1 | 0.6 |
| Forested | 12.7 | 2:1 | 25.4 |

| | |
|--------------------------------------|-------------|
| TOTAL REPLACEMENT ACREAGE | 43.6 |
|--------------------------------------|-------------|

| SUMMARY OF WETLAND IMPACTS OUACHITA/RED RIVER BASIN | | |
|--|--------------|----------------|
| Site ID | Wetland Type | Impact Acreage |
| 111 | Herbaceous | 1.5 |
| 112 | Herbaceous | 0.6 |
| 207 | Herbaceous | 0.4 |
| 214 | Herbaceous | 0.7 |
| 302 | Herbaceous | 2.1 |
| 303 | Forested | 0.8 |
| 304 | Scrub/Shrub | 1.2 |
| 305 | Herbaceous | 0.6 |
| 310 | Herbaceous | 2.0 |
| 315 | Forested | 1.5 |
| 317 | Herbaceous | 0.7 |
| 401 | Herbaceous | 6.3 |
| 404 | Forested | 1.0 |
| 407 | Herbaceous | 0.7 |
| 408 | Herbaceous | 1.2 |

| Wetland Type | Impact Acreage | Replacement Ratio | Replacement Acreage |
|--------------|----------------|-------------------|---------------------|
| Herbaceous | 16.8 | 1:1 | 16.8 |
| Scrub/Shrub | 1.2 | 2:1 | 2.4 |
| Forested | 3.3 | 2:1 | 6.6 |

| | |
|--------------------------------------|-------------|
| TOTAL REPLACEMENT ACREAGE | 25.8 |
|--------------------------------------|-------------|



September 19, 1996

Mr. Jim Grasso
National Park Service
Midwest Area Field Office
1709 Jackson Street
Omaha, Nebraska 68102

Michael Baker Jr., Inc.

A Unit of Michael Baker Corporation

2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

(501) 783-7790
FAX (501) 783-7091

RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
Ouachita River

Dear Mr. Grasso:

Thank you for your timely response regarding information on addressing bridge crossings of streams on the Nationwide Rivers Inventory. We have recently completed developing three highway alignments for a proposed interstate facility between DeQueen, Arkansas and Interstate-40 and are currently preparing a Draft Environmental Impact Statement. The present location of these alignments has been guided by both public and resource agency participation over the last twelve months.

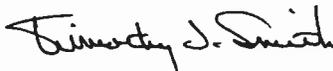
All alignments would bridge the Ouachita River, a Nationwide Rivers Inventory stream, near its upper reaches (see enclosed map). The preferred alignment is Line 1 (the pink line) in this portion of the project. Within this area, the Ouachita River is currently crossed by a number of highway bridges (U.S. 71, County Road 76, County Road 1444, S.H. 88, and County Road 647). 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. Portions of this upper reach of the Ouachita River cease to flow during dry periods.

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.

We would appreciate your comments on the above area. If you have any questions or need additional information please contact me at (501) 783-7790.

Sincerely yours,

MICHAEL BAKER JR., INC.



Timothy J. Smith
Sr. Environmental Scientist

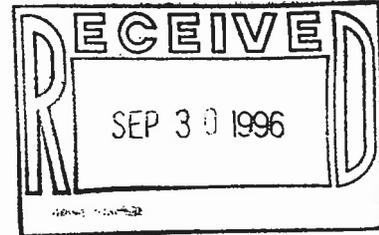
Attachment

cc: Bob Walters - AHTD
William D. Richardson - FHWA
Jane Jones - Arkansas Natural and Scenic Rivers Commission



United States Department of the Interior

NATIONAL PARK SERVICE
Great Plains Systems Office
1709 Jackson Street
Omaha, Nebraska 68102-2571



SEP 26 1996

IN REPLY REFER TO:

L7619(GPSO)

Mr. Timothy J. Smith
Michael Baker, Jr., Inc.
2912 Rogers Avenue, Suites A & B
Fort Smith, Arkansas 72901

Dear Mr. Smith:

This is in response to your letter of September 19, concerning the proposed crossing of the Ouachita River near DeQueen, Arkansas, by U.S. Highway 71.

Section 5 (d) of the National Wild and Scenic Rivers Act (Public Law 90-542) requires that, "In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic, and recreational river areas." In partial fulfillment of the section 5 (d) requirements, the National Park Service (NPS) has compiled and maintains the National Rivers Inventory (NRI). The NRI is a register of river segments that potentially qualify as national wild, scenic, or recreational river areas.

A presidential directive and subsequent instructions issued by the Council on Environmental Quality, and codified in agency manuals, require that each Federal agency, as part of its normal planning and environmental review processes, take care to avoid or mitigate adverse effects on rivers identified in the NRI. Further, all agencies are required to consult with the NPS prior to taking actions which could effectively foreclose wild, scenic, or recreational status for rivers on the inventory.

As you noted in your letter, the Ouachita River is on the NRI and is a potential component of the State rivers system. Approximately 70 river miles of the Ouachita, flowing through Montgomery and Polk counties are included in the NRI.

Regarding measures to reduce the impact of the proposed new bridge to the river, we recommend that:

- *The number of piers to be used be as few as practicable, or be eliminated if possible.
- *Time and work in the river be minimized as much as possible.
- *All trace of the existing bridge, equipment, and construction materials be removed from the river and bridge site.

cc: Lynn Malbrough - AHTD
Wendall Meyer - FHWA

- *Effective erosion-control measures for the construction be installed and monitored.
- *Washed, natural river stone be used in place of riprap.
- *The bridge site be restored after construction by replacing the trees that were removed with a like number of saplings of native species; if possible, reseeding with native grasses be done.
- *All unnecessary equipment be kept away from the riparian zone during construction.

We appreciate the opportunity to provide early coordination comments and we look forward to reviewing the environmental documents that are prepared for the U.S. Highway 71 project. If you have any questions, please call me at 402-221-3205.

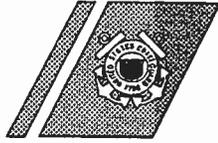
Sincerely,



James M. Grasso
Outdoor Recreation Planner
Stewardship and Partnerships Team

U.S. Department
of Transportation

United States
Coast Guard



Commander
Eighth Coast Guard District
Western Rivers Operations

1222 Spruce St.
St. Louis MO 63103-2832
Staff Symbol: (ob)
Phone: (314) 539-3900
Fax: (314) 539-3755

16590/291.8 ARWW
September 24, 1996

Patricia S. Gesing, P.E.
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

Subj: PROPOSED NEW U.S. 71 HIGHWAY BRIDGE, MILE 291.8 ARKANSAS
WATERWAY

Dear Ms. Gesing:

The following comments are provided in reply to your letter dated August 20, 1996 concerning the preliminary Draft Environmental Impact Statement for the subject project:

a. The following information was obtained from the Corps of Engineers, Arkansas Waterway Navigation Chart:

The Arkansas River begins in the Rocky Mountains of Colorado, It descends the eastern slopes of the Continental Divide, flowing through Royal Gorge and on to the Lower Mississippi River, at mile 599.0. It flows through Kansas and northern Oklahoma before it crosses the border into Arkansas. In its 1,450 mile journey, it drains an area of 160,000 square miles.

Development of the Arkansas River for navigation, additional flood control, hydroelectric power generation, and other purposes is the largest civil works project ever undertaken by the Corps of Engineers. It was authorized by Congress in the River and Harbor Act of July 24, 1946, and construction began in 1957.

Navigation reached Little Rock in December 1968; Fort Smith in December 1969; and the Port of Catoosa, at the head of navigation, in December 1970. The 445 mile system is now in use. The navigation channel begins at the confluence of the White River and the Mississippi River, proceeds 10 miles upstream on the White River to the man-made Arkansas Post Canal, and then 9 miles through the canal to the Arkansas River. It crosses the State of Arkansas into Oklahoma on the Arkansas River to the mouth of the Verdigris River at Muskogee and terminates 51 miles upstream on the Verdigris River at Catoosa, Oklahoma, near Tulsa.

16590/291.8 ARWW
September 24, 1996

Subj: PROPOSED NEW U.S. 71 HIGHWAY BRIDGE, MILE 291.8 ARKANSAS
WATERWAY

Channel Dimensions: Project widths are 300 feet on the White River, Arkansas Post Canal, and Lake Langhofer; 250 feet on the Arkansas River; 150 feet on the Verdigris River; and 225 feet on San Bois Creek. The project depths are 9 feet throughout.

Existing highway bridges across the main waterway are fixed high level spans. Railroad bridges across the main waterway are presently vertical lift spans from the mouth Through Fort Smith and fixed high level spans from Fort Smith to the head of navigation. The railroad and highway bridges across the navigable portion of San Bois Creek are fixed spans.

Clearance Gauges: All bridges have vertical clearance gauges installed on the pier protection cells or the navigation span piers. The gauges indicate vertical clearance available between the water surface and low steel of the bridge.

b. The James W. Trimble lock and dam is located at Mile 293.0 on the Arkansas Waterway, just upstream from the proposed project site. Lockage information was provided by the Little Rock Corps of Engineers for the 1995-navigation season as follows:

| | |
|-----------------|---|
| total lockages: | 961 |
| tows | 558 |
| barges | 3,313 (standard size is 35'w. x 195'l. x 9' deep. 1500 tons when loaded.) |
| pleasure craft | 382 |
| total tons | 3,501,668 |

commodities, in order of tonnages moved: fertilizer, wheat, forest products (wood chips), iron/steel, coal, lignite, coke, cement and other miscellaneous products.

Dredging through the proposed site, when necessary, is accomplished using contract dredging companies.

16590/291.8 ARWW
September 24, 1996

Subj: PROPOSED NEW U.S. 71 HIGHWAY BRIDGE, MILE 291.8 ARKANSAS
WATERWAY

Enclosure 1 provides 11 points concerning navigational impacts that should be addressed in the EIS. Comments could be included as follows:

a. Vessels engaged in emergency operations, national defense activities, or channel maintenance operate on the White River. The proposed bridge will provide similar clearances as existing bridges and will provide adequate clearances for all emergency-type vessels. The bridge as proposed, will not adversely impact the safe passage of any vessels currently using the river.

b. The tow sizes on this reach of the waterway allow passage through the 110' x 600' lock without double tripping approximately 95% of the time. (95% based upon statistics showing 6 of 125 tows during June 1996 double tripped).

c. Coordination with the Coast Guard during the design phase of proposed bridge project will ensure the proposed bridge will provide the horizontal and vertical clearances and pier placement necessary for the safe, efficient passage of vessels for which the navigation project was designed.

Enclosure 2 is an environmental checklist for other areas impacted by the proposed bridge and may be completed and included as a table within the EIS.

Thank you for the opportunity to comment on the preliminary draft for this project. I can be reached at 314-539-3900 if additional information is needed.

Sincerely,

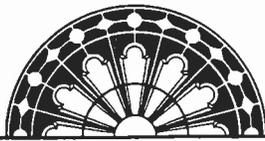


DAVID H. SULZOFF

Project Manager

By direction of the District Commander

Encl: (1) Navigation Evaluation 1st
(2) Environmental Evaluation ck 1st

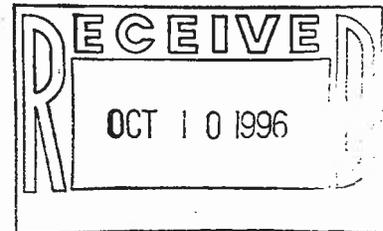


ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

October 4, 1996

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

RE: Multi County - General
Section 106 Review - FHWA
State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
Request for Technical Assistance



Dear Ms. Gesing:

My staff has reviewed the information submitted on the proposed referenced undertaking. We offer the following comments and recommendations for your consideration:

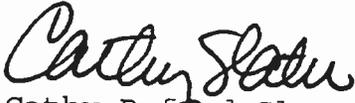
1. The Devils' Backbone Ridge Battlefield (SB0461) is eligible for inclusion in the National Register of Historic Places. The proposed yellow route (Line 2) would have an adverse effect on this historic property. This route is unacceptable. The proposed pink route (Line 1) and the blue route (Line 3) would have no effect on the battlefield. Therefore, these routes are the preferred alternatives.
2. The Lutrell House (SV0033) is not eligible for inclusion in the National Register of Historic Places. No further protection or documentation is needed for this structure.

Thank you for your interest and concern for the cultural heritage of Arkansas. We look forward to reviewing the Environmental Impact Statement (EIS) on this project.



If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,



Cathy Buford Slater
State Historic Preservation Officer

CBS:GM

cc: Federal Highway Administration
Arkansas State Highway & Transportation Department
SPEARS, Inc.
Arkansas Archeological Survey



STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 NATIONAL DRIVE, P.O. BOX 8913
LITTLE ROCK, ARKANSAS 72219-8913
PHONE: (501) 682-0744
FAX: (501) 682-0910



November 13, 1996

Colonel P.S. Morris
District Engineer
Little Rock District Corps of Engineers
P. O. Box 867
Little Rock, Arkansas 72203-0867

RECEIVED
A.H.T.D.
DEC 09 1996
ENVIRONMENTAL
DIVISION

RE: PUBLIC NOTICE ID NO. 13110

Dear Colonel Morris:

The Arkansas Department of Pollution Control and Ecology has completed its review of the above referenced permit for the **ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT, P.O. BOX 2261, LITTLE ROCK, ARKANSAS 72203**, for the construction of a four-lane divided highway from DeQueen to Alma.

The Department has determined there is a reasonable assurance this activity will be conducted in a manner which, according to the Department's Regulation No.2, will not physically alter a significant segment of a waterbody and will not violate the water quality criteria.

Pursuant to §401(a)(1) of the Clean Water Act, the Arkansas Department of Pollution Control and Ecology hereby issues water quality certification for this project: **PERMIT ID NO. 13110**, contingent upon the following conditions:

- (1) Best management practices be developed, implemented and maintained to prevent erosion and to protect water quality of affected waterbodies.
- (2) A National Pollutant Discharge Elimination System ("NPDES") General Storm Water permit be obtained from the Department.

This certification is effective unless a Commission review has been properly requested under provisions of Regulation No. 8, Administrative Procedures, within thirty (30) days after service of this decision.

All persons submitting written comments during this 30 day period, and all other persons entitled to do so, may request an adjudicatory hearing and Commission review on whether the decision of the Director should be reversed or modified. Such a request shall be in the form and manner required by provisions of Regulation No. 8.

Sincerely,

Randall Mathis
Director

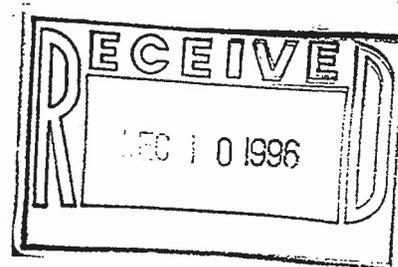
cc: Norm Thomas
J. Randy Young
Craig Uyeda
Arkansas State Highway Transportation Department



ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

December 4, 1996

Mr. Wendall L. Meyer
Federal Highway Administration
Arkansas Division Office
3128 Federal Building
700 West Capitol Avenue
Little Rock, AR 72201



RE: Multi County - General
Section 106 Review - FHWA
Draft Environmental Impact Statement
U.S. 71 Relocation - DeQueen to Interstate 40
State Job No. 001747
FAP No. DPS-015(7)

Dear Mr. Meyer:

My staff has reviewed the Draft Environmental Impact Statement on the proposed referenced undertaking. We concur with your decision to conduct an intensive cultural resources survey and do National Register eligibility evaluations on all historic properties in your preferred alignment route. Upon receipt of a report on this investigation, we can proceed with our review.

Thank you for your interest and concern for the cultural heritage of Arkansas. If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,

Cathy Buford Slater
State Historic Preservation Officer

CBS:GM

cc: Caddo Indian Tribe of Oklahoma
Advisory Council on Historic Preservation
Little Rock District, U.S. Army Corps of Engineers
Ouachita National Forest
Arkansas State Highway & Transportation Department
Michael Baker Jr., Inc.
Arkansas Archeological Survey





United States Department of the Interior

OFFICE OF THE SECRETARY

Washington, D.C. 20240

ER-96/730

DEC 23 1988

Mr. William D. Richardson
Division Administrator
Federal Highway Administration
700 West Capitol, Room 3128
Little Rock, Arkansas 722101-3298

Dear Mr. Richardson:

This is in response to the request for the Department of the Interior's comments on the Draft Environmental Impact Statement/Section 4(f) Evaluation for the US-71 Relocation between DeQueen and I-40 near Alma, Sevier, Polk, Scott, Sebastian and Crawford Counties, Arkansas.

Section 4(f) Evaluation Comments

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.

Environmental Statement Comments

The preferred alternative would result in the loss of 34.5 acres of herbaceous wetlands, 1.5 acres of scrub/shrub wetlands, and 15.9 acres of forested wetlands for a total of 51.9 acres of wetlands. A wetland mitigation plan to compensate for the unavoidable loss of wetlands for project construction will be developed and will include enhancement, restoration, or creation of wetlands. The ratios for wetland mitigation, identified in the statement, are acceptable to the U.S. Fish and Wildlife Service (FWS). The FWS will participate with other resource agencies in the development and review of the plan and the selection of mitigation areas. The Arkansas State Highway and Transportation Department (ASHTD) has tentatively reviewed several potential mitigation sites, including a portion of Fort Chaffee.

As noted in the statement, the federally-endangered American burying beetle, (*Nicrophorus americanus*), has been found within the preferred corridor at the Fort Chaffee Military Reservation and in other locations in Sebastian County. Since the highway project may affect the beetle, the FWS anticipates that formal consultation in accordance with Section 7 of the Endangered Species Act may be required.

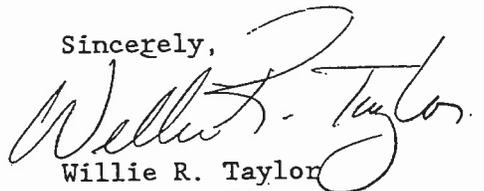
In conclusion, the FWS has worked with the ASHTD during all stages of planning to develop the least environmentally damaging highway facility for this portion of Highway US-71. The preferred alternative between DeQueen and I-40 is, therefore, environmentally acceptable and the FWS concurrence with this segment of the project was reflected in its comment letter for the ASHTD's application for a Department of the Army permit.

Summary Comments

The Department of the Interior has no objection to Section 4(f) approval of this project by the Department of Transportation.

We appreciate the opportunity to provide these comments.

Sincerely,



Willie R. Taylor
Director, Office of Environmental
Policy and Compliance

cc: Mr. Lynn P. Malbrough
Environmental Division
Arkansas State Highway
and Transportation Department
Post Office Box 2261
Little Rock, Arkansas 72203-2261



Federal Emergency Management Agency

Region VI
Federal Regional Center
800 North Loop 288
Denton, TX 76201-3698

December 26, 1996

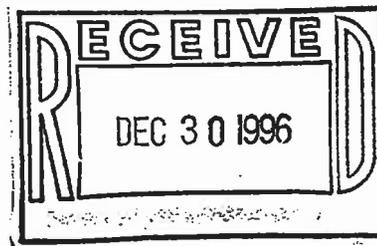
Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P. O. Box 12259
Philadelphia, Pennsylvania 15231-0259

RE: Draft Environmental Impact Statement: State Job No. 001747;
FAP No. DPS-015(7); US 71 Relocation - Dequeen to I-40

Dear Ms. Gesing:

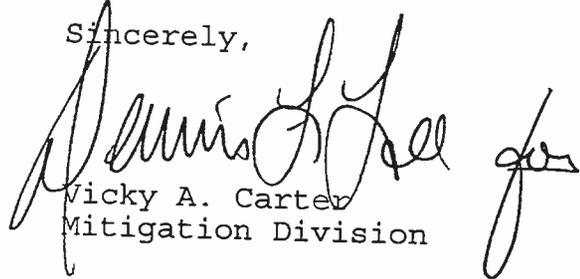
We have received your letter, dated November 5, 1996, in reference to the above-listed project. Thank you for the opportunity to comment on this Draft Environmental Impact Statement (DEIS).

The concerns of the Federal Emergency Management Agency (FEMA) are directed to the National Flood Insurance Program (NFIP) and the possible negative impact upon identified flood hazard areas and wetlands within the outlined project boundary. As stated in Executive Order 11990 (44 CFR Part 9) pertaining to wetlands, it is required that Federal agencies take into account the effects of their activities and programs on the designated wetlands as consistent with the wetland definition by the U. S. Fish and Wildlife Service. The U. S. Fish and Wildlife Service should be contacted to ensure that actions do not jeopardize the continued existence of any threatened or endangered species as stated in Section 7 of the Endangered Species Act. In addition, provisions of the Flood Disaster Protection Act of 1973 and Executive Order 11988 would apply whenever Federal funds, direct or indirect, are involved for development within the 100-year floodplain.



It appears that these concerns have been adequately addressed in the draft and we have no comments to offer. If we can be of further assistance, please do not hesitate to contact us at (817) 898-5333.

Sincerely,

A handwritten signature in black ink, appearing to read "Wicky A. Carter". The signature is fluid and cursive, with a long, sweeping tail that extends to the right.

Wicky A. Carter
Mitigation Division



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

December 30, 1996

William D. Richardson
Division Administrator
Arkansas Division
Federal Highway Administration
70C West Capitol Avenue, Room 3130
Little Rock, AR 72201-3298

Dear Mr. Richardson:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality Regulations for Implementing NEPA, the U.S. Environmental Protection Agency (EPA) Region 6 office in Dallas, Texas, has completed its review of the Federal Highway Administration (FHWA)/Arkansas State Highway and Transportation Department (ASHTD) Draft Environmental Impact Statement (DEIS) for U.S. 71 Relocation, DeQueen, Arkansas to Interstate 40.

The DEIS evaluates a project 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 proposed highway would be between 119 and 126 miles in length through the Arkansas counties of Sevier, Polk, Scott, Sebastian and Crawford. Several alternatives were considered including the No-Action alternative.

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. EPA asks that all mitigation measures be given the same consideration as the construction of the transportation improvement features associated with this project. Our classification will be published in the Federal Register according to our responsibility under Section 309 of the Clean Air Act, to inform the public of our views on proposed Federal actions.

EPA appreciates the opportunity to review the DEIS. We request that you send our office one (1) copy of the Final EIS at the same time that it is sent to the Office of Federal Activities (2251A), EPA, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20044.

Sincerely yours,



Michael P. Jansky, P.E.
Regional Environmental Review
Coordinator

cc: Randy Ort (ASHTD)



ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

January 7, 1997

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

RE: Multi County - General
Section 106 Review - FHwA
Report Entitled "A Cultural Resource
Assessment of the US 71 Relocation
Project Between DeQueen and Interstate
40 in Sevier, Polk, Scott, Sebastian,
and Crawford Counties, Arkansas"
AHTD Job No. 001747

Dear Ms. Gesing:

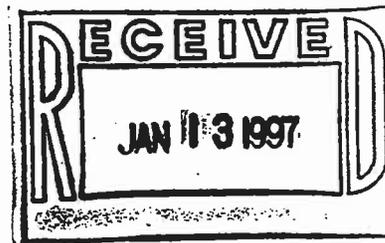
My staff has reviewed the referenced cultural resource assessment on the proposed U.S. Highway 71 Relocation Project. We concur with your decision to conduct an intensive cultural resources survey and do National Register eligibility evaluations on all historic properties in the preferred alignment route. Upon receipt of a report on this investigation, we can proceed with our review.

Thank you for your interest and concern for the cultural heritage of Arkansas. If you have any questions, please contact George McCluskey at (501) 324-9880.

Sincerely,

Cathy Buford Slater
State Historic Preservation Officer

CBS:GM



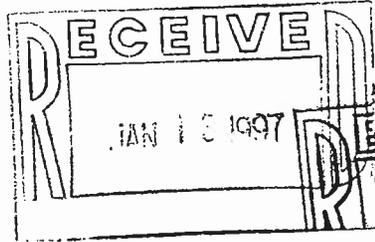
cc: Federal Highway Administration
Arkansas State Highway & Transportation Department
SPEARS, Inc.
Arkansas Archeological Survey



File Code: 1950/7700

Date: January 8, 1997

Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259



RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40

Dear Mrs. Gesing:

In your November 5, 1996 letter you enclosed five copies of the Draft Environmental Impact Statement (DEIS) for the above referenced project and requested our comments. Before proceeding, it is important to recognize that the decision we are making is whether or not to grant an easement for crossing federal lands within the Ouachita National Forest. On this federal land a four-lane highway will be built which will permanently change the present use of this land and have important environmental impacts on the surrounding area. We have therefore been acting as a cooperating agency throughout this project and appreciate the opportunity to comment on this DEIS.

Our comments will be organized around the following topics:

1. The effects on wildlife disclosed in section 4.11.
2. The effects on Red-cockaded Woodpecker and the need for possible mitigation based on Section 4(f) of the Department of Transportation Act of 1996. The effects disclosure is in section 4.12.3.
3. The effects on threatened, endangered and sensitive aquatic species. These are presently discussed in sections 4.12.4 and 4.12.5.
4. The need to discuss how fish passage needs will or will not be met.
5. A discussion of the changes this project will cause to runoff patterns, which directly affect stream channel integrity.
6. The need for a Biological Assessment.
7. The need to discuss the presence of Harperella, an endangered plant.
8. A discussion needs to be included of how certain site specific issues will be addressed during the design and construction phase of this project. Specifically issues related to forest road access, erosion control, and many other mitigation measures need to be explained.
9. The distribution list needs to be expanded to include additional environmental groups, congressional representatives, and individuals who would have an interest in this project.

Topic 1

We consider the disclosure of impacts that the proposed highway will have on habitat and wildlife to be lightly covered.

To use Dr Edwin Michael's study of 1975 to say that the trade offs are about the same is not adequate. His work was done in West Virginia and some of this may or may not be applicable.

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. The Draft mentions there will be a permanent commitment of resources and habitat. But how much, and of what kind, should be addressed. 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?

The differences in the type and quality of habitat provided by road rights-of-way should be explained.

The potential increase in wildlife mortality should be disclosed. In 1995 in Arkansas, 7,000 deer were killed on highways by collisions with vehicles. Highways dissect habitat for deer and other species and they must cross highways to get to habitat components to meet their needs. Increased vehicle use and speeds will increase mortality of all species. Slow moving reptiles and amphibians can be virtually eliminated within the total highway influence zone.

The highway and its right-of-way will also increase habitat fragmentation for some resident and neotropical migratory species, and increase predation and nest parasitism for others.

Topic 2

Between Segments "H" and "I", the corridor for the "Preferred Alternative" will cut a new path through the Shortleaf pine / Bluestem Ecosystem and Red-cockaded woodpecker (RCW) habitat management area. This wildlife management area is designated as Management Area 22 and was recently established through a significant amendment to the Forest Plan. On September 24, 1987 and subsequently revised on June 7, 1989 the Federal Highway Administration (FHWA) developed a policy paper to guide the applicability of Section 4(f) of the Department of Transportation Act of 1966 for project situations most often encountered. Under Item 18 titled Wildlife Management Areas the paper states "Section 4(f) may apply to publicly owned wildlife management areas...." The paper goes on to say "If the wildlife management area primarily functions as a sanctuary or refuge for the protection of species, Section 4(f) would apply."

One of the primary reasons for establishing this management area was for the protection of an endangered species (i.e. RCW). It is therefore our position that Section 4(f) applies and as such the USFS should be compensated for the loss of 492 acres of habitat (Preferred Alternative). This mitigation could be in the replacement of the land with land that is or could be suitable habitat. We are willing to work with you further on exactly what lands would qualify. This needs to be discussed in Section 5 of the EIS.

Topic 3

LEOPARD DARTERS: Leopard darters are mentioned in Chapter 2 and appear in Tables 2-1 as a constraint and in Table 2-6 in the comparison of corridors A, B and C with the conclusion that alignments could be developed within all corridors that would likely not affect these species. That discussion should be fleshed out in Chapter 4, Section 4.12 Threatened and Endangered Species. If the proposed corridor and various lines are outside drainages containing this Threatened darter, it should be stated. If construction will occur in the watershed containing the darter, then more discussion is warranted to justify the conclusion of no impact.

Table 2-12 River Crossings is not very helpful as is and should be broken out by watersheds and tributary systems, so streams that flow into other streams can be more easily determined without having to scrutinize maps to find the creeks and their tributary systems.

ARKANSAS FATMUCKET MUSSEL: We disagree with the assessment of no impact of the project from the Preferred Alignment (4.12.4). Our conclusion is a May Affect requiring Formal Consultation (even though the U. S. Fish and Wildlife Service (USFWS) did not list this species but rather the Ouachita rock pocketbook mussel for the Ouachita River in their July 14, 1995 correspondence.) (The Ouachita rock pocketbook mussel has been found in the Ouachita River but occurs below Lake Catherine.) Any significant spill at the Ouachita River crossing can have devastating consequences downstream for miles and miles. With the increase in traffic this four lane highway will generate, the risk is magnified many times. With the remote western Arkansas location, response of Hazmat or spill containment crews will not be timely. In addition to large spills, normal runoff will contain heavy metals, petroleum products, etc. that will be detrimental to aquatic life, particularly filter feeders such as mussels. Design of the Ouachita River crossing must take these factors into consideration and sufficiently reduce or eliminate these risks. One possibility would be to divert all runoff from bridges and roadways into retention basins that do not directly flow into the river and would provide retention of these harmful substances. Use of natural or constructed wetlands might be one solution.

CRAYFISH (*Procambarus reimeri*): There is no discussion (4.12.5) of the impact on this species, which is an endemic species only known from six locations in the Irons Fork drainage (Dr. Henry Robison, personal communications). This is within very close proximity to the study corridor. Insufficient surveys have been done for this species to be ruled out as not being impacted by this project. Surveys of the highway alignment for this species are needed within the full Irons Fork drainage and for some distance through the adjoining watersheds. This species is a Springtime burrower and are best surveyed during this very small window of time. Plans need to be made now to complete this survey as soon as possible. Little is known of the life history and burrowing habits of the species. There may be some potential that habitat could be created for this species; however, if a majority of individuals are destroyed by ground disturbing activities before the habitat is created, much will be lost. This species surely has potential as a candidate for Federal listing. As above, we are talking about insufficient disclosure, not necessarily changing alignments unless information gleaned in surveys dictates a change.

SPECIES OF STATE CONCERN: There is no discussion in 4.12.5 that indicates there is an understanding that data received from Arkansas Natural Heritage Commission (ANHC) is actually point information of localities for these species rather than the sites being the only locations where these species occur.

Making inference that because point localities of these species are not being impacted and therefore further consideration is not needed is insufficient analyses. The discussion of type localities and their occurrence is needed. More importantly, there should be a discussion as to how these areas will be surveyed and what mitigation potential exists. Is there a mechanism that if an Arkansas listed or Federally listed species is found, a consultation process will be initiated, and more importantly, will there be any further surveys?

Topic 4

Of the fish species listed in the Appendix as present (several scientific names listed are outdated and need to be corrected), possibly as high as one third of those listed are migratory spawners. Of this group, many will spawn in intermittent streams. There is no discussion of how fish passage needs will or will not be met. Fish passage will/should be a requirement for AHTD receiving a 404 permit for this project. Unless every river, creek and intermittent drainage is crossed with a bridge, fish passage will need addressing. Without fish passage, this project will severely fragment these many watersheds. Even if the crossings are all designed to be "fish friendly", watershed runoff changes may create natural barriers due to headcutting. This needs to be examined as well (see discussion on topic 5).

Topic 5

A project of this magnitude laid across the landscape is essentially a massive type-conversion of land use. We found no discussion of the profound changes this will cause to runoff patterns which directly affect stream channel integrity. There is a discussion of sedimentation to streams but that discussion is directed at construction type impacts (4.7-4.7.1). With the massive changes in runoff patterns from forested watersheds being impacted by four lanes of pavement, four paved shoulders, grassed cut and fill slopes and grass medians, stream runoff will increase significantly causing the water courses to go out of equilibrium of the existing runoff patterns and channel morphology. Annual runoff volume will increase as will peak storm flows. Significant downcutting and/or stream widening will occur which will cause instream sediment and bedload movement, habitat changes, etc. These impacts need to be discussed and mitigation measures developed either on-site or off-site.

Of particular concern is the 10 watershed crossings of Cedar Creek and unnamed perennial and intermittent tributaries totaling 85,250 feet, which is a tributary to Johnson Creek with its 14 crossings totaling 20,250 feet. These crossings are watershed crossings, not just streams. For every watershed crossed, there will be a stream or at least a drain crossed with some type of structure. This particular series of watersheds have a Severe-Moderate erosion potential. The concern is both short term from construction activities which is addressed, but more importantly there is no discussion of long-term and cumulative impacts.

Topic 6

It is our understanding there are presently no plans to complete a Biological Assessment (BA) for this project. Normally, the Fish and Wildlife Service requires the lead agency prepare a BA for a project of this magnitude. The BA would include information concerning listed and proposed species and designated and proposed critical habitat that may be present in the action area, and the potential effects of the proposed action on such species and habitat. This would seem to be especially important related to the RCW habitat that will be affected by this highway.

Topic 7

Ptilimnium nodosum (harperella) an endangered plant possibly occurs along the new highway corridor. Some discussion needs to be included in the EIS about either the presence or absence of this species and any possible effects. Only two places near the highway have been surveyed, with both coming up negative. Populations will be affected by increased silt into the creeks and rivers. In the process of building bridges, even over small creeks, populations could be destroyed.

Topic 8

This document lacks a lot of specificity. A discussion needs to be added that further explains how the site specific issues will be addressed during the design and construction phase of this project. Deferring these issues to the time of construction planning is insufficient without a discussion of a clearly defined process that includes sufficient checks and balances.

Specifically in this discussion there is a need to cover the following issues:

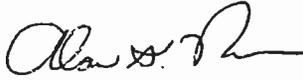
1. The need for the Forest Service and public to have continued access to forest roads within the preferred corridor. On page 4-46 of the DEIS the statement is made that this issue will be fully evaluated during the design phase of this highway. What will the process be for doing this?
2. Under 4.7.3 on page 4-27 the statement is made that implementation of proper erosion and sedimentation control techniques should minimize any potential impacts. Exactly what will these mitigation measures be?
3. The document noted that water quality BMPs will be implemented during the construction phase but does not explain what this will consist of. An erosion control plan should be included. This should be by road segment and include such things as when erosion control measures will be completed, how the raw cut/fill slopes and island strip will be prepared, what mulch, erosion control fabric, etc., will be used on certain cut/fill slopes, seed mix (consisting of species native to western Arkansas), fertilizer to be used, any soil amendments such as agricultural grade lime and rates of application, etc.. The highway department should consult with the local USDA Natural Resource Conservation Service District Conservationist, Forest Service, and County Agricultural Extension Agent in formulating these plans.

A land disturbing and land use altering project of this degree and magnitude will likely result in some off-site (i.e. outside the 500-700' actual impact area) watershed problems such as accelerated sheet/rill and gully erosion from increased runoff rates and re-routing of this runoff. The erosion control plan should address this issue and provide for monitoring and followup remedial action over at least a 3-5 year period after project completion on adjacent lands which are adversely impacted.

Topic 9

There are several people who should be added to the distribution list (see enclosure). These individuals should have received a copy of the DEIS in order to comment. At the very least a copy of the FEIS and ROD should be mailed to them.

In conclusion, we appreciate the very pro-active approach you have taken in keeping us informed on this project. The DEIS is well written with most of our comments related to the need to better disclose some of the environmental effects. The request for mitigation-related to RCW is new and based on additional research by my staff. Please direct any questions to John Cleeves at 501-321-5251.



ALAN G. NEWMAN
Forest Supervisor

Enclosure

cc: Dan Nolan
Nick Finzer
Rich Standage
Jerry Davis
Ken Luckow
Chris Frisbee
Larry Hedrick
John Cleeves
Tony Verucchi
Gary Hawkins - Mena District
John Strom - Poteau District
George Bukenhofer - Choctaw District

Mr. Al Brooks
HCR 67, Box 50
Waldron, AR 72958

Mr. Kirk Wasson
Arkansas Wilderness Steering Committee
32 Sierra Court
North Little AR 72118

Mr. Basil Kyriakakis
F.I.G.H.T.
HC 60, Box 73
Parks, AR 72950

Mr. Randall Mathis
Arkansas Dept. of Pollution Control
8001 National Drive
Little Rock, AR 72209

The Honorable Bill Brewster
House of Representatives
118 Federal Building

McAlester, OK 74501

The Honorable Ray Thornton
House of Representatives
1527 Federal Bulding
Attn: Janet Miller
Little Rock, AR 72201

The Honorable Dale Bumpers
United States Senate
2527 Federal Building
Attn. Cynthia Edwards
Little Rock, AR 72201

Mr. Richard A. Gordon, Jr.
Public Awareness Committee, Inc.
1145 No. 57th Place
Fort Smith, AR 72904-7341

Mr. Danny Rowland
Arkansas Game and Fish Commission
1603 Hwy. 71 N.
Mena, AR 71953

Mr. Robert Mitchell
U.S. Forest Service
Mena Ranger District
1603 Hwy. 71 N.
Mena, AR 71953

The Honorable David Pryor
United States Senate
3030 Federal Building
Attn: Carmie Henry
Little Rock, AR 72201

The Honorable Tim Hutchinson
House of Representatives
U.S. Federal Building
30 S. 6th Street, Suite 248
Fort Smith, AR 72901-2401

The Honorable Jay Dickey
House of Representatives
100 Reserve Street, Room 201
Attn: Glenda Peacock
Hot Springs, AR 71902

Mr. Tony Verucchi
U.S. Forest Service
P.O. Box 1270
Hot Springs, AR 71902

Mr. Jerry Williams
531 Windamere Terrace
Hot Springs, AR 771913

Mr. Jim Crouch
2901 Camelot Drive
Russellville, AR 72801

Mr. John Strom
U.S. Forest Service
Poteau Ranger District
P.O. Box 2255
Waldron, AR

ARKANSAS STATE HIGHWAY
AND
TRANSPORTATION DEPARTMENT

Dan Flowers
Director
Telephone (501) 569-2000



P.O. Box 2261
Little Rock, Arkansas 72203-2261
Telefax (501) 569-2400

January 9, 1997

Jerry Harris, Acting Chief
Regulatory Functions
U. S. Army Corps of Engineers
Little Rock District
Post Office Box 867
Little Rock, Arkansas 72203

Attention: Mr. Larry Harrison

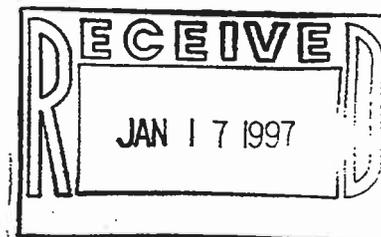
Re: AHTD Job Number 001747
FAP Number DPS-A015(7)
U. S. 71 Relocation - DeQueen to I-40

Dear Mr. Harris:

The Arkansas Highway and Transportation Department (AHTD) is writing in reference to a Section 404 Permit Application, ID Number 13110, for Department of the Army authorization for the discharge of dredged or fill material into wetlands and other "waters of the United States" in conjunction with the referenced project.

A Joint Public Notice was published on November 1, 1996 regarding the Draft Environmental Impact Statement and the Permit Application. Both AHTD and the Corps of Engineers participated in Joint Public Hearings that were held on December 2 - 6, 1996.

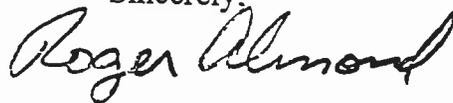
At this time, AHTD is requesting that the Corps of Engineers defer issuance of the project's Section 404 Permit until the Final Environmental Impact Statement (FEIS) is completed. The AHTD is currently working with the Federal Highway Administration and the Arkansas Historic Preservation Program on the schedule to



complete the project's Phase I and II archeological studies which will directly affect the completion date of this FEIS. The AHTD will coordinate with the Corps of Engineers as the schedule is finalized to determine the most appropriate time of permit issuance.

If you have any questions or need additional information regarding this request, please contact me.

Sincerely,



Roger Almond
Deputy Director
and Chief Engineer

RA:LPM:pb

cc: Director
Federal Highway Administration
Arkansas Historic Preservation Program
Michael Baker Jr., Inc. ✓
bc: Assistant Chief Engineer for Planning



STATE OF ARKANSAS
DEPARTMENT OF FINANCE AND ADMINISTRATION
P O BOX 3278
LITTLE ROCK • 72203

OFFICE OF
INTERGOVERNMENTAL
SERVICES

PHONE (501) 682-1074
FAX (501) 682-5206

January 10, 1997

Ms. Patricia S. Gesing, P.E.
MICHAEL BAKER JR., INC.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT/U.S. 71 RELOCATION DEQUEEN TO I-40

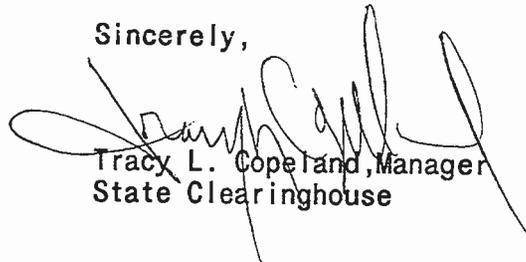
Dear Ms. Gesing:

The State Clearinghouse has received the above Document pursuant to the Arkansas Project Notification and Review System.

To carry out the review and comment process, this document was forwarded to members of the Arkansas Technical Review Committee. Resulting comments received from the Technical Review Committee which represents the position of the State of Arkansas are attached.

The State Clearinghouse wishes to thank you for your cooperation with the Arkansas Project Notification and Review System.

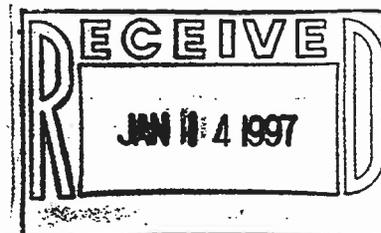
Sincerely,



Tracy L. Copeland, Manager
State Clearinghouse

Enclosure
PC: Randy Young, AS&WCC
mkb/tlc

0001N





OFFICE OF
INTERGOVERNMENTAL
SERVICES
PHONE (501) 682-1074
FAX (501) 682-5206

STATE OF ARKANSAS
DEPARTMENT OF FINANCE AND ADMINISTRATION
P.O. BOX 3278
LITTLE ROCK • 72203

AHTD-96-
DO-11-20
Kellar
WZ

NOV 10 1996
STATE CLEARINGHOUSE

MEMORANDUM

RECEIVED

NOV 7 1996

EXECUTIVE DIRECTOR'S
OFFICE

TO: All Technical Review Committee Members
FROM: Tracy L. Copeland, Manager - State Clearinghouse
DATE: November 6, 1996
SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT/U.S. 71 RELOCATION DEQUEEN TO INTERSTATE 40

Please review the above stated document under provisions of Section 404 of the Clean Water Act, Section 102(2)(c) of the National Environmental Policy Act of 1969 and the Arkansas Project Notification and Review System.

Your comments should be returned by Nov. 20, 1996 to - Mr. Randy Young, Chairman, Technical Review Committee, 101 E Capitol, Suite 350, Little Rock, Arkansas 72203.

If we have no reply within that time we will assume you have no comments and will proceed with the sign-off.

NOTE: It is imperative that your response be in to the ASWCC office by the date requested. Should your agency anticipate having a response which will be delayed beyond the stated deadline for comments, please contact Ms. Shani Cable of the ASWCC at 682-1611 or the State Clearinghouse Office.

- Support
- Comments Attached
- No Comments
- Do Not Support (Comments Attached)
- Support with Following Conditions
- Non-Degradation Certification Issues (Applies to PC&E Only)

Signature  Agency Parks/Tourism Date 11-18-96



Arkansas Soil and Water Conservation Commission

J. Randy Young, P.E.
Executive Director

101 EAST CAPITOL
SUITE 350
LITTLE ROCK, ARKANSAS 72201

PHONE 501-682-1611
FAX 501-682-3991

MEMORANDUM

TO: Mr. Tracy Copeland
Manager, State Clearinghouse

FROM: J. Randy Young, P.E.
Chairman, Technical Review Committee

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT/U.S. 71 RELOCATION DEQUEEN
TO INTERSTATE 40

DATE: December 31, 1996

Members of the Technical Review Committee have reviewed the above referenced project. The Committee supports this project. Agency comments are included for your review.

The opportunity to comment is appreciated.

JRY:smc
Enclosures
cc: Members of the Technical Review Committee

RECEIVED

JAN 10 1997

INTERGOVERNMENTAL
SERVICES
STATE CLEARINGHOUSE



STATE OF ARKANSAS
 DEPARTMENT OF FINANCE AND ADMINISTRATION
 P O BOX 3278
 LITTLE ROCK • 72203

OFFICE OF
 GOVERNMENTAL
 SERVICES

(501) 682-1074
 501) 682-5206

MEMORANDUM

TO: All Technical Review Committee Members

FROM: Tracy L. Copeland ^{VTC} (Manager - State Clearinghouse)

DATE: November 6, 1996

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT/U.S. 71 RELOCATION DEQUEEN TO INTERSTATE 40

Please review the above stated document under provisions of Section 404 of the Clean Water Act, Section 102(2)(c) of the National Environmental Policy Act of 1969 and the Arkansas Project Notification and Review System.

Your comments should be returned by 11/20/96 to - Mr. Randy Young, Chairman, Technical Review Committee, 101 E Capitol, Suite 350, Little Rock, Arkansas 72203.

If we have no reply within that time we will assume you have no comments and will proceed with the sign-off.

NOTE: It is imperative that your response be in to the ASWCC office by the date requested. Should your agency anticipate having a response which will be delayed beyond the stated deadline for comments, please contact Ms. Ann Morrison of the ASWCC at 682-3905 or the State Clearinghouse Office.

- | | |
|---|--|
| <input type="checkbox"/> Support | <input type="checkbox"/> Do Not Support (Comments Attached) |
| <input type="checkbox"/> Comments Attached | <input type="checkbox"/> Support with Following Conditions |
| <input checked="" type="checkbox"/> No Comments | <input type="checkbox"/> Non-Degradation Certification Issues (Applies to PC&E Only) |

Signature Joseph Krzywicki Agency ASWCC Date 12/6/96



ARKANSAS NATURAL HERITAGE COMMISSION
 1500 TOWER BUILDING
 323 CENTER STREET
 LITTLE ROCK, ARKANSAS 72201



Harold K. Grimmett
 Director

Mike Huckabee
 Governor

Date: January 17, 1997
 Subject: Draft Environmental Impact Statement
 U.S. 71 Relocation, DeQueen to I-40
 FAP No. DPS-015(7)
 State Job No. 001747
 ANHC No.: P-CF..-96-117

Ms. Patricia Gesing
 Michael Baker Jr., Inc.
 Airport Office Park, Building 3
 420 Rouser Road
 Coraopolis, Pennsylvania 15108

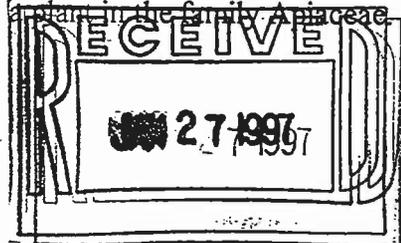
Dear Ms. Gesing:

Staff members of the Arkansas Natural Heritage Commission have reviewed the Draft Environmental Impact Statement (EIS) for the relocation of U.S. Highway 71 from DeQueen to Interstate 40. We have the following comments:

A review of our database indicates several species should be added to the list of species of special state concern. Information on the occurrence of these species in the study area was unavailable to our agency at the time we provided data in August of 1995.

| Element Name | Fed. Stat. | State Stat. | Global Rank | State Rank |
|--|------------|-------------|-------------|------------|
| <u>Dendroica petechia</u> , yellow warbler | - | INV | G5 | S3B,S5N |
| <u>Lythrurus snelsoni</u> , Ouachita Mountain shiner | - | INV | G2 | S? |
| <u>Notropis ortenburgeri</u> , Kiamichi shiner | - | INV | G3 | S2 |

Print-outs providing detailed information on the occurrences of these species are enclosed, as well as maps indicating their locations. Also, an error was detected in Section 3.11.5 and table 3-5 of the Draft EIS. Small's sanicle (Sanicula smallii) is a plant in the family Apiaceae. It was erroneously listed as in invertebrate.



Relative to impacts to wetlands and streams, we refer you to our letter of 4 December 1996 which responded to the public notice for 404 authorization for the project (a copy is enclosed). We would like to reiterate our concerns about the cumulative watershed level impacts of this project. Of particular concern to this agency are the watersheds of the Cossatot and Ouachita Rivers. The highway corridor will traverse substantial portions of these watersheds. All efforts should be made to include in the project design ways to keep adverse impacts to a minimum. Monitoring should be conducted during the construction phase to insure that Best Management Practices are adhered to and are adequate.

The Draft EIS addresses most of our concerns about endangered and threatened species. It would be our preference that habitat for Red-cockaded woodpecker (RCW) not be impacted by highway construction. However, if avoidance is not possible, we would encourage that right-of-way design incorporate features that would provide benefit to RCW. Where possible, such design might include retention and management of mature pines along the median and road margins.

Prairie remnants may occur within the alignment between Waldron and Fort Smith. Prairie, which was once extensive in this area, has all but disappeared from the landscape. Where such areas still exist they support a high species diversity that often includes rare plants and animals. If prairie remnants are found within this stretch they should be avoided. If avoidance is not possible, impacts should be minimized and might be mitigated by restoring prairie within highway rights-of-way.

The opportunity to comment is appreciated. If you have questions or need additional information, please feel free to contact me.

Sincerely,

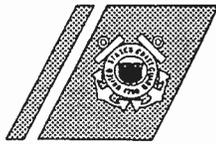
A handwritten signature in cursive script that reads "Cindy Osborne".

Cindy Osborne
Data Manager

Enclosures: 6 Element Occurrence Print-outs with maps
Copy of letter on 404 application

U.S. Department
of Transportation

United States
Coast Guard



Commander
Eighth Coast Guard District
Western Rivers Operations

1222 Spruce St.
St. Louis MO 63103-2832
Staff Symbol: (ob)
Phone: (314) 539-3900
Fax: (314) 539-3755

16590/291.8 ARWW
January 24, 1997

Ms. Patricia S. Gesing, P.E.
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

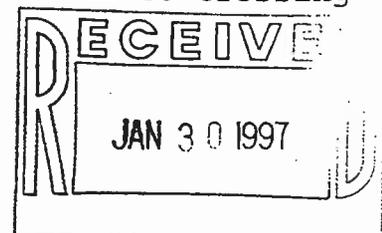
Subj: PROPOSED NEW U.S. 71 HIGHWAY BRIDGE, MILE 291.8 ARKANSAS
WATERWAY

Dear Ms. Gesing:

The following comments are provided concerning the Draft
Environmental Impact Statement (EIS) for the subject project.

- a. Title page: Change "U.S. Coast Guard - Second District"
to "U.S. Coast Guard - Eighth Coast Guard District".
- b. Section 4.19.2, Navigation Impacts, Two percent flowline:
Change mean sea level elevation of the 2 percent flowline
from "389.2 feet" to "389.7 feet at 165,000 cubic feet per
second flowrate".
- c. Section 5.19.2, Navigation Impacts, Continued
coordination with the Coast Guard: 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 the
owner of the bridge.
- d. Section 4.19.5 Bridge Impact Summary: Add comments on
bridge construction impacts upon river traffic. The
construction of falsework, cofferdams or other obstructions,
if required, and the scheme for constructing and erecting the
new 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 the
construction of the bridge.

A completed 4(f) evaluation will be required prior to final
processing of a bridge permit application, to show conclusively
that there are no feasible or prudent alternatives to crossing
Spring Hill Park.



16590/291.8 ARWW
January 10, 1997

Subj: PROPOSED NEW U.S. 71 HIGHWAY BRIDGE, MILE 291.8 ARKANSAS
WATERWAY

The opportunity to comment on the portions of this project that are under Coast Guard jurisdiction is appreciated. You may contact me at 314-539-3900, extension 382, or by fax at 314-539-3755 if additional information is needed.

Sincerely,

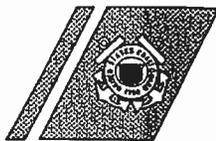


DAVID H. SULOUFF
Project Manager

By direction of the District Commander

U.S. Department
of Transportation

United States
Coast Guard



Commander
Eighth Coast Guard District
Western Rivers Operations

1222 Spruce St.
St. Louis MO 63103-2832
Staff Symbol: (ob)
Phone: (314) 539-3900
Fax: (314) 539-3755

16590/291.8 ARWW
January 24, 1997

Mr. Steve Teague, Assistant Chief
Engineer, Planning Department
Arkansas State Highway and Transportation Department
P.O. Box 2261
Little Rock, AR 72203-2261

Subj: PROPOSED U.S. 71 HIGHWAY BRIDGE, MILE 291.8,
ARKANSAS WATERWAY

Dear Mr. Teague:

We have completed our review of the navigational clearances required for the subject project. Our review included input from the Arkansas Waterways Commission and the Little Rock District, Corps of Engineers. Based upon our review we have determined the following navigational clearances must be provided by a new bridge at the proposed location:

a. Vertical: At least 52 feet vertical clearance above elevation 389.7 feet mean sea level (m.s.l.), 2 percent flowline.

b. Horizontal: At least 500 feet horizontal, between the face of the left descending channel pier and the right descending bank of the river, measured perpendicular to the axis of the channel. The right descending channel pier must be located out of the water on the right descending bank of the river.

Comments concerning the design of the bridge to withstand impacts from river traffic or to employ pier protection are needed and if possible, should be included in the environmental documentation for this project.

You may contact Mr. David Sulouff at 314-539-3900, extension 382 if additional information is needed.

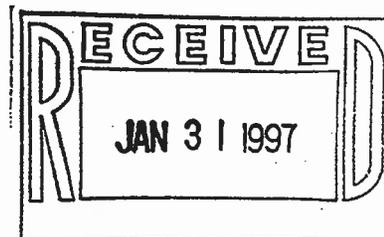
Sincerely,

Handwritten signature of Roger K. Wiebusch in black ink.

ROGER K. WIEBUSCH
Bridge Administrator

By direction of the District Commander

Copy: Michael Baker Jr., Inc.



Caddo Indian Tribe of Oklahoma

Post Office Box 487
Binger, Oklahoma 73009
405 / 656-2901 405 / 656-2344
Fax # 405 / 656-2892
Office of Environmental Education

January 29, 1997

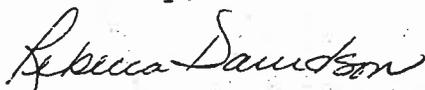
Mr. Randy Ort
Arkansas State Highway and Transportation Department
Public Affairs Officer
P.O. Box 2261
Little Rock, Arkansas 72203-2261

Dear Mr. Ort,

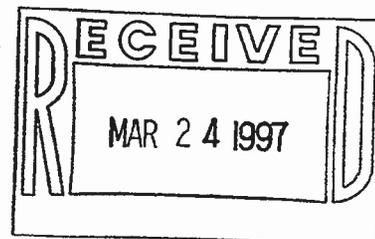
We have reviewed the Draft Environmental Impact Statement in the U.S. 71 Relocation DeQueen to Interstate 40. We are very concerned with this project because it passed through original Caddo homelands (see enclosed map.) We would like to be consulted on the project due to the cultural & historical significance of the area.

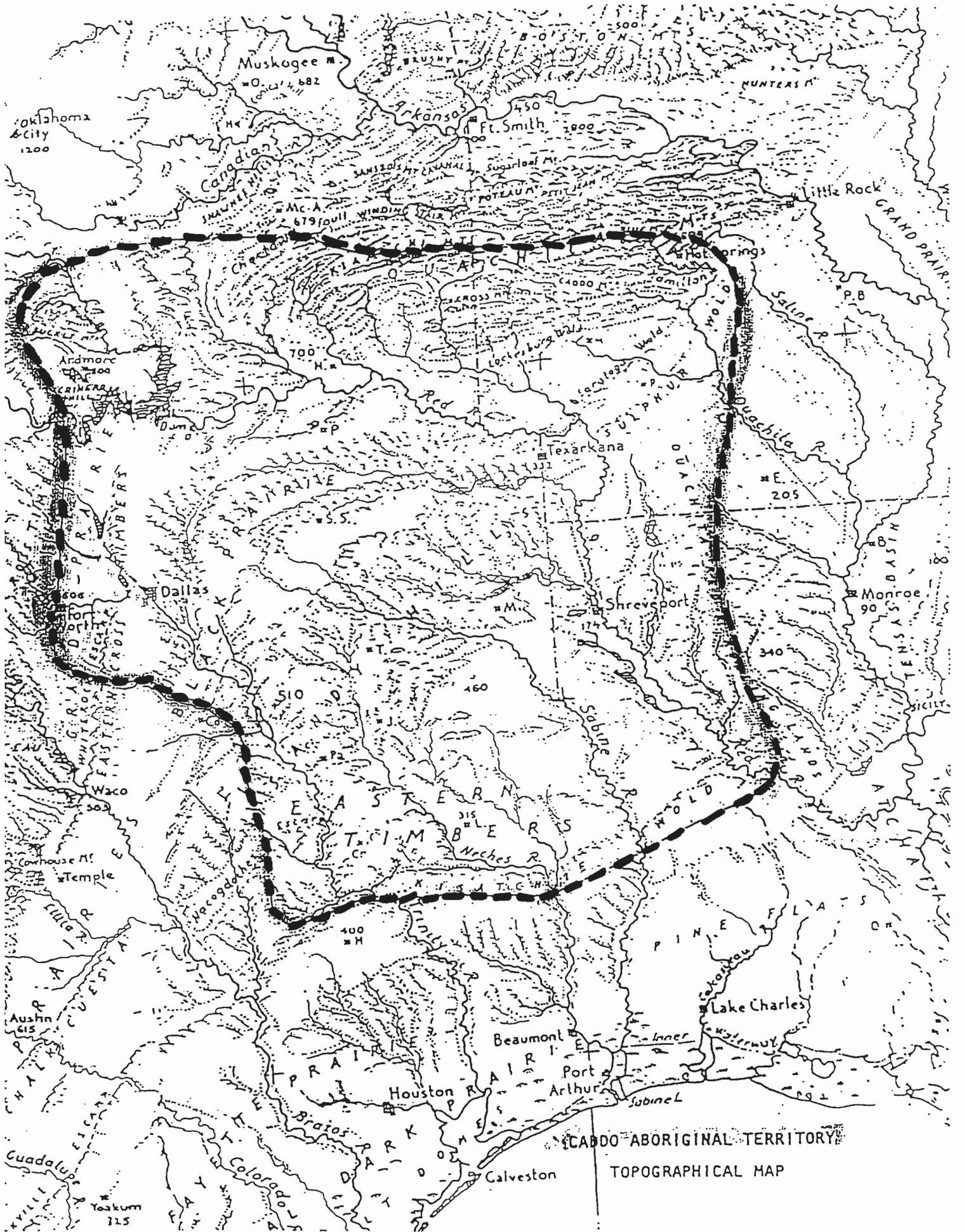
We're looking forward to working with you on this project.

Sincerely,



Rebecca Davidson
Environmental Education Director





Baker

FHWA

28658+

RJ

29224

Michael Baker Jr., Inc.

A Unit of Michael Baker Corporation

February 14, 1997

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048 or
FAX (412) 269-4647

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Request for Technical Assistance

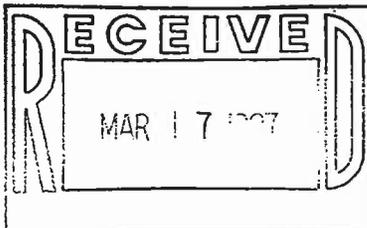
FEB 18 1997

Dear Mrs. Slater:

We are requesting technical assistance from your office in the review of structures identified during our on-going Phase I archeology work. As you are aware, AHTD and Baker identified a preferred alignment in the October 1996 Draft EIS. SPEARS, Inc., our subconsultant, has been conducting Phase I field work along the preferred alignment and to date has completed approximately 38 miles of testing from DeQueen, Arkansas to just south of Mena, Arkansas. This work is described in detail in the report entitled *Management Summary 1: An Archeological Survey of Segments A-D of the Preferred Alignment of the U.S. 71 Relocation Project, Sevier and Polk Counties, Arkansas* which your office will receive for review in the near future. The newly identified structures are located in areas that had been previously inaccessible until initiation of the Phase I field effort.

Based on your previous request, we have photographed the three structures that are within or adjacent to the construction limits that are approximately 50 years old or older. We would like your assistance in evaluating the architecture of these structures. For each structure we have provided a color photograph and an excerpt from the appropriate USGS quadrangle map. The location data shown on the attachments is keyed to our detailed alignment maps, such as the engineering station and the alignment nearest the structure, and is provided for Baker and AHTD use.

Structure No. 19-2 is currently undergoing renovation by the owner and has recently had new doors and windows installed.



2(1)

Date 3/14/97
This undertaking will have no effect
on significant cultural resources.

Cathy Buford Slater:
Arkansas Historic Preservation Officer

 A Total Quality Corporation

Mrs. Cathy Buford Slater

Page 2

February 14, 1997

We look forward to your response. Please contact us at 412-269-4603 if you need additional information. Thank you for your assistance.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in cursive script, appearing to read "Patricia S. Gesing".

Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Bob Walters - AHTD w/att
William D. Richardson - FHWA w/o att
Carol Spears - SPEARS, Inc. w/att

**U.S. 71 Relocation - DeQueen to I-40
Meeting Minutes**

Subject: RCW Habitat Management Area Section 4(f) Applicability

Attendees: Carl Kraehmer - FHWA Nick Finzer - FS
Lynn Malbrough - AHTD Jerry Davis - FS
Patty Gesing - Baker Tony Verucchi - FS
Tim Smith - Baker George Bukenhofer - FS
John Cleeves - FS Larry Hedrick- FS

Time and Place: February 20, 1997 2:00 p.m.
Federal Building
Hot Springs, Arkansas

1. The purpose of the meeting was to discuss the applicability of Section 4(f) to the habitat management area for the RCW. This meeting was held as a result of Forest Service letter dated January 8, 1997 commenting on the Draft EIS.
2. Carl Kraehmer gave a brief background as to the objective of USDOT policy on Section 4(f) properties. He noted that four categories of properties are protected, provided they are publicly owned public lands. These include designated parks, recreation areas, wildlife and waterfowl refuges and historic properties. Typically these lands are not multiple use in nature. If a project crosses 4(f) land, FHWA must demonstrate that there are not prudent and feasible alternatives to the use of that land before it can approve such use. This use is basically a "last resort".
3. Carl explained that from his review of the information, it appears that the HMA is a multiple use area in that it allows timber management and recreation to occur. Similar situations with multiple use areas in other national forests have been found not to qualify for Section 4(f) protection. He asked that the Forest Service explain their position.
4. George and Nick explained their discussions with the FWS regarding the Cossatot Wildlife Refuge. They had received information from FWS on Section 4(f) policy. Carl noted that the HMA is not a refuge. Patty asked if the HMA functions as a sanctuary and George stated that it does not. Larry countered that wildlife refuges are multiple use areas at which point Lynn pointed out that refuges are specifically identified as 4(f) in the law. A wildlife refuge must be designated as such. Multiple use areas must have refuge characteristics to qualify for protection under Section 4(f).
5. George clarified that the FS felt that the HMA of approximately 84,000 acres, not the 70,000 acre extended area, is 4(f). He also confirmed that 21% of the HMA is not suitable habitat and will not be managed for RCW recovery or shortleaf pine/bluestem ecosystem renewal.
6. Lynn inquired as to whether the FS would ever cut the trees in the HMA. This was confirmed. George explained that it will be managed into perpetuity meaning that some trees will be cut and the RCW pairs would then use other mature trees in the HMA. Carl inquired about how the land will actually be managed. The day to day management of the HMA is discussed in Appendix G to the RCW HMA FEIS.
7. Multiple use was again discussed. Carl and Patty explained that if within a multiple use area, certain areas are designated for specific recreation, wildlife and waterfowl refuge for example, that these areas may qualify for protection under Section 4(f). The Ouachita National Recreation Trail which is partly within the HMA is a good example. The FS expressed some frustration because they are guided by the Multiple Use Act which requires that all FS lands must be managed for multiple uses. Patty explained that in a similar situation for a multiple use area of another national forest, the FS stated that Section 4(f)

would not apply. Larry and George pointed out that while this may be true, the HMA in question is for recovery of an endangered species and therefore is more important. It was noted however that the Endangered Species Act offers legal protection of the RCW and that Section 4(f) does not deal with endangered species.

8. There was some discussion as to the distinction, if any, of a refuge which protects species and a management area that is for recovery of a species. No conclusion was reached on this topic.
9. The FS stated that they were less concerned with the 4(f) applicability of the HMA as with receiving adequate compensation for the land lost from this management area. They felt that Section 4(f) would assure compensation for the land "lost". The FS stated that they are not requesting compensation for other forest lands transferred to the highway department. Within the HMA, the Preferred Alignment crosses 437 acres of forest service land that is suitable habitat for RCW's.
10. Carl explained the detailed documentation and study of alternatives that would be necessary should the area be designated as 4(f) and also stated the larger concern that land in 10 other states could be similarly designated. Carl inquired as to the progress other forests had made on establishing HMAs in the southern region. (See attached table). The FS believes that they are one of the first to revise their Land and Resource Management Plan.
11. At this point, the topic was changed to review the results of an earlier meeting between John Harris, Tim and Rich Standage of the FS regarding several wildlife studies comments. It was agreed at that meeting that the FS typically conducts several site specific studies to satisfy NEPA documentation for their actions, in this case a land transfer. These studies go beyond what is typically completed for highway EISs and often include surveys for state listed or potential federal listed species. It was agreed that site-specific studies will need to be done in the future, once the right-of-way limits are better defined. The completion of these studies by AHTD is currently being discussed with AHTD administration.
12. John Cleaves suggested that a reasonable response to their comment letter would be to state what the highway department will consider for compensation of land lost and how the site-specific studies will be conducted at a later date. He suggested that the responses be faxed to the FS for their review.
13. Patty questioned why it appears that the FS conducts studies beyond that required by NEPA. The FS responded that the appeal process on their actions is so simple that the FS has been challenged numerous times by public. They simply have a "policy" that they conduct these studies to avoid court.
14. John Cleaves explained that on past projects with the highway department, the FS has imposed formerly prepared "Stipulations" as to receipt of a land transfer and the highway department has typically complied with these stipulations and conducted special site-specific studies. These projects however, were not of the magnitude of the U.S. 71 Relocation.
15. The FS was informed that the highway department was currently considering a revision to the Preferred Alignment in the Cove area that may put the proposed highway in the forest along Line 3. The only issue noted by Nick was to evaluate whether this location was within the Cossatot River watershed.
16. The meeting was adjourned at 4:10 p.m.

ACTION ITEMS:

- Carl Kraehmer will discuss the 4(f) applicability with appropriate FHWA staff and render a decision.
- Lynn Malbrough will discuss "equitable compensation" of the suitable publicly owned lands taken by the HMA with AHTD administration.
- Baker will proceed with the Final EIS with the assumption that the HMA does not qualify for Section 4(f) protection in order to maintain the project schedule.

| TENTATIVE HABITAT MANAGEMENT AREAS IN SOUTHERN REGION NATIONAL FORESTS* | | |
|--|------------------------|--------------------|
| State | National Forest | HMA (Acres) |
| Alabama | Bankhead | 20,402 |
| | Conecuh | 61,817 |
| | Talladega-Oakmulgee | 98,584 |
| | Talladega/Shoal Creek | 124,247 |
| Arkansas | Ouachita | 68,521 |
| Florida | Apalachicola | 141,263 |
| | Wakulla | 144,368 |
| | Ocala | 48,400 |
| | Osceola | 98,183 |
| Georgia | Oconee/Hitchiti | 52,966 |
| Kentucky | Daniel Boone | 48,487 |
| Louisiana | Kisatchi-Catahoula | 65,734 |
| | Evangeline | 46,298 |
| | Kisatchie | 59,267 |
| | Vernon | 64,243 |
| | Winn | 56,297 |
| Mississippi | Bienville | 125,160 |
| | DeSoto-Biloxi | 38,293 |
| | Black Creek | 35,467 |
| | Chickasawhay | 100,494 |
| | Homochitto | 67,755 |
| N.Carolina | Croatan | 27,940 |
| S.Carolina | Francis Marion | 125,351 |
| Tennessee | Cherokee | 6,150 |
| Texas | Angelina/Sabine | 66,286 |
| | Davy Crockett | 65,016 |
| | Sam Houston | 105,194 |
| Southern Region Total | | 1,962,183 |

*Based on 1995 Southern Region RCW FEIS



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

FEB 24 1997

Construction-Operations Division
Regulatory Branch

FILE ID No. 13110-4

Patricia S. Gesing, P.E., Project Manager
Transportation Planning Department
Michael Baker, Jr., Incorporated
P.O. Box 12259
Pittsburgh, Pennsylvania 15231-0259

Dear Ms. Gesing:

Please reference the Draft Environmental Impact Statement (DEIS) prepared for the relocation of U.S. Highway 71 between DeQueen and I-40 near Alma, Arkansas, Docket No. FHWA-AR-EIS-96-01-D.

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 a preferred alignment for the project.

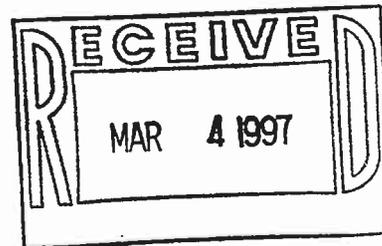
If you have any questions, please contact Mr. Larry Harrison at (501) 324-5295 and refer to File No. 13110.

Sincerely,

Jerry Harris, P.E.
Acting Chief, Regulatory Branch

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

cc: Lynn Malbrough - AHTD



Baker

March 5, 1997

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Management Summary for Segments A to D

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Dear Mrs. Slater:

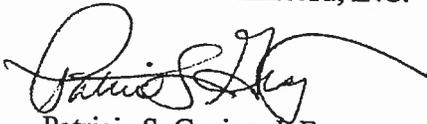
We are very pleased to provide you with the first of four management summaries covering the results of the Phase I survey for the U.S. 71 Relocation between DeQueen and Interstate 40. As discussed with you at our December 18, 1996 meeting, SPEARS, Inc. is conducting the survey and will prepare four management summaries which cover the project in three reaches from north to south, with the fourth summary covering National Forest Service lands.

Please note that the sites listed in the report are in order from south to north, as one reviews the maps provided in Appendix A, rather than in site number order. Because of the length of this project, we felt this organization would facilitate review and ongoing use of the reports. We intend to prepare the remainder of the management summaries in this fashion, so should you prefer a different organization of the report, please let us know as soon as possible.

We look forward to your comments. Thank you.

Sincerely yours,

MICHAEL BAKER JR., INC.


Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Robert L. Walters - AHTD w/att
William D. Richardson - FHWA w/att
Carol Spears - SPEARS, Inc. w/o att



A Total Quality Corporation

Baker

March 10, 1997

Mr. Alan G. Newman
Forestry Supervisor
Ouachita National Forest
P.O. Box 1270
Hot Springs, AR 71902

ATTN: Mr. John Cleeves

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Dear Mr. Newman:

As you are aware, the Forest Service has reviewed the DEIS for this project and provided comments dated January 8, 1997. As discussed at our February 20, 1997 meeting with your staff, we are considering a change in the Preferred Alignment in the Cove area, segments C-D. This shift would be from Line 2 to Line 3 for the majority of this segment and would place the alignment within the Forest Boundary north of S.H. 246. Between Polk County 36 and Polk County 78, Line 3 would connect to Line 2, as roughly shown on the attached map.

At this meeting, questions were raised as to the potential involvement of Line 3 with the Cossatot River watershed. The Forest Service boundary begins at S.H. 246 east of Vandervoort. This particular area serves as a watershed divide between the Flat Creek drainage, which flows into the Cossatot, and the Barren Creek drainage, which flows west into Buffalo Creek. Our review of this area indicates that Line 3 barely (30 feet in length) lies within the Cossatot River watershed within the Forest Boundary north of S.H. 246. However, from our review of the 1991 Ouachita National Forest map, this particular area (Section 21, Township 4 South, Range 31 West) is in private ownership and would not be subject to Forest Service management directives.

Our ongoing coordination with you, including field reviews, meetings and comments on the DEIS did not result in any concerns with the alignment alternatives in this area of the Forest. However, because this decision will place the proposed highway in Forest Service lands, we are requesting comment from you by March 31, 1997.

Please contact us at 412-269-4603 if you need additional information.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

PSG/mew

cc: Bob Walters - AHTD



A Total Quality Corporation

Baker

April 15, 1997

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Management Summary for Ouachita National Forest Lands

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Dear Mrs. Slater:

We are pleased to provide you with the management summary covering the results of the Phase I survey for the U.S. 71 Relocation within the Ouachita National Forest. This is the second report we have provided you, although it is entitled Management Summary 3.

Please note that the sites listed in the report are in order from south to north, as one reviews the maps provided in Appendix A, rather than in site number order. Because of the length of this project, we felt this organization would facilitate review and ongoing use of the reports. We intend to prepare the remainder of the management summaries in this fashion, so should you prefer a different organization of the report, please let us know as soon as possible.

We look forward to your comments. Thank you.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Robert L. Walters - AHTD w/att
William D. Richardson - FHWA w/att
Meeks Etchieson - USFS w/att
Carol Spears - SPEARS, Inc. w/o att



A Total Quality Corporation

Baker

May 5, 1997

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Management Summary for Segments D - J

Dear Mrs. Slater:

We are pleased to provide you with the management summary covering the results of the Phase I survey for the U.S. 71 Relocation for Segments D - J. This is the third report we have provided you, although it is entitled Management Summary 2.

We look forward to your comments.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Robert L. Walters - AHTD w/att
William D. Richardson - FHWA w/att
Carol Spears - SPEARS, Inc. w/o att

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108



A Total Quality Corporation

Baker

MAY 08 1997

31378
FHWA
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

May 6, 1997

(412) 269-4600
FAX (412) 269-2048

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Request for Technical Assistance

Date 6/11/97
This undertaking will have no effect
on significant cultural resources.

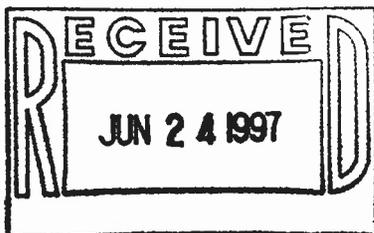
Cathy Buford Slater
State Historic Preservation Officer

Dear Mrs. Slater:

We are requesting technical assistance from your office in the review of structures identified during our on-going Phase I archeology work. As you are aware, AHTD and Baker identified a preferred alignment in the October 1996 Draft EIS. SPEARS, Inc., our subconsultant, has been conducting Phase I field work along the preferred alignment and to date has completed approximately 82 miles of testing from DeQueen, Arkansas to just north of Waldron, Arkansas. The most recent work is described in detail in the report entitled *Management Summary 2: An Archeological Survey of the Private Property Areas between Segments D-J of the Preferred Alignment of the U.S. 71 Relocation Project, Sevier and Polk Counties, Arkansas* which your office has received for review. The newly identified structures are located in areas that had been previously inaccessible until initiation of the Phase I field effort.

Based on your previous request, we have photographed all structures that are within or adjacent to the construction limits that are approximately 50 years old or older. We would like your assistance in evaluating the architecture of these structures. For each structure we have provided a color photograph and an excerpt from the appropriate USGS quadrangle map. The location data shown on the attachments is keyed to our detailed alignment maps, such as the engineering station and the alignment nearest the structure, and is provided for Baker and AHTD use.

Structure No. 2-F-1 is associated with archeological site No. 125-259. The structure is just east of the referenced archeological site described on page 16 of *Management Summary 2*.



A Total Quality Corporation

Mrs. Cathy Buford Slater
Page 2
May 6, 1997

Structure No. 2-12-2 is associated with archeological site No. 125-81 and is described on page 48 of *Management Summary 2*.

Structure No. 2-G-1 is associated with archeological site No. 125-86 and is described on page 26 of *Management Summary 2*.

Structures No. 2-D-3 and 2-D-4 are uninhabited outbuildings associated with structure 2-D-1.

We would like to hear back from you by June 6, 1997. Please contact us at 412-269-4603 if you need additional information. Thank you for your assistance.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in black ink, appearing to read "Patricia S. Gesing", with a long horizontal flourish extending to the right.

Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Bob Walters - AHTD w/att
Carl Kraehmer - FHWA w/o att
Carol Spears - SPEARS, Inc. w/o att



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
Arkansas Division
700 West Capitol Avenue, Room 3130
Little Rock, AR 72201-3298

RECEIVED
A.H.T.D.

MAY 15 1997

ENVIRONMENTAL
DIVISION

May 13, 1997

IN REPLY REFER TO:
DPS-A015(007)
State Job 001747
Section 4(f) Determination
HFO-AR

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

Dear Mr. Flowers:

The U.S. Forest Service (USFS) has reviewed the Draft Environmental Impact Statement (DEIS) and provided comments in its letter of January 8, 1997 to the Department's consultant engineer. The USFS approached its review from the standpoint of whether or not to grant an easement for crossing the federal lands of the Ouachita National Forest.

Since the USFS is a cooperating agency, it has been involved throughout the scoping process that led to the development of the DEIS. However, a new issue, the Red-cockaded woodpecker (RCW) has been introduced. The USFS recently amended its Land and Resource Management Plan for the Ouachita National Forest to establish a wildlife management area for the RCW, an endangered species. The USFS believes that Section 4(f) applies to the management area and as such that compensated for the loss of RCW habitats is warranted.

Because the application of Section 4(f) to this issue was unclear, a meeting was held at the USFS office in Hot Springs on February 20, 1997. A copy of the minutes is enclosed and should be read at this point to fully understand the issues and discussion.

Some of the particulars of the matter are:

- ◆ The Ouachita National Forest comprises approximately 1,600,000 acres.
- ◆ The habitat management area consists of 155,000 acres of the forest and is designated as multi purpose. The FEIS prepared by the Forest Service for amending its Land and Resource Management Plan states that timber management will remain the primary land use in addition to hunting, hiking, and fishing.
- ◆ The USFS has determined that approximately 21% of the 155,000 acre area is unsuitable for RCW management.
- ◆ The acreage that is proposed to be acquired for the preferred alternative is approximately 437 acres (0.3% of the total management area).

RECEIVED

MAY 15 1997

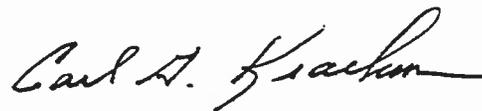
PROGRAMS & CONTRACTS
AUTO

FHWA has been asked to decide whether Section 4(f) applies to the RCW management area within the Ouachita National Forest. I have determined that Section 303 of 49 U.S.C. (commonly known as Section 4(f)) does not apply to the land RCW management area. This decision is based on:

- a) Section 303 states that "The Secretary may approve a transportation project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and water fowl refuge of national, State, or local significant. . . ."
- b) The privately owned portions are not considered Section 4(f) property because they are not publicly owned.
- c) The publicly owned portions are not considered Section 4(f) property because they are not portions of a public park, recreation area, or wildlife or water fowl refuge. FHWA has provided guidance concerning application of Section 4(f) to wildlife management areas. The critical factor is if the management area provides "refuge" characteristics. I do not believe that this RCW management area provides refuge characteristics due to the multi use designation.

However, this decision that Section 4(f) does not apply, does not mean that the RCW issue is not one of importance. The USFS has developed a plan to reestablish RCW colonies and the U.S. 71 project will adversely impact that plan. Since the RCW is an endangered species, the appropriate law to apply to the matter is 16 U.S.C., the Endangered Species Act. I understand that the primary desire of the USFS is the replacement of the land taken for U.S. 71. The USFS recommends that privately owned land within the RCW management area be purchased. I believe that this is a reasonable solution and recommend that the Department consider replacing these lands.

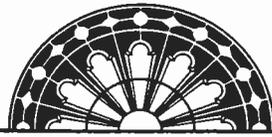
Sincerely yours,



Carl G. Kraehmer
Field Operations Engineer

Enclosure

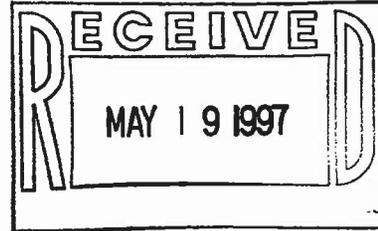
C. Director
Dep Dir + Ch Engr
Asst Ch Engr - Planning
Asst Ch Engr - Design
Environmental
Records
Public Affairs
District 3
District 7
Rec - 111



ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

May 15, 1997

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259



RE: Multi County - General
Section 106 Review - FHWA
"Management Summary 1: An Archeological Survey
of Segments A-D of the Preferred Alignment of
the U.S. 71 Relocation Project, Sevier and Polk
Counties, Arkansas"

Dear Ms. Gesing:

My staff has reviewed the management summary for archeological investigations on the proposed referenced undertaking. While the fieldwork was thorough, the findings and recommendations section of the report was confusing and not clearly stated. We also do not concur with all of the recommendations presented.

In the future, all historic properties should be categorized as follows: 1) properties listed in the National Register of Historic Places, 2) properties determined eligible for listing, 3) properties that are potentially eligible but need additional information to make an evaluation, and 4) properties that are determined ineligible.

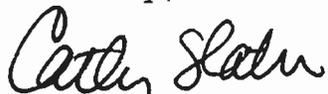
We have determined that 15 archeological sites (3PL823, 3PL824, 3PL825, 3PL832, 3PL834, 3PL835, 3PL837, 3PL838, 3PL839, 3PL842, 3PL844, 3PL852, 3PL854, 3SV294, and 3SV304) are potentially eligible for inclusion in the National Register of Historic Places. These historic properties should be avoided and protected or evaluated (phase 2 testing) for their National Register eligibility. Eligible sites that cannot be avoided should be mitigated by archeological data recovery. The remaining 35 archeological sites are ineligible. No further work or protection is needed for these historic properties.

Thank you for the opportunity to comment on this management summary. Upon receipt of a final report on this investigation we can proceed with our review.



If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,

A handwritten signature in cursive script that reads "Cathy Slater".

Cathy Buford Slater
State Historic Preservation Officer

CBS:GM

cc: Federal Highway Administration
Arkansas State Highway & Transportation Department
SPEARS, Inc.
Arkansas Archeological Survey

ARKANSAS STATE HIGHWAY COMMISSION



BOBBY HOPPER, CHAIRMAN
SPRINGDALE

HERBY BRANSCUM, JR., VICE CHAIRMAN
PERRYVILLE

JOHN "M" LIPTON
WARREN

P. O. Box 2261
LITTLE ROCK, ARKANSAS 72203-2261
TELEPHONE No. (501) 569-2000
FAX No. (501) 569-2400

J.W. "BUDDY" BENAFIELD
NEWPORT

MARY P. "PRISSY" HICKERSON
TEXARKANA

DAN FLOWERS
DIRECTOR OF
HIGHWAYS AND TRANSPORTATION

May 16, 1997

Mr. Al Newman
Forest Supervisor
U. S. Forest Service
Post Office Box 1270
Hot Springs, Arkansas 71902

Re: AHTD Job Number 001747
FAP Number DPS-A015(7)
U. S. 71 Relocation - DeQueen to I-40
Habitat Management Area 22

Dear Mr. Newman:

The Arkansas Highway and Transportation Department (AHTD) has been working with the Forest Service since the July 10, 1995 scoping meeting to assess impacts to forest resources as a result of the proposed highway, specifically potential impacts to the red-cockaded woodpecker (RCW) and Habitat Management Area 22 (HMA). In its January 8, 1997 comment letter on the DEIS, the Forest Service suggested protection for the HMA under USDOT Section 4(f) regulations. This comment was further discussed at the, February 20, 1997, meeting with your staff. The AHTD recognizes that the Forest Service has amended its Forest Land and Resource Management Plan for the renewal of a portion of the historic shortleaf pine/bluestem grass ecosystem for the long-term recovery of the RCW and that specific management guidelines have been developed for this area. The AHTD also recognizes that the Forest Service has based its HMA acreage requirements on the proposed management objective of reaching 250 breeding pairs of RCWs. The Federal Highway Administration has determined in its letter (enclosed) that the HMA does not meet Section 4(f) requirements and does not qualify for protection under this regulation.

Due to the importance of maintaining the HMA acreage for Forest Service RCW management objectives, AHTD will compensate the Forest Service for HMA acreage converted to highway use. Based on the estimated right-of-way requirements of the Selected Alignment, AHTD will acquire up to 437 acres of land from willing sellers that is suitable for management under HMA 22 objectives.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

Mr. Al Newman
U. S. Forest Service
AHTD Job Number 001747
Page Two

For this purpose, "willing seller" is defined as a property owner that will accept just compensation for their property based on the fair market value established by an appraisal. The Forest Service will have the sole responsibility for identifying such willing sellers of above described property near or adjacent to the existing HMA. The AHTD will not condemn land to meet this compensation commitment. Further, the Forest Service must identify the willing sellers of suitable property with acquisition occurring within the time period between the beginning of the segment's final design to the letting of a construction contract for the roadway segment that directly affects HMA 22. The AHTD will only acquire those parcels identified during the designated right-of-way acquisition period. The AHTD further agrees to acquire up to five percent more than 437 acres to prevent subdivision of identified parcels if no smaller parcels are available. It is understood that AHTD may acquire less than 437 acres, should the Forest Service fail, for whatever reason, to identify willing sellers; and in such a case, AHTD will have met its full commitment on this issue. Property acquired for this compensation will be acquired by warranty deed from the private owners to AHTD; then transferred from AHTD to U. S. Forest Service by warranty deed on an individual parcel basis.

AHTD looks forward to our continued working relationship as this project moves forward. If you have any questions or concerns, please contact Jim Gaither or Lynn Malbrough of the Department's staff at (501) 569-2000.

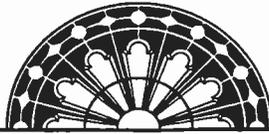
Sincerely,



Dan Flowers
Director of Highways
and Transportation

Enclosures

cc: Deputy Director and Chief Engineer



ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

June 17, 1997

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

cc: Lynn Malbrough - AHTD

RE: Multi County - General
Section 106 Review - FHWA
Management Summary Entitled "An Archeological
Survey of the Preferred Alignment Through the
Poteau and Mena Districts of the Ouachita
National Forest, U.S. 71 Relocation Project,
Polk and Scott Counties, Arkansas"

Dear Ms Gesing:

My staff has reviewed the management summary for archeological investigations on the proposed referenced undertaking. We concur with the findings and recommendations presented therein. Specifically, all historic properties that are potentially eligible for inclusion in the National Register of Historic Places should be avoided and protected or evaluated (phase 2 testing) for their National Register eligibility. Eligible sites that cannot be avoided should be mitigated by archeological data recovery.

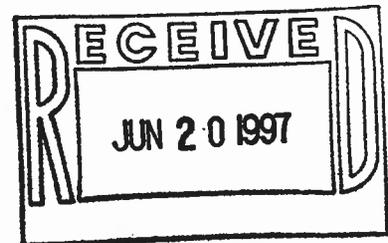
Thank you for the opportunity to comment on this management summary. Upon receipt of the final report on this investigation, we can proceed with our review.

If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,

Cathy Buford Slater
State Historic Preservation Officer

CBS:GM



cc: Federal Highway Administration
Ouachita National Forest
Arkansas State Highway & Transportation Department
SPEARS, Inc.
Arkansas Archeological Survey

1500 Tower Building • 323 Center • Little Rock, Arkansas 72201 • Phone (501) 324-9880
Fax (501) 324-9184 • TDD (501) 324-9811
A Division of the Department of Arkansas Heritage

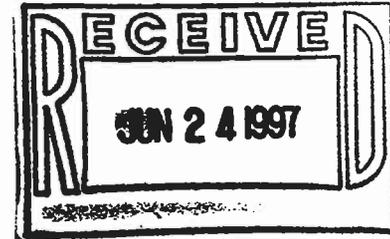


File Code: 1950/7700

Date: June 18, 1997

Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40



Dear Mrs. Gesing:

This letter is a follow-up to our January 8, 1997 comments on the Draft Environmental Impact Statement (DEIS) and is based on numerous meetings and discussion with your office and the Arkansas Highway and Transportation Department (AHTD).

The Forest Service does recognize that the relocation of U.S. 71 will need to cross National Forest System lands, and it is our intent to cooperate fully in this effort. Based on the information provided to date, we recognize the preferred alignment described in the DEIS and the recommended change in the Cove area described in your letter dated March 10, 1997 as reasonable. However, we will not be able to make a final decision on the preferred alignment and granting of an easement until the following site specific information is provided by AHTD and we are able to evaluate it.

1. A Biological Evaluation needs to be completed once the right-of-way requirements for the Project within a reach of the Forest are known. The Biological Evaluation will need to address sensitive species, such as crayfish, as well as other species on the Regional Forester's Sensitive Species list and Forest Watch list. This is needed to be in compliance with the National Forest Management Act.
2. A determination will be made of how access will be provided to, or compensation for, any remnants of National Forest system lands created as a direct result of the highway. This is especially a concern south of Fourche Gap within segment C-D on line 3. Land parcels west of this line may be isolated between the proposed highway and private land.
3. A map showing exactly how Forest roads will be accessed. Please refer to our May 14, 1996 letter for a list of the Forest roads.
4. A cultural resource survey will need to be completed and concurrence from Arkansas State Historic Preservation Officer (SHPO) will need to be obtained.

Also the following mitigation measures need to be added to the Final Environmental Impact Statement:

1. Compensation to the USFS will occur for the lost RCW habitat as agreed to by the USFS and AHTD. As generally outlined in the May 16, 1997 AHTD letter to the USFS.
2. Culvert designs agreed to by the USFS and AHTD that allow fish passage at perennial and intermittent stream crossings deemed of significant importance by the USFS, for passage of migratory fish species will be developed during the design phase, if feasible from an engineering standpoint.
3. Measures to dissipate and stabilize runoff flow velocities as agreed to by the USFS and AHTD to prevent instream habitat degradation will be developed during the design phase, if feasible from an engineering standpoint.
4. An erosion control plan will be developed during the design phase. This plan will include specific erosion and sedimentation control measures to minimize potential impacts. The plan will be reviewed by the USFS and AHTD agrees to abide by its current Standard Specifications for Highway Construction.

We hope this letter finally clarifies our position. If you have any questions please call John Cleeves at 501-321-5251.


ALAN G. NEWMAN
Forest Supervisor

Enclosure

cc: Dan Nolan
Nick Finzer
Rich Standage
Jerry Davis
Ken Luckow
Chris Frisbee
Larry Hedrick
John Cleeves
Tony Verucchi
Gary Hawkins - Mena District
John Strom - Poteau District
George Bukenhofer - Choctaw District

Baker

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

June 23, 1997

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Request for Technical Assistance

Dear Mrs. Slater:

During the field efforts conducted for segments J-O of the above project, three structures were identified that will require your technical assistance. SPEARS, Inc., our subconsultant, has been conducting Phase I field work along the preferred alignment which is identified in the October 1996 Draft Environmental Impact Statement. The most recent work is described in detail in the report entitled *Management Summary 4: An Archeological Survey of Segments J-O of the Preferred Alignment of the U.S. 71 Relocation Project, Scott, Sebastian, and Crawford Counties, Arkansas* which your office will receive for review shortly.

Based on your previous request, we have photographed all structures that are within or adjacent to the construction limits that are approximately 50 years old or older. We would like your assistance in evaluating the architecture of these structures. For each structure we have provided a color photograph and an excerpt from the appropriate USGS quadrangle map. The location data shown on the attachments is keyed to our detailed alignment maps, such as the engineering station and the alignment nearest the structure, and is provided for Baker and AHTD use.

Structure No. 4-23-1 is associated with archeological site No. 3SB1028 and is described on page 22 of *Management Summary 4*.



A Total Quality Corporation

Mrs. Cathy Buford Slater
Page 2
June 23, 1997

Structure No. 4-24-1 is associated with archeological site No. 3SB1051 and is described on page 30 of *Management Summary 4*.

Structure No. 4-27-1 is associated with archeological site No. 3SB1056 and is described on page 47 of *Management Summary 4*.

We would like to hear back from you by July 23, 1997. Please contact us at 412-269-4603 if you need additional information. Thank you for your assistance.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in black ink, appearing to read 'Patricia S. Gesing', with a large, stylized flourish extending to the right.

Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Bob Walters - AHTD w/att
Carl Kraehmer - FHWA w/o att
Carol Spears - SPEARS, Inc. w/o att

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

June 24, 1997

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Status of Project Submissions for Review

Dear Mrs. Slater:

Thank you for your responses on management summaries prepared for segments A-D and the Ouachita National Forest lands of the subject project. We wanted to follow up on your May 15, 1997 letter on segments A-D. Carol Spears, SPEARS, Inc., who is conducting the Phase I survey, spoke to Mr. McCluskey regarding the National Register eligibility categories and the recommendations for further study. It is our understanding that your office is in agreement with the sites recommended for further study and that no revisions to the management summary are required.

To update you on the various submissions made to your office, we have received your comments on all submissions to date, with the exception of the management summary for segments D-J. This summary was submitted on May 6, 1997 and is likely undergoing review. There are two more submissions that you have just received or that you will receive in the very near future:

- A request for technical assistance for structures identified in segments J-O which you will receive today
- Management summary for segments J-O which is currently in the final revisions and reproduction stage at SPEARS, Inc.



We appreciate the efforts that you have taken to review and provide timely responses to our submissions. We realize there have been numerous requests from our office and that these take considerable staff time. Following your review of management summary for segments J-O, we will require brief involvement from your office on the Phase II testing plans. The Phase II testing should begin in the next few months. Beyond that, we of course will need your assistance in reviewing and commenting on the full Phase I survey report, which will be submitted in several months.

Thank you again for your time.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in black ink, appearing to read "Patricia S. Gesing". The signature is fluid and cursive, with a large initial "P" and "G".

Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Robert L. Walters - AHTD w/att
Carl Kraehmer - FHWA w/att
Carol Spears - SPEARS, Inc. w/att
Arkansas Archeological Survey

Baker

June 26, 1997

Mrs. Cathy Buford Slater
Arkansas Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

ATTN: Mr. George McCluskey

RE: State Job No. 001747
FAP No. DPS-A015(7)
U.S. 71 Relocation - DeQueen to I-40
Management Summary for Segments J- O

Dear Mrs. Slater:

We are pleased to provide you with Management Summary 4 covering the results of the Phase I survey for the U.S. 71 Relocation for Segments J-O. This is the fourth and final summary report. We look forward to your comments.

Sincerely yours,

MICHAEL BAKER JR., INC.



Patricia S. Gesing, P.E.
Project Manager

Attachment
PSG/mew

cc: Robert L. Walters - AHTD w/att
Carl Kraehmer - FHWA w/att
Carol Spears - SPEARS, Inc. w/o att

Michael Baker Jr., Inc.
P.O. Box 12259
Pittsburgh, PA 15231-0259

(412) 269-4600
FAX (412) 269-2048

Office Location:
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108



A Total Quality Corporation

ARKANSAS STATE HIGHWAY
AND
TRANSPORTATION DEPARTMENT

Dan Flowers
Director
Telephone (501) 569-2000



P.O. Box 2261
Little Rock, Arkansas 72203-2261
Telefax (501) 569-2400

July 18, 1997

Alan G. Newman
Forest Supervisor
Ouachita National Forest
Post Office Box 1270
Hot Springs, Arkansas 71902

Re: AHTD Job Number 001747
DeQueen - Ft. Smith (Hwy. 71)

Dear Mr. Newman:

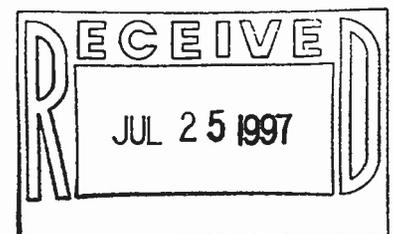
Thank you for your June 18, 1997 letter which summarizes the resolution of issues regarding the project's impact on the Ouachita National Forest. The Arkansas Highway and Transportation Department agrees to provide you with the items listed on page 1 of the letter and has incorporated the mitigation measures on page 2 of the letter into the Final Environmental Impact Statement.

We appreciate the attention your agency has given this project and look forward to future cooperation as the project proceeds.

We will forward copies of the Final Environmental Impact Statement in the near future.

Sincerely,

Roger Almond
Deputy Director
and Chief Engineer



Appendix D
WET II ANALYSIS

WET II ANALYSIS

WETLAND FUNCTIONS AND VALUES EVALUATION

A functions and values evaluation of the three main wetland types (herbaceous, scrub-shrub, forested) was conducted using the WET 2.1 computer model. This model is based on FHWA's *Wetland Evaluation Technique* (WET) (Adamus et al., 1991). WET was designed to conduct a scientifically sound, rapid and reproducible assessment of wetland functions and values including:

- Groundwater Recharge
- Groundwater Discharge
- Floodflow Alteration
- Sediment Stabilization
- Sediment/Toxicant Retention
- Nutrient Removal/Transformation
- Production Export
- Wildlife Diversity/Abundance
- Aquatic Diversity/Abundance
- Recreation
- Uniqueness/Heritage

The WET 2.1 program assigns qualitative probability ratings of high, moderate, or low to wetland functions and values in terms of social significance, effectiveness, and opportunity. Social significance addresses the value of a wetland to society due to its natural features, economic value, special designation, and strategic location. Effectiveness assesses the qualitative capability of a wetland to perform a function due to its chemical, physical, or biological characteristics. Opportunity assesses the qualitative probable opportunity of a wetland to perform a function to its level of capability (Adamus et al., 1987).

The WET 2.1 analysis was conducted using data representative of the majority of herbaceous, scrub/shrub, and forested wetlands encountered within the preferred corridor. Data was summarized for fifty-seven herbaceous wetlands,

five scrub/shrub wetlands, and twenty-one forested wetlands. In general, herbaceous wetlands received ratings of low to moderate, while scrub/shrub and forested wetlands received ratings of moderate to high. All wetland types received primarily low probability ratings for social significance variables. These results reflect the predominance of small, isolated wetlands that characterize the majority of wetland systems within the preferred corridor.

Herbaceous wetlands received probability ratings of low to moderate for most wetland functions and values (see data form US71PEM). High probability ratings were obtained for effectiveness of floodflow alteration and nutrient removal/transformation. Floodflow alteration received a high probability rating due to the intermittent nature of the inflow and outflow of surface water. Most of the herbaceous wetlands encountered are seasonally inundated or saturated for short periods during the year. These wetlands have the potential to store water during heavy precipitation events, thereby reducing and/or slowing the volume of water received by nearby waterways. Nutrient removal/transformation also received a high probability rating due to the presence of erect herbaceous vegetation and the overland or sheet flow of nutrients into these wetland systems. High probability ratings were obtained for opportunity of both sediment/toxicant retention and nutrient removal/transformation. Wetlands with a high opportunity probability rating for sediment/toxicant removal are those with any of several potential point or non-point sources of sediments or toxicants such as row crops and other agricultural activities common in the study area. Wildlife value for this wetland type ranged from low to moderate. The herbaceous wetlands observed were generally small and occurred in conjunction with active pastures. As such, little vegetative cover remains for wildlife foraging or cover during most of the year. However, during spring and early summer,

seasonal ponding of water can occur 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 received probability ratings of moderate to high for most wetland functions and values (see data form US71PSS). High probability ratings were obtained for effectiveness of floodflow alteration and nutrient removal/transformation similar to the herbaceous wetlands. Wildlife diversity and abundance for breeding and migration also received high probability ratings. This is likely due to a combination of the wetland's landscape position and vegetational diversity. Most scrub/shrub wetlands were associated with agriculture and pasture landscapes and provided some of the only woody dominated vegetative communities in the immediate area. Woody vegetation provides nesting and foraging cover for a variety of bird and mammal species. In addition, during fall and winter, wetlands in agricultural settings provide persistent cover as well as access to adjacent food resources (waste grains, winter crops) for migrating bird species. High probability ratings were obtained for opportunity of both sediment/toxicant retention and nutrient removal/transformation similar to the herbaceous wetlands. Wetlands associated with agricultural areas where potential sources of sediments or toxicants occur generally have a high probability of having the opportunity of interacting with these materials.

Forested wetlands received probability ratings of moderate to high for most wetland functions and values (see data form US71PFO). High probability ratings were obtained for effectiveness of nutrient removal/transformation similar to the herbaceous and scrub/shrub wetlands. Wildlife diversity and abundance for breeding and migration also received high probability ratings similar to the scrub/shrub wetlands. Forested wetlands are found along stream and river drainages as well as in agricultural settings as isolated woodlots. Often, these areas provide the only nesting and shelter habitat for a variety of vertebrate species that

forage in agricultural or aquatic habitats. High probability ratings were obtained for opportunity of both sediment/toxicant retention and nutrient removal/transformation similar to herbaceous and scrub/shrub wetlands. All wetlands associated with agricultural areas where potential sources of sediments or toxicants occur would generally have the opportunity of interacting with these materials through surface runoff.

Summary of Evaluation Results for "US71PEM"

| | Social Significance | Effectiveness | Opportunity |
|---------------------------------|------------------------|---------------|-------------|
| Ground Water Recharge | L | U | * |
| Ground Water Discharge | L | M | * |
| Floodflow Alteration | L | H | M |
| Sediment Stabilization | M | M | * |
| Sediment/Toxicant Retention | L | L | H |
| Nutrient Removal/Transformation | L | H | H |
| Production Export | * | M | * |
| Wildlife Diversity/Abundance | M | * | * |
| Wildlife D/A Breeding | * | M | * |
| Wildlife D/A Migration | * | L | * |
| Wildlife D/A Wintering | * | M | * |
| Aquatic Diversity/Abundance | M | M | * |
| Uniqueness/Heritage | M | * | * |
| Recreation | L | * | * |

Note: "H" = High, "M" = Moderate, "L" = Low, "U" = Uncertain, and
"*"s identify conditions where functions and values are not evaluated.

WET Answer Dataset for "US71PEM"

| | | | |
|-----------|--------------|--------------|--------------|
| s1 - n | 6.2 - y | 12Be (w) - n | 13Ba (d) - n |
| s2 - n | 7 - y | 12Be (d) - n | 13Bb (x) - n |
| s3 - n | 8.1 - n | 12C (x) - n | 13Bb (w) - n |
| s4 - n | 8.2 - y | 12C (w) - n | 13Bb (d) - n |
| s5 - n | 8.3 - n | 12C (d) - n | 13Bc (x) - n |
| s6 - n | 8.4 - y | 12Ca (x) - n | 13Bc (w) - n |
| s7 - n | 9.1 - y | 12Ca (w) - n | 13Bc (d) - n |
| s8 - n | 9.2 - n | 12Ca (d) - n | 13Bd (x) - n |
| s9 - n | 9.3 - y | 12Cb (x) - n | 13Bd (w) - n |
| s10 - n | 10A - n | 12Cb (w) - n | 13Bd (d) - n |
| s11 - n | 10B - y | 12Cb (d) - n | 13Be (x) - n |
| s12 - n | 10C - n | 12Cc (x) - n | 13Be (w) - n |
| s13 - n | 10D - n | 12Cc (w) - n | 13Be (d) - n |
| s14 - n | 10E - n | 12Cc (d) - n | 13C (x) - n |
| s15 - n | 10F - n | 12Cd (x) - n | 13C (w) - n |
| s16 - n | 11 (x) - n | 12Cd (w) - n | 13C (d) - n |
| s17 - n | 11 (w) - n | 12Cd (d) - n | 13Ca (x) - n |
| s18 - i | 11 (d) - n | 12D (x) - y | 13Ca (w) - n |
| s19 - n | 12A (x) - n | 12D (w) - n | 13Ca (d) - n |
| s20 - n | 12A (w) - n | 12D (d) - n | 13Cb (x) - n |
| s21 - n | 12A (d) - n | 12Da (x) - y | 13Cb (w) - n |
| s22 - i | 12Aa (x) - n | 12Da (w) - n | 13Cb (d) - n |
| s23 - n | 12Aa (w) - n | 12Da (d) - n | 13Cc (x) - n |
| s24 - n | 12Aa (d) - n | 12Db (x) - n | 13Cc (w) - n |
| s25 - n | 12Ab (x) - n | 12Db (w) - n | 13Cc (d) - n |
| s26 - n | 12Ab (w) - n | 12Db (d) - n | 13Cd (x) - n |
| s27 - n | 12Ab (d) - n | 12E (x) - n | 13Cd (w) - n |
| s28 - n | 12Ac (x) - n | 12E (w) - n | 13Cd (d) - n |
| s29 - n | 12Ac (w) - n | 12E (d) - n | 13D (x) - y |
| s30 - y | 12Ac (d) - n | 13A (x) - n | 13D (w) - n |
| s31 - n | 12Ad (x) - n | 13A (w) - n | 13D (d) - n |
| 1.1 - n | 12Ad (w) - n | 13A (d) - n | 13Da (x) - n |
| 1.2 - y | 12Ad (d) - n | 13Aa (x) - n | 13Da (w) - n |
| 1.3 - y | 12Ae (x) - n | 13Aa (w) - n | 13Da (d) - n |
| 2.1.1 - y | 12Ae (w) - n | 13Aa (d) - n | 13Db (x) - n |
| 2.1.2 - n | 12Ae (d) - n | 13Ab (x) - n | 13Db (w) - n |
| 2.1.3 - n | 12B (x) - n | 13Ab (w) - n | 13Db (d) - n |
| 2.2.1 - n | 12B (w) - n | 13Ab (d) - n | 13E (x) - n |
| 2.2.2 - y | 12B (d) - n | 13Ac (x) - n | 13E (w) - n |
| 3.1 - y | 12Ba (x) - n | 13Ac (w) - n | 13E (d) - n |
| 3.2 - n | 12Ba (w) - n | 13Ac (d) - n | 14.1 (x) - n |
| 3.3 - n | 12Ba (d) - n | 13Ad (x) - n | 14.1 (w) - n |
| 4.1 - n | 12Bb (x) - n | 13Ad (w) - n | 14.1 (d) - n |
| 4.2A - n | 12Bb (w) - n | 13Ad (d) - n | 14.2 (x) - n |
| 4.2B - y | 12Bb (d) - n | 13Ae (x) - n | 14.2 (w) - n |
| 4.2C - n | 12Bc (x) - n | 13Ae (w) - n | 14.2 (d) - n |
| 4.2D - n | 12Bc (w) - n | 13Ae (d) - n | 15.1A - y |
| 5.1.1 - y | 12Bc (d) - n | 13B (x) - n | 15.1B - n |
| 5.1.2 - n | 12Bd (x) - n | 13B (w) - n | 15.1C - n |
| 5.2 - n | 12Bd (w) - n | 13B (d) - n | 15.2 - n |
| blank - u | 12Bd (d) - n | 13Ba (x) - n | 16A (x) - y |
| 6.1 - n | 12Be (x) - n | 13Ba (w) - n | 16A (w) - y |

WET Answer Dataset for "US71PEM"

| | | | | | | | |
|---------|-----|----------|-----|-----------|-----|--------|-----|
| 16A(d) | - y | 31.3(x) | - n | 36.1.1(x) | - n | 43B(d) | - y |
| 16B(x) | - n | 31.3(w) | - n | 36.1.1(w) | - n | 43C(x) | - n |
| 16B(w) | - n | 31.3(d) | - n | 36.1.1(d) | - n | 43C(w) | - n |
| 16B(d) | - n | 31.4(x) | - i | 36.1.2(x) | - n | 43C(d) | - n |
| 16C(x) | - n | 31.4(w) | - i | 36.1.2(w) | - n | 43D(x) | - n |
| 16C(w) | - n | 31.4(d) | - i | 36.1.2(d) | - n | 43D(w) | - n |
| 16C(d) | - n | 31.5(x) | - y | 36.2.1(x) | - n | 43D(d) | - n |
| 17 | - n | 31.5(w) | - y | 36.2.1(w) | - n | 43E(x) | - n |
| 18 | - n | 31.5(d) | - y | 36.2.1(d) | - n | 43E(w) | - n |
| 19.1A | - i | 31.6A(x) | - n | 36.2.2(x) | - n | 43E(d) | - n |
| 19.1B | - n | 31.6A(w) | - n | 36.2.2(w) | - n | 43F(x) | - n |
| 19.2 | - n | 31.6A(d) | - n | 36.2.2(d) | - n | 43F(w) | - n |
| 19.3 | - n | 31.6B(x) | - n | 36.2.3(x) | - n | 43F(d) | - n |
| 20.1 | - n | 31.6B(w) | - n | 36.2.3(w) | - n | 43G(x) | - n |
| 20.2 | - i | 31.6B(d) | - n | 36.2.3(d) | - n | 43G(w) | - n |
| 21A | - n | 31.6C(x) | - n | 37 | - i | 43G(d) | - n |
| 21B | - n | 31.6C(w) | - n | 38.1 | - n | 43H(x) | - n |
| 21C | - n | 31.6C(d) | - n | 38.2 | - n | 43H(w) | - n |
| 21D | - y | 31.6D(x) | - y | 38.3 | - n | 43H(d) | - n |
| 21E | - n | 31.6D(w) | - y | 38.4 | - n | 43I(x) | - n |
| 22.1.1 | - n | 31.6D(d) | - y | 38.5 | - n | 43I(w) | - n |
| 22.1.2 | - i | 31.6E(x) | - n | 38.6 | - y | 43I(d) | - n |
| 22.2 | - n | 31.6E(w) | - n | 38.7 | - n | 44A(x) | - n |
| 22.3 | - n | 31.6E(d) | - n | 38.8 | - i | 44A(w) | - n |
| 23 | - n | 32A | - n | 39 | - n | 44A(d) | - n |
| 24.1 | - i | 32B | - n | 40.1 | - i | 44B(x) | - y |
| 24.2 | - y | 32C | - n | 40.2 | - i | 44B(w) | - y |
| 24.3 | - n | 32D | - y | 41.1 | - i | 44B(d) | - y |
| 24.4 | - n | 32E | - y | 41.2 | - i | 44C(x) | - n |
| 24.5 | - n | 32F | - n | 42.1.1(x) | - n | 44C(w) | - n |
| 25.1 | - y | 32G | - n | 42.1.1(w) | - n | 44C(d) | - n |
| 25.2A | - y | 32H | - n | 42.1.1(d) | - n | 44D(x) | - n |
| 25.2B | - n | 32I | - n | 42.1.2(x) | - n | 44D(w) | - n |
| 25.3 | - n | 32J | - n | 42.1.2(w) | - n | 44D(d) | - n |
| 26.1 | - y | 32K | - n | 42.1.2(d) | - n | 44E(x) | - n |
| 26.2 | - y | 33A | - n | 42.1.3(x) | - n | 44E(w) | - n |
| 26.3 | - n | 33B | - n | 42.1.3(w) | - n | 44E(d) | - n |
| 27.1 | - n | 33C | - n | 42.1.3(d) | - n | 44F(x) | - n |
| 27.2 | - i | 33D | - y | 42.2.1(x) | - i | 44F(w) | - n |
| 27.3 | - i | 33E | - y | 42.2.1(w) | - i | 44F(d) | - n |
| 28 | - n | 33F | - n | 42.2.1(d) | - i | 44G(x) | - n |
| 29.1 | - n | 33G | - n | 42.2.2(x) | - i | 44G(w) | - n |
| 29.2 | - n | 33H | - n | 42.2.2(w) | - i | 44G(d) | - n |
| 30(x) | - n | 33I | - n | 42.2.2(d) | - i | 44H(x) | - n |
| 30(w) | - n | 33J | - n | 42.2.3(x) | - i | 44H(w) | - n |
| 30(d) | - n | 33K | - n | 42.2.3(w) | - i | 44H(d) | - n |
| 31.1(x) | - y | 34.1 | - n | 42.2.3(d) | - i | 44I(x) | - n |
| 31.1(w) | - y | 34.2 | - n | 43A(x) | - n | 44I(w) | - n |
| 31.1(d) | - y | 34.3.1 | - n | 43A(w) | - n | 44I(d) | - n |
| 31.2(x) | - y | 34.3.2 | - i | 43A(d) | - n | 45A | - y |
| 31.2(w) | - y | 35.1 | - i | 43B(x) | - y | 45B | - n |
| 31.2(d) | - y | 35.2 | - i | 43B(w) | - y | 45C | - n |

WET Answer Dataset for "US71PEM"

| | | | |
|------------|---------------|-------------|----------|
| 45D - n | 48B(w) - n | 49.2(x) - n | 55.3 - u |
| 45E - n | 48B(d) - n | 49.2(w) - n | 55.4 - u |
| 45F - n | 48C(x) - n | 49.2(d) - n | 56.1 - u |
| 45G - n | 48C(w) - n | 49.3(x) - n | 56.2 - u |
| 46A(x) - Y | 48C(d) - n | 49.3(w) - n | 57.1 - u |
| 46A(w) - Y | 48D(x) - n | 49.3(d) - n | 57.2 - u |
| 46A(d) - Y | 48D(w) - n | 50(x) - Y | 58 - u |
| 46B(x) - n | 48D(d) - n | 50(w) - Y | 59.1 - u |
| 46B(w) - n | 48E(x) - n | 50(d) - Y | 59.2 - u |
| 46B(d) - n | 48E(w) - n | 51.1 - u | 60 - u |
| 46C(x) - n | 48E(d) - n | 51.2 - u | 61 - u |
| 46C(w) - n | 48F(x) - n | 52.1 - u | 62 - u |
| 46C(d) - n | 48F(w) - n | 52.2 - u | 63.1 - u |
| 47A - Y | 48F(d) - n | 53.1 - u | 63.2 - u |
| 47B - n | 49.1.1(x) - n | 53.2 - u | 64 - u |
| 47C - n | 49.1.1(w) - n | 54(x) - u | CR - u |
| 48A(x) - Y | 49.1.1(d) - n | 54(w) - u | 1 - u |
| 48A(w) - Y | 49.1.2(x) - n | 54(d) - u | 2 - u |
| 48A(d) - Y | 49.1.2(w) - n | 55.1 - u | 3 - u |
| 48B(x) - n | 49.1.2(d) - n | 55.2 - u | 4 - u |

Summary of Evaluation Results for "US71PSS"

| | Social Significance | Effectiveness | Opportunity |
|---------------------------------|------------------------|---------------|-------------|
| Ground Water Recharge | L | U | * |
| Ground Water Discharge | L | L | * |
| Floodflow Alteration | L | H | M |
| Sediment Stabilization | M | M | * |
| Sediment/Toxicant Retention | L | M | H |
| Nutrient Removal/Transformation | L | H | H |
| Production Export | * | M | * |
| Wildlife Diversity/Abundance | M | * | * |
| Wildlife D/A Breeding | * | H | * |
| Wildlife D/A Migration | * | H | * |
| Wildlife D/A Wintering | * | L | * |
| Aquatic Diversity/Abundance | M | M | * |
| Uniqueness/Heritage | M | * | * |
| Recreation | L | * | * |

Note: "H" = High, "M" = Moderate, "L" = Low, "U" = Uncertain, and
"*"'s identify conditions where functions and values are not evaluated.

WET Answer Dataset for "US71PSS"

| | | | | | | | | | | | |
|-------|---|---|----------|---|---|----------|---|---|----------|---|---|
| s1 | - | n | 6.2 | - | n | 12Be (w) | - | y | 13Ba (d) | - | n |
| s2 | - | n | 7 | - | y | 12Be (d) | - | y | 13Bb (x) | - | n |
| s3 | - | n | 8.1 | - | n | 12C (x) | - | n | 13Bb (w) | - | n |
| s4 | - | n | 8.2 | - | y | 12C (w) | - | n | 13Bb (d) | - | n |
| s5 | - | n | 8.3 | - | n | 12C (d) | - | n | 13Bc (x) | - | n |
| s6 | - | n | 8.4 | - | y | 12Ca (x) | - | n | 13Bc (w) | - | n |
| s7 | - | n | 9.1 | - | n | 12Ca (w) | - | n | 13Bc (d) | - | n |
| s8 | - | n | 9.2 | - | n | 12Ca (d) | - | n | 13Bd (x) | - | n |
| s9 | - | n | 9.3 | - | y | 12Cb (x) | - | n | 13Bd (w) | - | n |
| s10 | - | n | 10A | - | n | 12Cb (w) | - | n | 13Bd (d) | - | n |
| s11 | - | n | 10B | - | y | 12Cb (d) | - | n | 13Be (x) | - | n |
| s12 | - | n | 10C | - | n | 12Cc (x) | - | n | 13Be (w) | - | n |
| s13 | - | n | 10D | - | n | 12Cc (w) | - | n | 13Be (d) | - | n |
| s14 | - | n | 10E | - | n | 12Cc (d) | - | n | 13C (x) | - | n |
| s15 | - | n | 10F | - | n | 12Cd (x) | - | n | 13C (w) | - | n |
| s16 | - | n | 11 (x) | - | n | 12Cd (w) | - | n | 13C (d) | - | n |
| s17 | - | n | 11 (w) | - | n | 12Cd (d) | - | n | 13Ca (x) | - | n |
| s18 | - | i | 11 (d) | - | n | 12D (x) | - | n | 13Ca (w) | - | n |
| s19 | - | n | 12A (x) | - | n | 12D (w) | - | n | 13Ca (d) | - | n |
| s20 | - | n | 12A (w) | - | n | 12D (d) | - | n | 13Cb (x) | - | n |
| s21 | - | n | 12A (d) | - | n | 12Da (x) | - | n | 13Cb (w) | - | n |
| s22 | - | i | 12Aa (x) | - | n | 12Da (w) | - | n | 13Cb (d) | - | n |
| s23 | - | n | 12Aa (w) | - | n | 12Da (d) | - | n | 13Cc (x) | - | n |
| s24 | - | n | 12Aa (d) | - | n | 12Db (x) | - | n | 13Cc (w) | - | n |
| s25 | - | n | 12Ab (x) | - | n | 12Db (w) | - | n | 13Cc (d) | - | n |
| s26 | - | n | 12Ab (w) | - | n | 12Db (d) | - | n | 13Cd (x) | - | n |
| s27 | - | n | 12Ab (d) | - | n | 12E (x) | - | n | 13Cd (w) | - | n |
| s28 | - | n | 12Ac (x) | - | n | 12E (w) | - | n | 13Cd (d) | - | n |
| s29 | - | n | 12Ac (w) | - | n | 12E (d) | - | n | 13D (x) | - | y |
| s30 | - | y | 12Ac (d) | - | n | 13A (x) | - | y | 13D (w) | - | y |
| s31 | - | n | 12Ad (x) | - | n | 13A (w) | - | y | 13D (d) | - | y |
| 1.1 | - | n | 12Ad (w) | - | n | 13A (d) | - | y | 13Da (x) | - | n |
| 1.2 | - | y | 12Ad (d) | - | n | 13Aa (x) | - | n | 13Da (w) | - | n |
| 1.3 | - | y | 12Ae (x) | - | n | 13Aa (w) | - | n | 13Da (d) | - | n |
| 2.1.1 | - | n | 12Ae (w) | - | n | 13Aa (d) | - | n | 13Db (x) | - | y |
| 2.1.2 | - | n | 12Ae (d) | - | n | 13Ab (x) | - | n | 13Db (w) | - | y |
| 2.1.3 | - | n | 12B (x) | - | y | 13Ab (w) | - | n | 13Db (d) | - | y |
| 2.2.1 | - | n | 12B (w) | - | y | 13Ab (d) | - | n | 13E (x) | - | n |
| 2.2.2 | - | y | 12B (d) | - | y | 13Ac (x) | - | n | 13E (w) | - | n |
| 3.1 | - | y | 12Ba (x) | - | n | 13Ac (w) | - | n | 13E (d) | - | n |
| 3.2 | - | n | 12Ba (w) | - | n | 13Ac (d) | - | n | 14.1 (x) | - | n |
| 3.3 | - | y | 12Ba (d) | - | n | 13Ad (x) | - | n | 14.1 (w) | - | n |
| 4.1 | - | n | 12Bb (x) | - | n | 13Ad (w) | - | n | 14.1 (d) | - | n |
| 4.2A | - | n | 12Bb (w) | - | n | 13Ad (d) | - | n | 14.2 (x) | - | n |
| 4.2B | - | y | 12Bb (d) | - | n | 13Ae (x) | - | y | 14.2 (w) | - | n |
| 4.2C | - | n | 12Bc (x) | - | n | 13Ae (w) | - | y | 14.2 (d) | - | n |
| 4.2D | - | n | 12Bc (w) | - | n | 13Ae (d) | - | y | 15.1A | - | y |
| 5.1.1 | - | y | 12Bc (d) | - | n | 13B (x) | - | n | 15.1B | - | n |
| 5.1.2 | - | n | 12Bd (x) | - | n | 13B (w) | - | n | 15.1C | - | n |
| 5.2 | - | n | 12Bd (w) | - | n | 13B (d) | - | n | 15.2 | - | n |
| blank | - | u | 12Bd (d) | - | n | 13Ba (x) | - | n | 16A (x) | - | n |
| 6.1 | - | n | 12Be (x) | - | y | 13Ba (w) | - | n | 16A (w) | - | n |

WET Answer Dataset for "US71PSS"

| | | | |
|-------------|--------------|---------------|------------|
| 16A(d) - n | 31.3(x) - n | 36.1.1(x) - n | 43B(d) - Y |
| 16B(x) - y | 31.3(w) - n | 36.1.1(w) - n | 43C(x) - n |
| 16B(w) - y | 31.3(d) - n | 36.1.1(d) - n | 43C(w) - n |
| 16B(d) - y | 31.4(x) - i | 36.1.2(x) - n | 43C(d) - n |
| 16C(x) - n | 31.4(w) - i | 36.1.2(w) - n | 43D(x) - n |
| 16C(w) - n | 31.4(d) - i | 36.1.2(d) - n | 43D(w) - n |
| 16C(d) - n | 31.5(x) - y | 36.2.1(x) - n | 43D(d) - n |
| 17 - n | 31.5(w) - y | 36.2.1(w) - n | 43E(x) - n |
| 18 - n | 31.5(d) - y | 36.2.1(d) - n | 43E(w) - n |
| 19.1A - i | 31.6A(x) - n | 36.2.2(x) - n | 43E(d) - n |
| 19.1B - n | 31.6A(w) - n | 36.2.2(w) - n | 43F(x) - n |
| 19.2 - n | 31.6A(d) - n | 36.2.2(d) - n | 43F(w) - n |
| 19.3 - n | 31.6B(x) - y | 36.2.3(x) - n | 43F(d) - n |
| 20.1 - n | 31.6B(w) - y | 36.2.3(w) - n | 43G(x) - n |
| 20.2 - i | 31.6B(d) - y | 36.2.3(d) - n | 43G(w) - n |
| 21A - n | 31.6C(x) - n | 37 - n | 43G(d) - n |
| 21B - n | 31.6C(w) - n | 38.1 - n | 43H(x) - n |
| 21C - n | 31.6C(d) - n | 38.2 - n | 43H(w) - n |
| 21D - y | 31.6D(x) - n | 38.3 - n | 43H(d) - n |
| 21E - n | 31.6D(w) - n | 38.4 - n | 43I(x) - n |
| 22.1.1 - y | 31.6D(d) - n | 38.5 - n | 43I(w) - n |
| 22.1.2 - y | 31.6E(x) - n | 38.6 - n | 43I(d) - n |
| 22.2 - n | 31.6E(w) - n | 38.7 - n | 44A(x) - n |
| 22.3 - n | 31.6E(d) - n | 38.8 - i | 44A(w) - n |
| 23 - n | 32A - n | 39 - y | 44A(d) - n |
| 24.1 - i | 32B - n | 40.1 - i | 44B(x) - y |
| 24.2 - y | 32C - n | 40.2 - i | 44B(w) - y |
| 24.3 - n | 32D - y | 41.1 - i | 44B(d) - y |
| 24.4 - n | 32E - y | 41.2 - i | 44C(x) - n |
| 24.5 - n | 32F - n | 42.1.1(x) - y | 44C(w) - n |
| 25.1 - y | 32G - n | 42.1.1(w) - y | 44C(d) - n |
| 25.2A - y | 32H - n | 42.1.1(d) - y | 44D(x) - n |
| 25.2B - n | 32I - n | 42.1.2(x) - n | 44D(w) - n |
| 25.3 - n | 32J - n | 42.1.2(w) - n | 44D(d) - n |
| 26.1 - y | 32K - n | 42.1.2(d) - n | 44E(x) - n |
| 26.2 - y | 33A - n | 42.1.3(x) - n | 44E(w) - n |
| 26.3 - n | 33B - n | 42.1.3(w) - n | 44E(d) - n |
| 27.1 - n | 33C - n | 42.1.3(d) - n | 44F(x) - n |
| 27.2 - i | 33D - y | 42.2.1(x) - n | 44F(w) - n |
| 27.3 - i | 33E - y | 42.2.1(w) - n | 44F(d) - n |
| 28 - n | 33F - n | 42.2.1(d) - n | 44G(x) - n |
| 29.1 - y | 33G - n | 42.2.2(x) - n | 44G(w) - n |
| 29.2 - y | 33H - n | 42.2.2(w) - n | 44G(d) - n |
| 30(x) - n | 33I - n | 42.2.2(d) - n | 44H(x) - n |
| 30(w) - n | 33J - n | 42.2.3(x) - n | 44H(w) - n |
| 30(d) - n | 33K - n | 42.2.3(w) - n | 44H(d) - n |
| 31.1(x) - y | 34.1 - n | 42.2.3(d) - n | 44I(x) - n |
| 31.1(w) - y | 34.2 - n | 43A(x) - n | 44I(w) - n |
| 31.1(d) - y | 34.3.1 - n | 43A(w) - n | 44I(d) - n |
| 31.2(x) - y | 34.3.2 - i | 43A(d) - n | 45A - y |
| 31.2(w) - y | 35.1 - i | 43B(x) - y | 45B - n |
| 31.2(d) - y | 35.2 - i | 43B(w) - y | 45C - n |

WET Answer Dataset for "US71PSS"

| | | | |
|------------|---------------|-------------|----------|
| 45D - n | 48B(w) - n | 49.2(x) - n | 55.3 - u |
| 45E - n | 48B(d) - n | 49.2(w) - n | 55.4 - u |
| 45F - n | 48C(x) - n | 49.2(d) - n | 56.1 - u |
| 45G - n | 48C(w) - n | 49.3(x) - n | 56.2 - u |
| 46A(x) - y | 48C(d) - n | 49.3(w) - n | 57.1 - u |
| 46A(w) - y | 48D(x) - n | 49.3(d) - n | 57.2 - u |
| 46A(d) - y | 48D(w) - n | 50(x) - y | 58 - u |
| 46B(x) - n | 48D(d) - n | 50(w) - y | 59.1 - u |
| 46B(w) - n | 48E(x) - n | 50(d) - y | 59.2 - u |
| 46B(d) - n | 48E(w) - n | 51.1 - u | 60 - u |
| 46C(x) - n | 48E(d) - n | 51.2 - u | 61 - u |
| 46C(w) - n | 48F(x) - n | 52.1 - u | 62 - u |
| 46C(d) - n | 48F(w) - n | 52.2 - u | 63.1 - u |
| 47A - y | 48F(d) - n | 53.1 - u | 63.2 - u |
| 47B - n | 49.1.1(x) - n | 53.2 - u | 64 - u |
| 47C - n | 49.1.1(w) - n | 54(x) - u | CR - u |
| 48A(x) - y | 49.1.1(d) - n | 54(w) - u | 1 - u |
| 48A(w) - y | 49.1.2(x) - n | 54(d) - u | 2 - u |
| 48A(d) - y | 49.1.2(w) - n | 55.1 - u | 3 - u |
| 48B(x) - n | 49.1.2(d) - n | 55.2 - u | 4 - u |

Summary of Evaluation Results for "US71PFO"

| | Social Significance | Effectiveness | Opportunity |
|---------------------------------|------------------------|---------------|-------------|
| Ground Water Recharge | L | U | * |
| Ground Water Discharge | L | L | * |
| Floodflow Alteration | L | M | M |
| Sediment Stabilization | M | M | * |
| Sediment/Toxicant Retention | L | M | H |
| Nutrient Removal/Transformation | L | H | H |
| Production Export | * | M | * |
| Wildlife Diversity/Abundance | M | * | * |
| Wildlife D/A Breeding | * | H | * |
| Wildlife D/A Migration | * | H | * |
| Wildlife D/A Wintering | * | L | * |
| Aquatic Diversity/Abundance | M | M | * |
| Uniqueness/Heritage | M | * | * |
| Recreation | L | * | * |

Note: "H" = High, "M" = Moderate, "L" = Low, "U" = Uncertain, and "*"s identify conditions where functions and values are not evaluated.

WET Answer Dataset for "US71PFO"

| | | | | | | | | | | | |
|-------|---|---|---------|---|---|---------|---|---|---------|---|---|
| s1 | - | n | 6.2 | - | n | 12Be(w) | - | n | 13Ba(d) | - | n |
| s2 | - | n | 7 | - | y | 12Be(d) | - | n | 13Bb(x) | - | n |
| s3 | - | n | 8.1 | - | y | 12C(x) | - | n | 13Bb(w) | - | n |
| s4 | - | n | 8.2 | - | y | 12C(w) | - | n | 13Bb(d) | - | n |
| s5 | - | n | 8.3 | - | y | 12C(d) | - | n | 13Bc(x) | - | n |
| s6 | - | n | 8.4 | - | y | 12Ca(x) | - | n | 13Bc(w) | - | n |
| s7 | - | n | 9.1 | - | n | 12Ca(w) | - | n | 13Bc(d) | - | n |
| s8 | - | n | 9.2 | - | n | 12Ca(d) | - | n | 13Bd(x) | - | n |
| s9 | - | n | 9.3 | - | n | 12Cb(x) | - | n | 13Bd(w) | - | n |
| s10 | - | n | 10A | - | n | 12Cb(w) | - | n | 13Bd(d) | - | n |
| s11 | - | n | 10B | - | y | 12Cb(d) | - | n | 13Be(x) | - | y |
| s12 | - | n | 10C | - | n | 12Cc(x) | - | n | 13Be(w) | - | y |
| s13 | - | n | 10D | - | n | 12Cc(w) | - | n | 13Be(d) | - | y |
| s14 | - | n | 10E | - | n | 12Cc(d) | - | n | 13C(x) | - | n |
| s15 | - | n | 10F | - | n | 12Cd(x) | - | n | 13C(w) | - | n |
| s16 | - | n | 11(x) | - | n | 12Cd(w) | - | n | 13C(d) | - | n |
| s17 | - | n | 11(w) | - | n | 12Cd(d) | - | n | 13Ca(x) | - | n |
| s18 | - | i | 11(d) | - | n | 12D(x) | - | n | 13Ca(w) | - | n |
| s19 | - | n | 12A(x) | - | y | 12D(w) | - | n | 13Ca(d) | - | n |
| s20 | - | n | 12A(w) | - | y | 12D(d) | - | n | 13Cb(x) | - | n |
| s21 | - | n | 12A(d) | - | y | 12Da(x) | - | n | 13Cb(w) | - | n |
| s22 | - | i | 12Aa(x) | - | n | 12Da(w) | - | n | 13Cb(d) | - | n |
| s23 | - | n | 12Aa(w) | - | n | 12Da(d) | - | n | 13Cc(x) | - | n |
| s24 | - | n | 12Aa(d) | - | n | 12Db(x) | - | n | 13Cc(w) | - | n |
| s25 | - | n | 12Ab(x) | - | n | 12Db(w) | - | n | 13Cc(d) | - | n |
| s26 | - | n | 12Ab(w) | - | n | 12Db(d) | - | n | 13Cd(x) | - | n |
| s27 | - | n | 12Ab(d) | - | n | 12E(x) | - | n | 13Cd(w) | - | n |
| s28 | - | n | 12Ac(x) | - | n | 12E(w) | - | n | 13Cd(d) | - | n |
| s29 | - | n | 12Ac(w) | - | n | 12E(d) | - | n | 13D(x) | - | n |
| s30 | - | y | 12Ac(d) | - | n | 13A(x) | - | n | 13D(w) | - | n |
| s31 | - | n | 12Ad(x) | - | n | 13A(w) | - | n | 13D(d) | - | n |
| 1.1 | - | n | 12Ad(w) | - | n | 13A(d) | - | n | 13Da(x) | - | n |
| 1.2 | - | y | 12Ad(d) | - | n | 13Aa(x) | - | n | 13Da(w) | - | n |
| 1.3 | - | y | 12Ae(x) | - | y | 13Aa(w) | - | n | 13Da(d) | - | n |
| 2.1.1 | - | n | 12Ae(w) | - | y | 13Aa(d) | - | n | 13Db(x) | - | n |
| 2.1.2 | - | n | 12Ae(d) | - | y | 13Ab(x) | - | n | 13Db(w) | - | n |
| 2.1.3 | - | n | 12B(x) | - | y | 13Ab(w) | - | n | 13Db(d) | - | n |
| 2.2.1 | - | n | 12B(w) | - | y | 13Ab(d) | - | n | 13E(x) | - | n |
| 2.2.2 | - | y | 12B(d) | - | y | 13Ac(x) | - | n | 13E(w) | - | n |
| 3.1 | - | y | 12Ba(x) | - | n | 13Ac(w) | - | n | 13E(d) | - | n |
| 3.2 | - | n | 12Ba(w) | - | n | 13Ac(d) | - | n | 14.1(x) | - | n |
| 3.3 | - | y | 12Ba(d) | - | n | 13Ad(x) | - | n | 14.1(w) | - | n |
| 4.1 | - | n | 12Bb(x) | - | n | 13Ad(w) | - | n | 14.1(d) | - | n |
| 4.2A | - | n | 12Bb(w) | - | n | 13Ad(d) | - | n | 14.2(x) | - | n |
| 4.2B | - | y | 12Bb(d) | - | n | 13Ae(x) | - | n | 14.2(w) | - | n |
| 4.2C | - | n | 12Bc(x) | - | n | 13Ae(w) | - | n | 14.2(d) | - | n |
| 4.2D | - | n | 12Bc(w) | - | n | 13Ae(d) | - | n | 15.1A | - | y |
| 5.1.1 | - | y | 12Bc(d) | - | n | 13B(x) | - | y | 15.1B | - | n |
| 5.1.2 | - | n | 12Bd(x) | - | n | 13B(w) | - | y | 15.1C | - | n |
| 5.2 | - | n | 12Bd(w) | - | n | 13B(d) | - | y | 15.2 | - | n |
| blank | - | u | 12Bd(d) | - | n | 13Ba(x) | - | n | 16A(x) | - | n |
| 6.1 | - | n | 12Be(x) | - | n | 13Ba(w) | - | n | 16A(w) | - | n |

WET Answer Dataset for "US71PFO"

| | | | | | | | |
|---------|-----|----------|-----|-----------|-----|--------|-----|
| 16A(d) | - n | 31.3(x) | - n | 36.1.1(x) | - n | 43B(d) | - y |
| 16B(x) | - y | 31.3(w) | - n | 36.1.1(w) | - n | 43C(x) | - n |
| 16B(w) | - y | 31.3(d) | - n | 36.1.1(d) | - n | 43C(w) | - n |
| 16B(d) | - y | 31.4(x) | - i | 36.1.2(x) | - n | 43C(d) | - n |
| 16C(x) | - n | 31.4(w) | - i | 36.1.2(w) | - n | 43D(x) | - n |
| 16C(w) | - n | 31.4(d) | - i | 36.1.2(d) | - n | 43D(w) | - n |
| 16C(d) | - n | 31.5(x) | - y | 36.2.1(x) | - n | 43D(d) | - n |
| 17 | - n | 31.5(w) | - y | 36.2.1(w) | - n | 43E(x) | - n |
| 18 | - n | 31.5(d) | - y | 36.2.1(d) | - n | 43E(w) | - n |
| 19.1A | - i | 31.6A(x) | - n | 36.2.2(x) | - n | 43E(d) | - n |
| 19.1B | - n | 31.6A(w) | - n | 36.2.2(w) | - n | 43F(x) | - n |
| 19.2 | - n | 31.6A(d) | - n | 36.2.2(d) | - n | 43F(w) | - n |
| 19.3 | - n | 31.6B(x) | - y | 36.2.3(x) | - n | 43F(d) | - n |
| 20.1 | - y | 31.6B(w) | - y | 36.2.3(w) | - n | 43G(x) | - n |
| 20.2 | - i | 31.6B(d) | - y | 36.2.3(d) | - n | 43G(w) | - n |
| 21A | - n | 31.6C(x) | - n | 37 | - n | 43G(d) | - n |
| 21B | - n | 31.6C(w) | - n | 38.1 | - n | 43H(x) | - n |
| 21C | - n | 31.6C(d) | - n | 38.2 | - n | 43H(w) | - n |
| 21D | - y | 31.6D(x) | - n | 38.3 | - n | 43H(d) | - n |
| 21E | - n | 31.6D(w) | - n | 38.4 | - n | 43I(x) | - n |
| 22.1.1 | - y | 31.6D(d) | - n | 38.5 | - n | 43I(w) | - n |
| 22.1.2 | - y | 31.6E(x) | - n | 38.6 | - n | 43I(d) | - n |
| 22.2 | - n | 31.6E(w) | - n | 38.7 | - n | 44A(x) | - n |
| 22.3 | - n | 31.6E(d) | - n | 38.8 | - n | 44A(w) | - n |
| 23 | - n | 32A | - n | 39 | - y | 44A(d) | - n |
| 24.1 | - i | 32B | - n | 40.1 | - i | 44B(x) | - y |
| 24.2 | - y | 32C | - n | 40.2 | - i | 44B(w) | - y |
| 24.3 | - n | 32D | - y | 41.1 | - i | 44B(d) | - y |
| 24.4 | - n | 32E | - n | 41.2 | - i | 44C(x) | - n |
| 24.5 | - n | 32F | - y | 42.1.1(x) | - n | 44C(w) | - n |
| 25.1 | - y | 32G | - y | 42.1.1(w) | - n | 44C(d) | - n |
| 25.2A | - y | 32H | - n | 42.1.1(d) | - n | 44D(x) | - n |
| 25.2B | - n | 32I | - n | 42.1.2(x) | - y | 44D(w) | - n |
| 25.3 | - n | 32J | - n | 42.1.2(w) | - y | 44D(d) | - n |
| 26.1 | - y | 32K | - n | 42.1.2(d) | - y | 44E(x) | - n |
| 26.2 | - y | 33A | - n | 42.1.3(x) | - n | 44E(w) | - n |
| 26.3 | - n | 33B | - n | 42.1.3(w) | - n | 44E(d) | - n |
| 27.1 | - n | 33C | - n | 42.1.3(d) | - n | 44F(x) | - n |
| 27.2 | - i | 33D | - y | 42.2.1(x) | - n | 44F(w) | - n |
| 27.3 | - i | 33E | - y | 42.2.1(w) | - n | 44F(d) | - n |
| 28 | - n | 33F | - y | 42.2.1(d) | - n | 44G(x) | - n |
| 29.1 | - y | 33G | - y | 42.2.2(x) | - y | 44G(w) | - n |
| 29.2 | - y | 33H | - n | 42.2.2(w) | - y | 44G(d) | - n |
| 30(x) | - n | 33I | - n | 42.2.2(d) | - y | 44H(x) | - n |
| 30(w) | - n | 33J | - n | 42.2.3(x) | - n | 44H(w) | - n |
| 30(d) | - n | 33K | - n | 42.2.3(w) | - n | 44H(d) | - n |
| 31.1(x) | - y | 34.1 | - n | 42.2.3(d) | - n | 44I(x) | - n |
| 31.1(w) | - y | 34.2 | - n | 43A(x) | - n | 44I(w) | - n |
| 31.1(d) | - y | 34.3.1 | - n | 43A(w) | - n | 44I(d) | - n |
| 31.2(x) | - y | 34.3.2 | - n | 43A(d) | - n | 45A | - y |
| 31.2(w) | - y | 35.1 | - i | 43B(x) | - y | 45B | - n |
| 31.2(d) | - y | 35.2 | - i | 43B(w) | - y | 45C | - n |

WET Answer Dataset for "US71PFO"

| | | | |
|------------|---------------|-------------|----------|
| 45D - n | 48B(w) - n | 49.2(x) - n | 55.3 - u |
| 45E - n | 48B(d) - n | 49.2(w) - n | 55.4 - u |
| 45F - n | 48C(x) - n | 49.2(d) - n | 56.1 - u |
| 45G - n | 48C(w) - n | 49.3(x) - n | 56.2 - u |
| 46A(x) - y | 48C(d) - n | 49.3(w) - n | 57.1 - u |
| 46A(w) - y | 48D(x) - n | 49.3(d) - n | 57.2 - u |
| 46A(d) - y | 48D(w) - n | 50(x) - y | 58 - u |
| 46B(x) - n | 48D(d) - n | 50(w) - y | 59.1 - u |
| 46B(w) - n | 48E(x) - n | 50(d) - y | 59.2 - u |
| 46B(d) - n | 48E(w) - n | 51.1 - u | 60 - u |
| 46C(x) - n | 48E(d) - n | 51.2 - u | 61 - u |
| 46C(w) - n | 48F(x) - n | 52.1 - u | 62 - u |
| 46C(d) - n | 48F(w) - n | 52.2 - u | 63.1 - u |
| 47A - y | 48F(d) - n | 53.1 - u | 63.2 - u |
| 47B - n | 49.1.1(x) - n | 53.2 - u | 64 - u |
| 47C - n | 49.1.1(w) - n | 54(x) - u | CR - u |
| 48A(x) - y | 49.1.1(d) - n | 54(w) - u | 1 - u |
| 48A(w) - y | 49.1.2(x) - n | 54(d) - u | 2 - u |
| 48A(d) - y | 49.1.2(w) - n | 55.1 - u | 3 - u |
| 48B(x) - n | 49.1.2(d) - n | 55.2 - u | 4 - u |

Appendix E
RESIDENT VERTEBRATE SPECIES WITHIN THE
PREFERRED CORRIDOR

| <u>FISH</u> | |
|------------------------|-------------------------------------|
| Common Name | Scientific Name |
| Family Petromyzontidae | |
| Chestnut lamprey | <i>Ichthyomyzon castaneus</i> |
| Family Acipenseridae | |
| Shortnose sturgeon | <i>Scaphirhynchus platorhynchus</i> |
| Family Polyodontidae | |
| Paddlefish | <i>Polyodon spathula</i> |
| Family Lepisosteidae | |
| Alligator gar | <i>Atractosteus spatula</i> |
| Spotted gar | <i>Lepisosteus oculatus</i> |
| Longnose gar | <i>Lepisosteus osseus</i> |
| Shortnose gar | <i>Lepisosteus platostomus</i> |
| Family Amiidae | |
| Bowfin | <i>Amia calva</i> |
| Family Anguillidae | |
| American eel | <i>Anguilla rostrata</i> |
| Family Clupeidae | |
| Skipjack herring | <i>Alosa chrysochloris</i> |
| Gizzard shad | <i>Dorosoma cepedianum</i> |
| Threadfin shad | <i>Dorosoma petenense</i> |
| Family Hiodontidae | |
| Goldeye | <i>Hiodon alosoides</i> |
| Family Cyprinidae | |
| Central stoneroller | <i>Campostoma anomalum</i> |
| Grass carp | <i>Ctenopharyngodon idella</i> |
| Common carp | <i>Cyprinus carpio</i> |
| Silver chub | <i>Macrhybopsis storeriana</i> |
| Golden shiner | <i>Notemigonus crysoleucas</i> |
| Pallid shiner | <i>Hybopsis amnis</i> |
| Emerald shiner | <i>Notropis atherinoides</i> |
| River shiner | <i>Notropis blennioides</i> |
| Bigeye shiner | <i>Notropis boops</i> |
| Ghost shiner | <i>Notropis buchmanii</i> |
| Striped shiner | <i>Luxilus chrysocephalus</i> |
| Pugnose shiner | <i>Opsopoeodus emiliae</i> |
| Red shiner | <i>Cyprinella lutrensis</i> |
| Kiamichi shiner | <i>Notropis ortenburgeri</i> |
| Silverband shiner | <i>Notropis shumardi</i> |

| FISH | |
|------------------------|---------------------------------|
| Common Name | Scientific Name |
| Mimic shiner | <i>Notropis volucellus</i> |
| Steelcolor shiner | <i>Cyprinella whipplei</i> |
| Bluntnose minnow | <i>Pimiphales notatus</i> |
| Bullhead minnow | <i>Pimiphales vigilax</i> |
| Family Catostomidae | |
| River carpsucker | <i>Carpoides carpio</i> |
| Blue sucker | <i>Cycleptus elongatus</i> |
| Creek chubsucker | <i>Erimyzon oblongus</i> |
| Smallmouth buffalo | <i>Ictiobus bubalus</i> |
| Bigmouth buffalo | <i>Ictiobus cyprinellus</i> |
| Spotted sucker | <i>Minytrema melanops</i> |
| Golden redbhorse | <i>Moxostoma erythrurum</i> |
| Shorthead redbhorse | <i>Moxostoma macrolepidotum</i> |
| Family Ictaluridae | |
| Blue catfish | <i>Ictalurus furcatus</i> |
| Black bullhead | <i>Ameriurus melas</i> |
| Yellow bullhead | <i>Ameriurus natalis</i> |
| Channel catfish | <i>Ictalurus punctatus</i> |
| Slender madtom | <i>Noturus exilis</i> |
| Tadpole madtom | <i>Noturus gyrinus</i> |
| Brindled madtom | <i>Noturus miurus</i> |
| Freckled madtom | <i>Noturus nocturnus</i> |
| Flathead catfish | <i>Pylodictis olivaris</i> |
| Family Fudulidae | |
| Blackspotted topminnow | <i>Fundulus olivaceus</i> |
| Family Poeciliidae | |
| Mosquitofish | <i>Gambusia affinis</i> |
| Family Atherinidae | |
| Brook silverside | <i>Labidesthes sicculus</i> |
| Inland silverside | <i>Menidia beryllina</i> |
| Family Moronidae | |
| White bass | <i>Morone chrysops</i> |
| Striped bass | <i>Morone saxatilis</i> |
| Family Centrarchidae | |
| Green sunfish | <i>Lepomis cyanellus</i> |
| Warmouth | <i>Lepomis gulosus</i> |
| Orangespotted sunfish | <i>Lepomis humilis</i> |
| Bluegill | <i>Lepomis macrochirus</i> |

| FISH | |
|---------------------|--------------------------------|
| Common Name | Scientific Name |
| Longear sunfish | <i>Lepomis megalotis</i> |
| Redear sunfish | <i>Lepomis microlophus</i> |
| Smallmouth bass | <i>Micropterus dolomieu</i> |
| Spotted bass | <i>Micropterus punctulatus</i> |
| Largemouth bass | <i>Micropterus salmoides</i> |
| White crappie | <i>Pomoxis annularis</i> |
| Black crappie | <i>Pomoxis nigromaculatus</i> |
| Family Percidae | |
| Greenside darter | <i>Etheostoma blennioides</i> |
| Bluntnose darter | <i>Etheostoma chlorosomum</i> |
| Creole darter | <i>Etheostoma collettei</i> |
| Fantail darter | <i>Etheostoma flabellare</i> |
| Slough darter | <i>Etheostoma gracile</i> |
| Cypress darter | <i>Etheostoma proeliare</i> |
| Orangebelly darter | <i>Etheostoma radiosum</i> |
| Orangethroat darter | <i>Etheostoma spectabile</i> |
| Speckled darter | <i>Etheostoma stigmaeum</i> |
| Redfin darter | <i>Etheostoma whipplei</i> |
| Banded darter | <i>Etheostoma zonale</i> |
| Logperch | <i>Percina caprodes</i> |
| Channel darter | <i>Percina copelandi</i> |
| Dusky darter | <i>Percina sciera</i> |
| River darter | <i>Percina shumardi</i> |
| Sauger | <i>Stizostedion canadense</i> |
| Family Sciaenidae | |
| Freshwater drum | <i>Aplodinotus grunniens</i> |

Source: Robison and Buchanan, 1988

REPTILES AND AMPHIBIANS

| Common Name | Scientific Name |
|------------------------------|---|
| Order Testudines | |
| Alligator Snapping Turtle | <i>Macrochelys temminckii</i> |
| Common Snapping Turtle | <i>Chelydra serpentina serpentina</i> |
| Stinkpot | <i>Stemotherus odoratus</i> |
| Razor-backed Musk Turtle | <i>Stemotherus carinatus</i> |
| Mississippi Mud Turtle | <i>Kinostemon subrubrum hippocrepis</i> |
| Ouachita Map Turtle | <i>Graptemys pseudogeographica ouachitensis</i> |
| Mississippi Map Turtle | <i>Graptemys kohni</i> |
| Southern Painted Turtle | <i>Chrysemys picta dorsalis</i> |
| Slider | <i>Chrysemys concinna hieroglyphica</i> |
| Missouri Slider | <i>Chrysemys floridana hoyi</i> |
| Red-eared Pond Slider | <i>Chrysemys scripta elegans</i> |
| Three-toed Box Turtle | <i>Terrapene carolina triunguis</i> |
| Ornate Box Turtle | <i>Terrapene ornata ornata</i> |
| Western Chicken Turtle | <i>Deirochelys reticularia miaria</i> |
| Midland Smooth Softshell | <i>Trionyx muticus muticus</i> |
| Western Spiny Softshell | <i>Trionyx spiniferus hartwegi</i> |
| Order Squamata | |
| Green Anole | <i>Anolis carolinensis carolinensis</i> |
| Collared Lizard | <i>Crotaphytus collaris</i> |
| Texas Horned Lizard | <i>Phrynosoma cornutum</i> |
| Ground Skink | <i>Scincella lateralis</i> |
| Five-lined Skink | <i>Eumeces fasciatus</i> |
| Broad-headed Skink | <i>Eumeces laticeps</i> |
| Southern Coal Skink | <i>Eumeces anthracinus pluvialis</i> |
| Six-lined Racerunner | <i>Cnemidophorus sexlineatus sexlineatus</i> |
| Western Slender Glass Lizard | <i>Ophisaurus attenuatus attenuatus</i> |
| Northern Fence Lizard | <i>Sceloporus undulatus hyacinthinus</i> |
| Midland Water Snake | <i>Natrix sipedon pleuralis</i> |
| Broad-banded Water Snake | <i>Natrix fasciata confluens</i> |
| Yellow-bellied Water Snake | <i>Natrix erythrogaster flavigaster</i> |
| Diamondback Water Snake | <i>Natrix rhombifera</i> |
| Gulf Glossy Water Snake | <i>Natrix rigida sinicola</i> |
| Graham's Water Snake | <i>Natrix grahami</i> |
| Eastern Garter Snake | <i>Thamnophis sirtalis sirtalis</i> |
| Western Ribbon Snake | <i>Thamnophis proximus proximus</i> |
| Rough Earth Snake | <i>Virginia striatula</i> |
| Western Smooth Earth Snake | <i>Virginia valeriae elegans</i> |
| Northern Red-bellied Snake | <i>Storeria occipitomaculata occipitomaculata</i> |
| Texas Brown Snake | <i>Storeria dekayi texana</i> |
| Midland Brown Snake | <i>Storeria dekayi wrightorum</i> |

REPTILES AND AMPHIBIANS

| Common Name | Scientific Name |
|------------------------------------|--|
| Eastern Hognose Snake | <i>Heterodon platyrhinos</i> |
| Western Worm Snake | <i>Carphophis amoenus vermis</i> |
| Prairie Ringneck Snake | <i>Diadophis punctatus amyi</i> |
| Mississippi Ringneck Snake | <i>Diadophis punctatus stictogenys</i> |
| Rough Green Snake | <i>Opheodrys aestivus</i> |
| Southern Black Racer | <i>Coluber constrictor priapus</i> |
| Eastern Coachwhip | <i>Masticophis flagellum flagellum</i> |
| Black Rat Snake | <i>Elaphe obsoleta obsoleta</i> |
| Great Plains Rat Snake | <i>Elaphe guttata emoryi</i> |
| Northern Scarlet Snake | <i>Cemophora coccinea copei</i> |
| Red Milk Snake | <i>Lampropeltis traingulum sypila</i> |
| Prairie Kingsnake | <i>Lampropeltis calligaster calligaster</i> |
| Speckled Kingsnake | <i>Lampropeltis getulus holbrooki</i> |
| Flat-headed Snake | <i>Tantilla gracilis</i> |
| Western Cottonmouth | <i>Agkistridin piscivorus leucostoma</i> |
| Southern Copperhead | <i>Agkistrodon contortrix contortrix</i> |
| Western Pygmy Rattlesnake | <i>Sistrurus miliaris streckeri</i> |
| Timber Rattlesnake | <i>Crotalus horridus horridus</i> |
| Western Diamondback Snake | <i>Crotalus atrox</i> |
| Order Caudata | |
| Western Lesser Siren | <i>Siren intermedia nettingi</i> |
| Three-toed Amphiuma | <i>Amphiuma tridactylum</i> |
| Louisiana Waterdog | <i>Necturus maculosus louisianensis</i> |
| Central Newt | <i>Notophthalmus viridescens louisianensis</i> |
| Small-mouthed Salamander | <i>Ambystoma texanum</i> |
| Ringed Salamander | <i>Ambystoma annulatum</i> |
| Eastern Tiger Salamander | <i>Ambystoma tigrinum tigrinum</i> |
| Spotted Salamander | <i>Ambystoma maculatum</i> |
| Marbled Salamander | <i>Ambystoma opacum</i> |
| Ouachita dusky Salamander | <i>Desmognathus brimleyorum</i> |
| Slimy Salamander | <i>Plethodon glutinosus glutinosus</i> |
| Ouachita Red-backed Salamander | <i>Plethodon cinereus serratus</i> |
| Four-toed Salamander | <i>Hemidactylium scutatum</i> |
| Many-ribbed Salamander | <i>Eurycea multiplicata multiplicata</i> |
| Dark-sided Salamander | <i>Eurycea longicauda malanopleura</i> |
| Order Anura | |
| Hurter's Spadefoot Toad | <i>Scaphiopus holbrooki hurteri</i> |
| Eastern Narrow-mouthed Toad | <i>Gastrophryne carolinensis</i> |
| Great Plains Narrowed-mouthed Toad | <i>Gastrophryne olivacea</i> |
| Dwarf Toad | <i>Bufo americanus charlesmithi</i> |
| Woodhouse's Toad | <i>Bufo woodhousei woodhousei</i> |
| Fowler's Toad | <i>Bufo woodhousei fowleri</i> |

REPTILES AND AMPHIBIANS

| Common Name | Scientific Name |
|--------------------------|---------------------------------------|
| Northern Spring Peeper | <i>Hyla crucifer crucifer</i> |
| Green Treefrog | <i>Hyla cinerea</i> |
| Gray Treefrog | <i>Hyla versicolor</i> |
| Gray Treefrog | <i>Hyla chrysoscelis</i> |
| Upland Chorus Frog | <i>Pseudacris triseriata feriarum</i> |
| Blanchard's Cricket Frog | <i>Acris crepitans</i> |
| Green Frog | <i>Rana clamitans melanota</i> |
| Bronze Frog | <i>Rana clamitans clamitans</i> |
| Bullfrog | <i>Rana catesbeiana</i> |
| Southern Leopard Frog | <i>Rana utricularia</i> |
| Pickerel Frog | <i>Rana palustris</i> |
| Southern Crawfish Frog | <i>Rana areolata areolata</i> |

Source: Conant and Collins, 1991;
Johnson, 1992

| BIRDS | | | |
|------------------------------|--------------------------------|-----------------|-----------------|
| Common Name | Scientific Name | Typical Habitat | Seasonal Status |
| Cooper's Hawk | <i>Accipiter cooperii</i> | Forests | P |
| Northern Harrier | <i>Circus cyaneus</i> | Marshes/Fields | W |
| Red-tailed Hawk | <i>Buteo jamaicensis</i> | Open country | P |
| Red-shouldered Hawk | <i>Buteo lineatus</i> | Forests | P |
| Broad-winged Hawk | <i>Buteo platypterus</i> | Forests | S |
| American Kestrel | <i>Falco sparverius</i> | Open country | P |
| Order Galliformes | | | |
| Northern Bobwhite | <i>Colinus virginianus</i> | Old Fields | P |
| Wild Turkey | <i>Meleagris gallopavo</i> | Forests | P |
| Order Gruiformes | | | |
| American Coot | <i>Fulica americana</i> | Still water | P |
| Order Charadriiformes | | | |
| Black-bellied Plover | <i>Pluvialis squatarola</i> | Cropland | T |
| Lesser Golden Plover | <i>Pluvialis dominica</i> | Cropland | T |
| Semipalmated Plover | <i>Charadrius semipalmatus</i> | Cropland | T |
| Killdeer | <i>Charadrius vociferus</i> | Cropland | P |
| Greater Yellowlegs | <i>Tringa melanoleuca</i> | Cropland | T |
| Lesser Yellowlegs | <i>Tringa flavipes</i> | Cropland | T |
| Solitary Sandpiper | <i>Tringa solitaria</i> | Cropland | T |
| Spotted Sandpiper | <i>Actitis macularia</i> | Cropland | T |
| Hudsonian Godwit | <i>Limosa haemastica</i> | Cropland | T |
| Ruddy Turnstone | <i>Arenaria interpres</i> | Cropland | T |
| Semipalmated Sandpiper | <i>Calidris pusilla</i> | Cropland | T |
| Western Sandpiper | <i>Calidris mauri</i> | Cropland | T |
| Least Sandpiper | <i>Calidris minutilla</i> | Cropland | W |
| White-rumped Sandpiper | <i>Calidris fuscicollis</i> | Cropland | T |
| Dunlin | <i>Calidris alpina</i> | Cropland | T |
| Stilt Sandpiper | <i>Calidris himantopus</i> | Cropland | T |
| Buff-breasted Sandpiper | <i>Tryngites subruficollis</i> | Cropland | T |
| Common Snipe | <i>Gallinago gallinago</i> | Cropland | W |
| Wilson's Phalarope | <i>Phalaropus tricolor</i> | Cropland | T |
| Franklin's Gull | <i>Larus pipixcan</i> | Open water | W |
| Bonaparte's Gull | <i>Larus philadelphia</i> | Open water | W |
| Herring Gull | <i>Larus argentatus</i> | Open water | W |
| Ring-billed Gull | <i>Larus delawarensis</i> | Open water | W |
| Least Tern | <i>Sterna antillarum</i> | Open water | T |
| Black Tern | <i>Chlidonias niger</i> | Open water | T |
| Order Columbiformes | | | |
| Rock Dove | <i>Columba livia</i> | Cropland | P |
| Mourning Dove | <i>Zenaida macroura</i> | Cropland | P |

| BIRDS | | | |
|-------------------------------|-----------------------------------|-------------------|-----------------|
| Common Name | Scientific Name | Typical Habitat | Seasonal Status |
| Order Cuculiformes | | | |
| Yellow-billed Cuckoo | <i>Coccyzus americanus</i> | Forests | S |
| Greater Roadrunner | <i>Geococcyx californianus</i> | Open country | P |
| Order Stringiformes | | | |
| Barn Owl | <i>Tyto alba</i> | Farmland | P |
| Eastern Screech-owl | <i>Otus asio</i> | Forests | P |
| Great Horned Owl | <i>Bubo virginianus</i> | Forests | P |
| Barred Owl | <i>Strix varia</i> | Forests | P |
| Short-eared Owl | <i>Asio flammeus</i> | Open country | W |
| Order Caprimulgiformes | | | |
| Whip-Poor-Will | <i>Caprimulgus vociferus</i> | Forests | S |
| Common Nighthawk | <i>Chordeiles minor</i> | Open country | S |
| Chuck-Will's Widow | <i>Caprimulgus carolinensis</i> | Forests | S |
| Order Apodiformes | | | |
| Chimney Swift | <i>Chaetura pelagica</i> | Chimneys | S |
| Ruby-throated Hummingbird | <i>Archilochus colubris</i> | Forests | S |
| Order Coraciiformes | | | |
| Belted Kingfisher | <i>Ceryle alcyon</i> | Open water | P |
| Order Piciformes | | | |
| Red-headed Woodpecker | <i>Melanerpes erythrocephalus</i> | Dead trees | P |
| Pileated Woodpecker | <i>Dryocopus pileatus</i> | Forests | P |
| Red-bellied Woodpecker | <i>Melanerpes carolinus</i> | Forests | P |
| Northern Flicker | <i>Colaptes auratus</i> | Forests | P |
| Red-cockaded Woodpecker | <i>Picoides borealis</i> | Open pine forests | P |
| Yellow-bellied Sapsucker | <i>Sphyrapicus varius</i> | Forests | W |
| Downy Woodpecker | <i>Picoides pubescens</i> | Forests | P |
| Hairy Woodpecker | <i>Picoides villosus</i> | Forests | P |
| Order Passeriformes | | | |
| Olive-sided Flycatcher | <i>Contopus borealis</i> | Trees | T |
| Eastern Wood-pewee | <i>Contopus virens</i> | Forests | S |
| Acadian Flycatcher | <i>Empidonax virens</i> | Forests | S |
| Least Flycatcher | <i>Empidonax minimus</i> | Forests | T |
| Eastern Phoebe | <i>Sayornis phoebe</i> | Streamsides | P |
| Great Crested Flycatcher | <i>Myiarchus crinitus</i> | Forests | S |
| Eastern Kingbird | <i>Tyrannus tyrannus</i> | Open country | S |
| Scissor-tailed Flycatcher | <i>Tyrannus forficatus</i> | Open country | S |
| Horned Lark | <i>Eremophila alpestris</i> | Cropland | P |
| Purple Martin | <i>Progne subis</i> | Open country | S |
| Northern Rough-winged Swallow | <i>Stelgidopteryx serripennis</i> | Open country | S |

BIRDS

| Common Name | Scientific Name | Typical Habitat | Seasonal Status |
|-------------------------|---------------------------------|-----------------------|-----------------|
| Bank Swallow | <i>Riparia riparia</i> | Open country | T |
| Cliff Swallow | <i>Hirundo pyrrhonta</i> | Open country | W |
| Barn Swallow | <i>Hirundo rustica</i> | Open country | S |
| Blue Jay | <i>Cyanocitta cristata</i> | Forests | P |
| American Crow | <i>Corvus brachyrhynchos</i> | Forests/Fields | P |
| Fish Crow | <i>Corvus ossifragus</i> | Forests/Fields/Rivers | P |
| Carolina Chickadee | <i>Parus carolinensis</i> | Forests | P |
| Tufted Titmouse | <i>Parus bicolor</i> | Forests | P |
| Red-breasted Nuthatch | <i>Sitta canadensis</i> | Pine forests | W |
| White-breasted Nuthatch | <i>Sitta carolinensis</i> | Forests | P |
| Brown-headed Nuthatch | <i>Sitta pusilla</i> | Forests | P |
| Brown Creeper | <i>Certhia americana</i> | Forests | W |
| Carolina Wren | <i>Thryothorus ludovicianus</i> | Forest edge | P |
| Winter Wren | <i>Troglodytes troglodytes</i> | Forests | W |
| Bewick's Wren | <i>Thryomanes bewickii</i> | Brush | P |
| House Wren | <i>Troglodytes aedon</i> | Brush | P |
| Golden-crowned Kinglet | <i>Regulus satrapa</i> | Forests | W |
| Ruby-crowned Kinglet | <i>Regulus calendula</i> | Forests | W |
| Blue-gray Gnatcatcher | <i>Poliophtila caerulea</i> | Forests | S |
| Brown Thrasher | <i>Toxostoma rufum</i> | Shrubs/edge | P |
| Gray Catbird | <i>Dumetella carolinensis</i> | Shrubs/edge | S |
| Northern Mockingbird | <i>Mimus polyglottos</i> | Shrubs/edge | P |
| Eastern Bluebird | <i>Sialia sialis</i> | Open country | P |
| American Robin | <i>Turdus migratorius</i> | Open country/forests | P |
| Swainson's Thrush | <i>Catharus ustulatus</i> | Forests | T |
| Hermit Thrush | <i>Catharus guttatus</i> | Forests | W |
| Wood Thrush | <i>Hylocichla mustelina</i> | Forests | S |
| Water Pipit | <i>Anthus spinoletta</i> | Cropland | W |
| Sprague's Pipit | <i>Anthus spragueii</i> | Cropland | W |
| Cedar Waxwing | <i>Bombycilla cedrorum</i> | Open woodlands/trees | W |
| Loggerhead Shrike | <i>Lanius ludovicianus</i> | Open country | P |
| European Starling | <i>Sturnus vulgaris</i> | Open country | P |
| White-eyed Vireo | <i>Vireo griseus</i> | Forest edge/shrubs | S |
| Bell's Vireo | <i>Vireo bellii</i> | Shrubs/edge | S |
| Red-eyed Vireo | <i>Vireo olivaceus</i> | Forests | S |
| Warbling Vireo | <i>Vireo gilvus</i> | Waterside trees | S |
| Yellow-throated Vireo | <i>Vireo flavifrons</i> | Forests | S |
| Blue-winged Warbler | <i>Vermivora pinus</i> | Shrubs/edge | T |
| Tennessee Warbler | <i>Vermivora peregrina</i> | Forests | T |
| Orange-crowned Warbler | <i>Vermivora celata</i> | Shrubs/edge | T |
| Nashville Warbler | <i>Vermivora ruficapilla</i> | Open woodlands/trees | T |
| Yellow Warbler | <i>Dendroica petechia</i> | Shrubs/edge | T |
| Northern Parula Warbler | <i>Parula americana</i> | Forests | S |

| BIRDS | | | |
|------------------------------|----------------------------------|----------------------|-----------------|
| Common Name | Scientific Name | Typical Habitat | Seasonal Status |
| Chestnut-sided Warbler | <i>Dendroica pensylvanica</i> | Forests | T |
| Magnolia Warbler | <i>Dendroica magnolia</i> | Forests | T |
| Yellow-rumped Warbler | <i>Dendroica coronata</i> | Forests | W |
| Black-throated Green Warbler | <i>Dendroica virens</i> | Forests | T |
| Yellow-throated Warbler | <i>Dendroica dominica</i> | Forests | S |
| Pine Warbler | <i>Dendroica pinus</i> | Pine forests | P |
| Prairie Warbler | <i>Dendroica discolor</i> | Old fields | S |
| Blackpoll Warbler | <i>Dendroica striata</i> | Forests | T |
| Cerulean Warbler | <i>Dendroica cerulea</i> | Forests | S |
| Black-and-White Warbler | <i>Mniotilta varia</i> | Forests | S |
| American Redstart | <i>Setophaga ruticilla</i> | Forests | S |
| Prothonotary Warbler | <i>Protonotaria citrea</i> | Swamps | S |
| Worm-eating Warbler | <i>Helmitheros vermivorus</i> | Forests | S |
| Ovenbird | <i>Seiurus aurocapillus</i> | Forests | S |
| Louisiana Waterthrush | <i>Seiurus motacilla</i> | Forested streams | S |
| Hooded Warbler | <i>Wilsonia citrina</i> | Forests | S |
| Yellow-breasted Chat | <i>Icteria virens</i> | Shrubs/edge | |
| Wilson's Warbler | <i>Wilsonia pusilla</i> | Forests | T |
| Common Yellowthroat | <i>Geothlypis trichas</i> | Shrubs/edge | S |
| Summer Tanager | <i>Piranga rubra</i> | Forests | S |
| Scarlet Tanager | <i>Piranga olivacea</i> | Forests | S |
| Nothem Cardinal | <i>Cardinalis cardinalis</i> | Shrubs/edge | P |
| Rose-breasted Grosbeak | <i>Pheucticus ludovicianus</i> | Open woodlands/trees | T |
| Blue Grosbeak | <i>Guiraca caerulea</i> | Forest edge/shrubs | S |
| Indigo Bunting | <i>Passerina cyanea</i> | Forest edge/shrubs | S |
| Painted Bunting | <i>Passerina ciris</i> | Forest edge/shrubs | S |
| Dickcissel | <i>Spiza americana</i> | Old fields | S |
| Rufous-sided Towhee | <i>Pipilo erythrophthalmus</i> | Shrubs/edge | W |
| Bachman's Sparrow | <i>Aimophila aestivalis</i> | Pine plantations | S |
| American Tree Sparrow | <i>Spizella arborea</i> | Old fields | W |
| Chipping Sparrow | <i>Spizella passerina</i> | Open country | P |
| Field Sparrow | <i>Spizella pusilla</i> | Old fields | P |
| Vesper Sparrow | <i>Poocetes gramineus</i> | Open country | W |
| Lark Sparrow | <i>Chondestes grammacus</i> | Open country | S |
| Savannah Sparrow | <i>Passerculus sandwichensis</i> | Open country | W |
| Grasshopper Sparrow | <i>Ammodramus savannarum</i> | Open country | S |
| Le Conte's Sparrow | <i>Ammodramus leconteii</i> | Open country | W |
| Fox Sparrow | <i>Passerella iliaca</i> | Shrubs/edge | W |
| Song Sparrow | <i>Melospiza melodia</i> | Shrubs/edge | W |
| Lincoln's Sparrow | <i>Melospiza lincolni</i> | Shrubs/edge | W |
| Swamp Sparrow | <i>Melospiza georgiana</i> | Marshes | W |
| White-throated Sparrow | <i>Zonotrichia albicollis</i> | Forest edge/shrubs | W |
| White-crowned Sparrow | <i>Zonotrichia leucophrys</i> | Shrubs/edge | W |

| BIRDS | | | |
|-------------------------|--------------------------------------|------------------------|-----------------|
| Common Name | Scientific Name | Typical Habitat | Seasonal Status |
| Harris' Sparrow | <i>Zonotrichia querula</i> | Shrubs/edge | W |
| Dark-eyed Junco | <i>Junco hyemalis</i> | Forests | W |
| Lapland Longspur | <i>Calcarius lapponicus</i> | Open country | W |
| Smith's Longspur | <i>Calcarius pictus</i> | Open country | W |
| Red-winged Blackbird | <i>Agelaius phoeniceus</i> | Open country/marshes | P |
| Eastern Meadowlark | <i>Stumella magna</i> | Open country | P |
| Yellow-headed Blackbird | <i>Xanthocephalus xanthocephalus</i> | Cropland | T |
| Rusty Blackbird | <i>Euphagus carolinus</i> | Swamps | W |
| Brewer's Blackbird | <i>Euphagus cyanocephalus</i> | Cropland | W |
| Great-tailed Grackle | <i>Quiscalus mexicanus</i> | | P,S |
| Common Grackle | <i>Quiscalus quiscula</i> | Woodlands/open country | P |
| Brown-headed Cowbird | <i>Molothrus ater</i> | Open country | P |
| Orchard Oriole | <i>Icterus spurius</i> | Open woodlands/trees | S |
| Northern Oriole | <i>Icterus galbula</i> | Open woodlands/trees | S |
| Purple Finch | <i>Carpodacus purpureus</i> | Forests | W |
| House Finch | <i>Carpodacus mexicanus</i> | Residential areas | P |
| House Sparrow | <i>Passer domesticus</i> | Residential areas | P |
| American Goldfinch | <i>Carduelis tristis</i> | Open country | P |
| Pine Siskin | <i>Carduelis pinus</i> | Pine forests | W |

P - Permanent Resident

T - Transient Species

S - Breeding Season Species
(Summer)

W - Wintering/Migrant Species

Source: Neal, 1986; Peterson, 1980

| MAMMALS | |
|-----------------------------|----------------------------------|
| Common Name | Scientific Name |
| Order Marsupialia | |
| Virginia Opossum | <i>Didelphus virginiana</i> |
| Order Insectivora | |
| Southeastern Shrew | <i>Sorex longirostris</i> |
| Southern Short-tailed Shrew | <i>Blarina carolinensis</i> |
| Elliot's Short-tailed Shrew | <i>Blarina hylophaga</i> |
| Least Shrew | <i>Cryptotis parva</i> |
| Desert Shrew | <i>Notiosorex crawfordi</i> |
| Eastern Mole | <i>Scalopus aquaticus</i> |
| Order Chiroptera | |
| Little Brown Bat | <i>Myotis lucifugus</i> |
| Southeastern Myotis | <i>Myotis austroriparius</i> |
| Keen's Myotis | <i>Myotis keenii</i> |
| Silver-haired Bat | <i>Lasionycteris noctivagans</i> |
| Eastern Pipistrelle | <i>Pipistrellus subflavus</i> |
| Big Brown Bat | <i>Eptesicus fuscus</i> |
| Red Bat | <i>Lasiurus borealis</i> |
| Seminole Bat | <i>Lasiurus seminolus</i> |
| Hoary Bat | <i>Lasiurus cinereus</i> |
| Evening Bat | <i>Nycticeius humeralis</i> |
| Rafinesque's Big-eared Bat | <i>Plecitcus rafinesquii</i> |
| Brazilian Free-tailed Bat | <i>Tadarida brasiliensis</i> |
| Order Edentata | |
| Nine-banded Armadillo | <i>Dasypus novemcinctus</i> |
| Order Lagomorpha | |
| Eastern Cottontail | <i>Sylvilagus floridanus</i> |
| Swamp Rabbit | <i>Sylvilagus aquaticus</i> |
| Black-tailed Jackrabbit | <i>Lepus californicus</i> |
| Order Rodentia | |
| Eastern Chipmunk | <i>Tamias striatus</i> |
| Woodchuck | <i>Marmota monax</i> |
| Gray Squirrel | <i>Sciurus carolinensis</i> |
| Fox Squirrel | <i>Sciurus niger</i> |
| Southern Flying Squirrel | <i>Glaucomys volans</i> |
| Baird's Pocket Gopher | <i>Geomys breviceps</i> |
| Beaver | <i>Castor canadensis</i> |
| Marsh Rice Rat | <i>Oryzomys palustris</i> |
| Eastern Harvest Mouse | <i>Reithrodontomys humulis</i> |
| Fulvous harvest Mouse | <i>Reithrodontomys fuscus</i> |

| BIRDS | | | |
|-------------------------------|----------------------------------|-----------------|-----------------|
| Common Name | Scientific Name | Typical Habitat | Seasonal Status |
| Order Podicipediformes | | | |
| Pied-billed Grebe | <i>Podilymbus podiceps</i> | Still water | P |
| Horned Grebe | <i>Podiceps auritus</i> | Still water | W |
| Order Pelecaniformes | | | |
| American White Pelican | <i>Pelicanus erythrorhynchos</i> | Open water | T |
| Double-crested Cormorant | <i>Phalacrocorax auritus</i> | Open water | W |
| Order Ciconiiformes | | | |
| Great Blue Heron | <i>Ardea herodias</i> | Still water | P |
| Little Blue Heron | <i>Florida caerulea</i> | Still water | S |
| Great Egret | <i>Casmerodius albus</i> | Still water | S |
| Cattle Egret | <i>Bubulcus ibis</i> | Open fields | S |
| Black-crowned Night Heron | <i>Nycticorax nycticorax</i> | Still water | S |
| Yellow-crowned Night Heron | <i>Nyctanassa violacea</i> | Still water | S |
| Green-backed Heron | <i>Butorides striatus</i> | Still water | S |
| Snowy Egret | <i>Egretta thula</i> | Still water | S |
| Tricolored Heron | <i>Egretta tricolor</i> | Still water | T |
| Order Anseriformes | | | |
| Greater White-fronted Goose | <i>Anser albifrons</i> | Open fields | W |
| Canada Goose | <i>Branta canadensis</i> | Open fields | W |
| Wood Duck | <i>Aix sponsa</i> | Swamps | P |
| Green-winged Teal | <i>Anas crecca</i> | Open water | W |
| American Black Duck | <i>Anas rubripes</i> | Still water | W |
| Mallard | <i>Anas platyrhynchos</i> | Still water | W |
| Blue-winged Teal | <i>Anas discors</i> | Still water | W |
| Northern Shoveler | <i>Anas clypeata</i> | Still water | W |
| Gadwall | <i>Anas strepera</i> | Still water | W |
| American Wigeon | <i>anas americana</i> | Still water | W |
| Canvasback | <i>Aythya valisineria</i> | Open water | W |
| Redhead | <i>Aythya americana</i> | Open water | W |
| Ring-necked Duck | <i>Aythya collaris</i> | Open water | W |
| Lesser Scaup | <i>Aythya affinis</i> | Open water | W |
| Bufflehead | <i>Bucephala albeola</i> | Open water | W |
| Ruddy Duck | <i>Oxyura jamaicensis</i> | Still water | W |
| Common Merganser | <i>Mergus merganser</i> | Still water | W |
| Hooded Merganser | <i>Lophodytes cucullatus</i> | Still water | P |
| Order Falconiformes | | | |
| Black Vulture | <i>Coragyps atratus</i> | Open country | P |
| Turkey Vulture | <i>Cathartes aura</i> | Open country | P |
| Sharp-shinned Hawk | <i>Accipiter striatus</i> | Forests | W |

| MAMMALS | |
|---------------------------|---------------------------------|
| Common Name | Scientific Name |
| Deer Mouse | <i>Peromyscus maniculatus</i> |
| White-footed Mouse | <i>Peromyscus leucopus</i> |
| Cotton Mouse | <i>Peromyscus gossyoinus</i> |
| Texas Mouse | <i>Peromyscus attwateri</i> |
| Golden Mouse | <i>Ochrotomys nutalli</i> |
| Hispid Cotton Rat | <i>Sigmodon hispidus</i> |
| Eastern Woodrat | <i>Neotoma floridana</i> |
| Woodland Vole | <i>Microtus pinetorum</i> |
| Muskrat | <i>Ondatra zibethicus</i> |
| Southern Bog Lemming | <i>Synaptomys cooperi</i> |
| Norway Rat | <i>Rattus norvegicus</i> |
| House Mouse | <i>Mus musculus</i> |
| Nutria | <i>Myocastor coypus</i> |
| Order Carnivora | |
| Coyote | <i>Canis latrans</i> |
| Red Fox | <i>Vulpes vulpes</i> |
| Gray Fox | <i>Urocyon cinereoargenteus</i> |
| Black Bear | <i>Ursus americanus</i> |
| Raccoon | <i>Procyon lotor</i> |
| Long-tailed Weasel | <i>Mustela frenata</i> |
| Mink | <i>Mustela vison</i> |
| Badger | <i>Taxidea taxus</i> |
| Eastern Spotted Skunk | <i>Spilogale putorius</i> |
| Striped Skunk | <i>Mephitis mephitis</i> |
| River Otter | <i>Lutra canadensis</i> |
| Bobcat | <i>Felis rufus</i> |
| Order Artiodactyla | |
| White-tailed deer | <i>Odocoileus virginianus</i> |

Source: Sealander and Heidt,
1990

Appendix F
WATER QUALITY INDEX ANALYSIS

WATER QUALITY INDEX ANALYSIS

METHODOLOGY

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). These parameters include erosion hazard, runoff potential, topographic relief (slope), drainage area, land use, and drainage area crossing distance.

Each parameter was divided into three categories, Low, Moderate, High, which were assigned a numerical value (Rating) to reflect the potential impact to water quality. Ratings ranged from 4 to 12, 4 representing a low potential for adverse water quality impacts, 8 representing a moderate potential impact, and 12 representing a high potential for adverse impacts. The numerical ratings obtained for each parameter were then summed to yield a water quality index for each

individual drainage area crossed.

Erosion Hazard

Erosion hazard ratings for soils types crossed within each drainage unit were obtained from the published soil surveys of Sebastian and Crawford Counties (USDA, 1975; USDA, 1979) and from information received directly from the Natural Resource Conservation Services of Scott, Polk and Sevier Counties. When available, the erosion factors "K" and "T" were used. The K factor is a measure of the erodibility of a soil based on infiltration capacity and soil structural stability (Brady, 1984). The T factor represents the point at which the soil or the environment degrades. When more than one soil unit was traversed in a single drainage unit, an intermediate rating was calculated based on the crossing distance of each soil type. The assigned numerical ratings for Erosion Hazard were:

| Potential Soil Loss | K | T | Erosion Hazard Rating |
|---------------------|-----------|---|-----------------------|
| Low | < 0.24 | 1 | 4 |
| Moderate | 0.24-0.34 | 3 | 8 |
| High | > 0.34 | 5 | 12 |

Runoff Potential

The surface water runoff potential for each drainage area crossed was determined using a measurement of soil permeability (USDA, 1975; USDA, 1979; Scott, Polk and Sevier NRCS offices) and the calculated relief of the surrounding land

area. When more than one soil unit was traversed in a single drainage unit, an intermediate rating was calculated based on the crossing distance of each soil type. The assigned numerical ratings for Runoff Potential were:

| Soil Permeability | Relief | Runoff Potential Rating |
|-------------------|--------|-------------------------|
| > 15 cm/hr | < 5% | 4 |
| 1.5-5 cm/hr | 5%-10% | 8 |
| < 1.5 cm/hr | > 10% | 12 |

Topographic Relief

The USGS 7.5 minute topographic maps were used to determine the average relief for a minimum of 300 meters (1,000 ft) either side of the drainage

unit crossing. The assigned numerical ratings for Relief were:

| Percent Slope | Land Use | Relief Rating |
|---------------|----------------------|---------------|
| < 5% | Floodplains/plateaus | 4 |
| 5%-10% | Ridges/valleys | 8 |
| > 10% | Foothills/mountains | 12 |

Drainage Area

Drainage areas upstream of the alignment crossings of each drainage unit were calculated using USGS 7.5 minute topographic maps. In

general, stream order and flow regime increase as the drainage area increases. Drainage areas were placed in one of three categories:

| Upstream Drainage Area | Stream Order | Flow Regime (cu meters/sec) | Drainage Area Rating |
|------------------------|--------------|--------------------------------|----------------------|
| < 13.0 sq. km | 1st | Intermittent | 4 |
| 13-78 sq. km | 2nd, 3rd | Perennial (< 0.1) | 8 |
| > 78 sq. km | 3rd, 4th | Perennial (> 0.1) | 12 |

Land Use

Aerial photographs and field investigations were used to determine the current land use where proposed alignments crossed individual drainage units. Land use was divided into three major categories; forest, pasture, and agriculture. Forested areas provide the greatest water quality protection by dissipating rainfall and runoff energy, thereby decreasing the soil erosion potential. In addition, forested areas can reduce the impacts of overland surface runoff on receiving streams by filtering and transforming organic and inorganic material (Welsch, 1991; Brooks and Croonquist,

1993). Pasture land and its associated vegetation also reduces erosion and sedimentation but to a lesser degree. Agricultural land use includes cultivated fields, residences, and chicken and swine production. This land use provides the least protection to water quality and could result in the greatest adverse impacts through nutrient and/or chemical laden surface runoff. When more than one land use type was traversed in a single drainage unit, an intermediate rating was calculated based on the crossing distance of each land use type. Land use ratings were:

| Land Use | Land Use Rating |
|-------------------|-----------------|
| Forest | 4 |
| Pasture/Old Field | 8 |
| Agriculture | 12 |

Drainage Crossing

The alignment crossing distance of each individual drainage unit was calculated using USGS 7.5 minute topographic maps. Distances were determined to the nearest 75 meter (250 ft) interval. Crossing a drainage unit perpendicular to

its direction of flow would have less impact than a parallel crossing. The number of crossings were plotted versus crossing distances to determine the distributional tendencies of the data. The Drainage Crossing ratings were:

| Crossing Distance | Drainage Crossing Rating |
|-----------------------------------|--------------------------|
| < 300 meters (1,000 ft) | 4 |
| 300-1,525 meters (1,000-5,000 ft) | 8 |
| > 1,525 meters (5,000 ft) | 12 |

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-A-001 | Pepper Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Forest 4 | 0.47 4 | (.18) | 533.4 8 | (1750) | 42 |
| 1-A-002 | Pepper Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.43 4 | (.17) | 762 8 | (2500) | 36 |
| 1-A-003 | Pepper Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 1.06 4 | (.41) | 685.8 8 | (2250) | 40 |
| 1-A-004 | Wilson Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.16 4 | (.06) | 304.8 4 | (1000) | 30 |
| 1-A-005 | Wilson Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 0.08 4 | (.03) | 304.8 4 | (1000) | 36 |
| 1-A-006 | Story Creek | Moderate-Low 6 | Rapid-Moderate 10 | 14.0% 12 | Forest 4 | 0.73 4 | (.28) | 1219.2 8 | (4000) | 44 |
| 1-A-007 | Bellah Creek (I) | Moderate 8 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 0.63 4 | (.24) | 533.4 8 | (1750) | 42 |
| 1-B-008 | Bellah Creek (I) | Moderate 8 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 0.81 4 | (.31) | 1447.8 8 | (4750) | 42 |
| 1-B-009 | Almond Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 1.28 4 | (.5) | 838.2 8 | (2750) | 40 |
| 1-B-010 | Almond Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.32 4 | (.12) | 685.8 8 | (2250) | 34 |
| 1-B-011 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 1.69 4 | (.65) | 762 8 | (2500) | 40 |
| 1-B-012 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 0.4 4 | (.16) | 457.2 8 | (1500) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-B-013 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 1.32 4 | (.51) | 228.6 4 | (750) | 36 |
| 1-B-014 | Carters Creek (P) | Moderate 8 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 8.6 4 | (3.32) | 685.8 8 | (2250) | 42 |
| 1-B-015 | Carters Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.62 4 | (.24) | 838.2 8 | (2750) | 36 |
| 1-B-016 | Carters Creek | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 4.61 4 | (1.78) | 1066.8 8 | (3500) | 38 |
| 1-B-017 | Carters Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 11.0% 12 | Pasture-Forest 6 | 0.38 4 | (.15) | 685.8 8 | (2250) | 46 |
| 1-B-018 | Carters Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 1.64 4 | (.63) | 1600.2 12 | (5250) | 38 |
| 1-B-019 | Coon Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.23 4 | (.09) | 838.2 8 | (2750) | 34 |
| 1-B-020 | Coon Creek | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 2.28 4 | (.88) | 990.6 8 | (3250) | 34 |
| 1-B-021 | Coon Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.54 4 | (.21) | 1371.6 8 | (4500) | 34 |
| 1-B-022 | Allen Branch | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 0.47 4 | (.18) | 762 8 | (2500) | 40 |
| 1-B-023 | Opossum Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 0.6 4 | (.23) | 609.6 8 | (2000) | 40 |
| 1-B-024 | Opossum (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 0.42 4 | (.16) | 838.2 8 | (2750) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-B-025 | Opossum Creek | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 1.58 4 | (.61) | 609.6 8 | (2000) | 40 |
| 1-B-026 | Opossum Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 1.1 4 | (.43) | 838.2 8 | (2750) | 36 |
| 1-B-027 | Opossum Creek (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 0.66 4 | (.25) | 762 8 | (2500) | 38 |
| 1-B-028 | Cow Creek | Moderate-Low 6 | Moderate 8 | 10.0% 8 | Pasture-Forest 6 | 1.35 4 | (.52) | 609.6 8 | (2000) | 40 |
| 1-B-029 | Cow Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 0.44 4 | (.17) | 228.6 4 | (750) | 34 |
| 1-B-030 | Cow Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 2.17 4 | (.84) | 1219.2 8 | (4000) | 38 |
| 1-B-031 | Pryor Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.51 4 | (.2) | 609.6 8 | (2000) | 32 |
| 1-B-032 | Pryor Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.19 4 | (.07) | 228.6 4 | (750) | 28 |
| 1-B-033 | Pryor Creek (P) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 3.47 4 | (1.34) | 1600.2 12 | (5250) | 42 |
| 1-B-034 | Pryor Creek | Moderate 8 | Rapid-Moderate 10 | 14.0% 12 | Forest 4 | 1.92 4 | (.74) | 990.6 8 | (3250) | 46 |
| 1-C-035 | Caney Creek (I) | Moderate 8 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 0.36 4 | (.14) | 609.6 8 | (2000) | 46 |
| 1-C-036 | Caney Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 1.53 4 | (.59) | 609.6 8 | (2000) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-C-037 | Caney Creek | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 1.16 4 | (.45) | 533.4 8 | (1750) | 34 |
| 1-C-038 | Caney Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.12 4 | (.05) | 228.6 4 | (750) | 30 |
| 1-C-039 | Caney Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 0.71 4 | (.27) | 609.6 8 | (2000) | 40 |
| 1-C-040 | Flat Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.9 4 | (.35) | 457.2 8 | (1500) | 34 |
| 1-C-041 | Flat Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 0.69 4 | (.27) | 457.2 8 | (1500) | 40 |
| 1-C-042 | Flat Creek (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.58 4 | (.22) | 457.2 8 | (1500) | 36 |
| 1-C-043 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.6 4 | (.23) | 762 8 | (2500) | 34 |
| 1-C-044 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.5% 4 | Pasture-Forest 6 | 3.95 4 | (1.52) | 914.4 8 | (3000) | 34 |
| 1-C-045 | Buffalo Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 3.85 4 | (1.49) | 1295.4 8 | (4250) | 36 |
| 1-C-046 | Buffalo Creek | Moderate-Low 6 | Moderate-Slow 6 | 4.5% 4 | Pasture-Forest 6 | 4.05 4 | (1.56) | 1447.8 8 | (4750) | 34 |
| 1-C-047 | Sixmile Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 0.2 4 | (.08) | 457.2 8 | (1500) | 38 |
| 1-C-048 | Sixmile Creek (I) | Moderate-Low 6 | Moderate 8 | 6.5% 8 | Pasture-Forest 6 | 0.2 4 | (.08) | 685.8 8 | (2250) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------|-------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-C-049 | Sixmile Creek | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 15.82 8 | (6.11) | 533.4 8 | (1750) | 40 |
| 1-C-050 | Sixmile Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 2.98 4 | (1.15) | 1295.4 8 | (4250) | 38 |
| 1-C-051 | Mike Creek | Moderate 8 | Moderate 8 | 11.0% 12 | Forest 4 | 4.16 4 | (1.6) | 609.6 8 | (2000) | 44 |
| 1-C-052 | Mike Creek (I) | Moderate 8 | Moderate-Slow 6 | 7.0% 8 | Forest 4 | 0.45 4 | (.17) | 685.8 8 | (2250) | 38 |
| 1-C-053 | Joshling Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.05 4 | (.02) | 533.4 8 | (1750) | 32 |
| 1-C-054 | Joshling Creek | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.99 4 | (.38) | 228.6 4 | (750) | 28 |
| 1-C-055 | Joshling Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 0.7 4 | (.27) | 609.6 8 | (2000) | 38 |
| 1-C-056 | Twomile Creek (P) | Moderate 8 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 2.29 4 | (.89) | 914.4 8 | (3000) | 46 |
| 1-C-057 | Twomile Creek | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 30.07 8 | (11.61) | 2209.8 12 | (7250) | 44 |
| 1-C-058 | Thompson Creek (I) | Moderate-Low 6 | Moderate 8 | 9.0% 8 | Forest 4 | 0.33 4 | (.13) | 990.6 8 | (3250) | 38 |
| 1-C-059 | Thompson Creek | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 2.19 4 | (.85) | 381 8 | (1250) | 34 |
| 1-C-060 | Thompson Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 1.23 4 | (.48) | 1676.4 12 | (5500) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-C-061 | McKinney Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 2 4 | (.77) | 685.8 8 | (2250) | 40 |
| 1-D-062 | McKinney Creek | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 3.65 4 | (1.41) | 990.6 8 | (3250) | 32 |
| 1-D-063 | McKinney Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 0.09 4 | (.04) | 838.2 8 | (2750) | 38 |
| 1-D-064 | Rock Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 15.0% 12 | Pasture-Forest 6 | 0.25 4 | (.1) | 685.8 8 | (2250) | 50 |
| 1-D-065 | Prairie Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 1.44 4 | (.56) | 1447.8 8 | (4750) | 36 |
| 1-D-066 | Prairie Creek (P) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 10.96 4 | (4.23) | 762 8 | (2500) | 38 |
| 1-E-067 | Ward Creek | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 11.59 4 | (4.48) | 685.8 8 | (2250) | 38 |
| 1-E-068 | Brier Creek | Moderate 8 | Moderate 8 | 6.0% 8 | Forest 4 | 9.98 4 | (3.85) | 1752.6 12 | (5750) | 44 |
| 1-F-069 | Ouachita River (P) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 2.6 4 | (1) | 1066.8 8 | (3500) | 34 |
| 1-F-070 | Ouachita River (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.73 4 | (.28) | 685.8 8 | (2250) | 36 |
| 1-F-071 | Ouachita River | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 68.66 8 | (26.5) | 1066.8 8 | (3500) | 42 |
| 1-F-072 | Ouachita River (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.18 4 | (.45) | 762 8 | (2500) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-F-073 | Chances Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 2.48 | (.96) | 381 | (1250) | 36 |
| 1-F-074 | Chances Creek (P) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 6.76 | (2.61) | 381 | (1250) | 36 |
| 1-F-075 | Chances Creek | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 7.09 | (2.74) | 2286 | (7500) | 40 |
| 1-F-076 | Lick Branch | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 1.25 | (.48) | 1219.2 | (4000) | 36 |
| 1-F-077 | Lick Branch | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.72 | (.28) | 685.8 | (2250) | 38 |
| 1-F-078 | Chances Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.25 | (.1) | 533.4 | (1750) | 36 |
| 1-G-079 | Chances Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.22 | (.08) | 609.6 | (2000) | 36 |
| 1-G-080 | Gap Creek | Moderate 8 | Moderate 8 | 6.0% 8 | Forest 4 | 6.04 | (2.33) | 2971.8 | (9750) | 44 |
| 1-G-081 | Gap Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 0.28 | (.11) | 152.4 | (500) | 30 |
| 1-G-082 | Gap Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 0.83 | (.32) | 152.4 | (500) | 30 |
| 1-G-083 | Gap Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.4 | (.15) | 304.8 | (1000) | 30 |
| 1-G-084 | Cedar Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Forest 4 | 0.4 | (.15) | 685.8 | (2250) | 42 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-G-085 | Cedar Creek (P) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 2.1 4 | (.81) | 457.2 8 | (1500) | 42 |
| 1-G-086 | Cedar Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 2.55 4 | (.99) | 533.4 8 | (1750) | 48 |
| 1-G-087 | Johnson Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 0.24 4 | (.09) | 1066.8 8 | (3500) | 42 |
| 1-G-088 | Johnson Creek (P) | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 2.13 4 | (.82) | 533.4 8 | (1750) | 42 |
| 1-G-089 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 1.87 4 | (.72) | 838.2 8 | (2750) | 48 |
| 1-G-090 | Johnson Creek (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 0.3 4 | (.11) | 381 8 | (1250) | 42 |
| 1-G-091 | Johnson Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 1.63 4 | (.63) | 685.8 8 | (2250) | 36 |
| 1-G-092 | Johnson Creek (I) | Severe-Moderate 10 | Moderate 8 | 9.0% 8 | Forest 4 | 1.99 4 | (.77) | 685.8 8 | (2250) | 42 |
| 1-G-093 | Johnson Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 0.21 4 | (.08) | 304.8 4 | (1000) | 44 |
| 1-G-094 | Johnson Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 15.0% 12 | Forest 4 | 0.4 4 | (.15) | 685.8 8 | (2250) | 48 |
| 1-G-095 | Johnson Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 0.17 4 | (.06) | 533.4 8 | (1750) | 44 |
| 1-H-096 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Pasture-Forest 6 | 6.76 4 | (2.61) | 457.2 8 | (1500) | 50 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------------|-----------------------|----------------------|-------------|---------------------|-------------------------------------|----------|------------------------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 1-H-097 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Forest 4 | 1.44 4 | (.56) | 228.6 4 | (750) | 44 |
| 1-H-098 | Fourche LaFave River | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 336.41 12 | (129.84) | 11658.6 12 | (38250) | 48 |
| 1-H-099 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 9.0% 8 | Forest 4 | 0.21 4 | (.08) | 304.8 4 | (1000) | 38 |
| 1-H-100 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 0.6 4 | (.23) | 76.2 4 | (250) | 38 |
| 1-H-101 | Fourche LaFave River (P) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.44 4 | (.56) | 609.6 8 | (2000) | 44 |
| 1-H-102 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 0.28 4 | (.11) | 762 8 | (2500) | 42 |
| 1-H-103 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.2 4 | (.08) | 685.8 8 | (2250) | 38 |
| 1-H-104 | Northern Creek (I) | Severe 12 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 0.4 4 | (.15) | 76.2 4 | (250) | 38 |
| 1-H-105 | Northern Creek | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 9.11 4 | (3.51) | 685.8 8 | (2250) | 36 |
| 1-H-106 | Northern Creek (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.42 4 | (.16) | 381 8 | (1250) | 34 |
| 1-H-107 | Buffalo Creek | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 18.09 8 | (6.98) | 4495.8 12 | (14750) | 44 |
| 1-H-108 | Little Buffalo Creek | Moderate 8 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 10.84 4 | (4.18) | 1066.8 8 | (3500) | 46 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-H-109 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 2.17 4 | (.84) | 533.4 8 | (1750) | 48 |
| 1-H-110 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.55 4 | (.21) | 457.2 8 | (1500) | 48 |
| 1-H-111 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.17 4 | (.07) | 685.8 8 | (2250) | 48 |
| 1-H-112 | Ross Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.28 4 | (.11) | 685.8 8 | (2250) | 38 |
| 1-H-113 | Ross Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 26.12 8 | (10.08) | 1143 8 | (3750) | 42 |
| 1-H-114 | Ross Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 0.38 4 | (.15) | 457.2 8 | (1500) | 42 |
| 1-H-115 | Ross Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.26 4 | (.1) | 533.4 8 | (1750) | 36 |
| 1-H-116 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.16 4 | (.06) | 457.2 8 | (1500) | 36 |
| 1-I-117 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.28 4 | (.11) | 457.2 8 | (1500) | 36 |
| 1-I-118 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.17 4 | (.07) | 762 8 | (2500) | 38 |
| 1-I-119 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 14.12 8 | (5.45) | 609.6 8 | (2000) | 42 |
| 1-I-120 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.38 4 | (.15) | 228.6 4 | (750) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-----------------------|-----------------------|--------------------|-----------|---------------------|-------------------------------------|---------|------------------------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 1-I-121 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.41 4 | (.16) | 381 8 | (1250) | 42 |
| 1-I-122 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 0.56 4 | (.22) | 457.2 8 | (1500) | 42 |
| 1-I-123 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 0.11 4 | (.04) | 381 8 | (1250) | 40 |
| 1-I-124 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 0.04 4 | (.01) | 304.8 4 | (1000) | 36 |
| 1-I-125 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 0.59 4 | (.23) | 762 8 | (2500) | 40 |
| 1-I-126 | Poteau River | Severe 12 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 173.77 12 | (67.07) | 2057.4 12 | (6750) | 54 |
| 1-I-127 | Poteau River (I) | Severe 12 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 0.03 4 | (.01) | 152.4 4 | (500) | 38 |
| 1-I-128 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.2 4 | (.08) | 381 8 | (1250) | 40 |
| 1-I-129 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 0.52 4 | (.2) | 762 8 | (2500) | 40 |
| 1-I-130 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.07 4 | (.03) | 381 8 | (1250) | 40 |
| 1-I-131 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.19 4 | (.07) | 304.8 4 | (1000) | 34 |
| 1-I-132 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.51 4 | (.2) | 381 8 | (1250) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-----------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-I-133 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.36 4 | (.14) | 381 8 | (1250) | 36 |
| 1-I-134 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.58 4 | (.22) | 228.6 4 | (750) | 32 |
| 1-I-135 | Square Rock Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 3.14 4 | (1.21) | 762 8 | (2500) | 48 |
| 1-I-136 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Forest 4 | 1.46 4 | (.56) | 838.2 8 | (2750) | 42 |
| 1-I-137 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate 8 | 9.5% 8 | Forest 4 | 1.62 4 | (.62) | 838.2 8 | (2750) | 42 |
| 1-I-138 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.23 4 | (.09) | 457.2 8 | (1500) | 38 |
| 1-I-139 | Packsaddle Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 1.13 4 | (.44) | 381 8 | (1250) | 38 |
| 1-I-140 | Packsaddle Creek (P) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.99 4 | (2.31) | 838.2 8 | (2750) | 40 |
| 1-J-141 | Old Freedom Creek | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 7.6 4 | (2.93) | 685.8 8 | (2250) | 48 |
| 1-J-142 | Brushy Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.13 4 | (.05) | 228.6 4 | (750) | 34 |
| 1-J-143 | Brushy Creek (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 10.02 4 | (3.87) | 1295.4 8 | (4250) | 40 |
| 1-J-144 | Brushy Creek | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.2 4 | (.08) | 304.8 4 | (1000) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-J-145 | Kings Creek | Severe-Moderate 10 | Moderate 8 | 5.5% 8 | Pasture-Forest 6 | 25.88 8 | (9.99) | 1447.8 8 | (4750) | 48 |
| 1-J-146 | Carnes Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.5% 4 | Pasture-Forest 6 | 2.34 4 | (.9) | 685.8 8 | (2250) | 38 |
| 1-J-147 | Rock Creek | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 46.18 8 | (17.82) | 1143 8 | (3750) | 48 |
| 1-J-148 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture 8 | 1.38 4 | (.53) | 1905 12 | (6250) | 44 |
| 1-J-149 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.47 4 | (.18) | 990.6 8 | (3250) | 36 |
| 1-J-150 | Rock Creek (I) | Severe 12 | Moderate-Slow 6 | 2.5% 4 | Forest 4 | 0.21 4 | (.08) | 228.6 4 | (750) | 34 |
| 1-J-151 | Rock Creek (I) | Severe 12 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 1.44 4 | (.56) | 457.2 8 | (1500) | 40 |
| 1-J-152 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.36 4 | (.14) | 762 8 | (2500) | 38 |
| 1-J-153 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 1.08 4 | (.42) | 838.2 8 | (2750) | 38 |
| 1-J-154 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.5% 8 | Pasture-Forest 6 | 0.08 4 | (.03) | 533.4 8 | (1750) | 44 |
| 1-J-155 | Cherokee Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.5% 4 | Forest 4 | 0.21 4 | (.08) | 914.4 8 | (3000) | 34 |
| 1-J-156 | Cherokee Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.5% 4 | Pasture-Forest 6 | 0.19 4 | (.07) | 685.8 8 | (2250) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-J-157 | Old Prairie Creek | Severe-Moderate 10 | Moderate 8 | 5.5% 8 | Pasture 8 | 6.45 4 | (2.49) | 1905 12 | (6250) | 50 |
| 1-J-158 | Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 40.78 8 | (15.74) | 838.2 8 | (2750) | 44 |
| 1-K-159 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 3.48 4 | (1.34) | 1447.8 8 | (4750) | 40 |
| 1-K-160 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 4.33 4 | (1.67) | 381 8 | (1250) | 40 |
| 1-K-161 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 25.37 8 | (9.79) | 609.6 8 | (2000) | 44 |
| 1-K-162 | Prairie Creek (I) | Severe 12 | Moderate 8 | 0.5% 4 | Pasture 8 | 0.13 4 | (.05) | 304.8 4 | (1000) | 40 |
| 1-K-163 | Vineyard Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.92 4 | (.36) | 1219.2 8 | (4000) | 38 |
| 1-K-164 | Adamson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture-Forest 6 | 0.56 4 | (.22) | 762 8 | (2500) | 38 |
| 1-K-165 | Adamson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 1.07 4 | (.41) | 1143 8 | (3750) | 38 |
| 1-K-166 | Elder Branch (I) | Moderate 8 | Moderate 8 | 5.5% 8 | Pasture-Forest 6 | 0.18 4 | (.07) | 609.6 8 | (2000) | 42 |
| 1-K-167 | Elder Branch (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.22 4 | (.08) | 609.6 8 | (2000) | 38 |
| 1-K-168 | Hester Creek | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture 8 | 1.32 4 | (.51) | 1752.6 12 | (5750) | 44 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-K-169 | Hester Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Pasture 8 | 0.16 4 | (.06) | 381 8 | (1250) | 44 |
| 1-K-170 | Hester Creek (I) | Moderate-Low 6 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 0.3 4 | (.12) | 533.4 8 | (1750) | 40 |
| 1-L-171 | Bear Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture 8 | 3.5 4 | (1.35) | 1219.2 8 | (4000) | 40 |
| 1-L-172 | Prairie Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 1.27 4 | (.49) | 1295.4 8 | (4250) | 38 |
| 1-L-173 | Prairie Creek | Severe 12 | Moderate 8 | 1.0% 4 | Forest 4 | 10.18 4 | (3.93) | 76.2 4 | (250) | 36 |
| 1-L-174 | Prairie Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.7 4 | (.27) | 685.8 8 | (2250) | 40 |
| 1-L-175 | Little Vache Grasse Creek (I) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.16 4 | (.06) | 304.8 4 | (1000) | 34 |
| 1-L-176 | Little Vache Grasse Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 4.02 4 | (1.55) | 1600.2 12 | (5250) | 44 |
| 1-L-177 | Little Vache Grasse Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.34 4 | (.13) | 228.6 4 | (750) | 34 |
| 1-L-178 | Little Vache Grasse Creek (P) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Forest 4 | 3.27 4 | (1.26) | 228.6 4 | (750) | 34 |
| 1-L-179 | Little Vache Grasse Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.82 4 | (.32) | 609.6 8 | (2000) | 40 |
| 1-M-180 | Little Vache Grasse Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 1.96 4 | (.76) | 533.4 8 | (1750) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------------------|-----------------------|--------------------|-----------|----------------------------|-----------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 1-M-181 | Little Vache Grasse Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.24 4 | (2.02) | 3124.2 12 | (10250) | 42 |
| 1-M-182 | Arkansas River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.34 4 | (2.06) | 1295.4 8 | (4250) | 38 |
| 1-M-183 | Arkansas River | Moderate 8 | Slow 4 | 0.5% 4 | Forest 4 | 389928.45 12 | (150498.7) | 1295.4 8 | (4250) | 40 |
| 1-M-184 | Arkansas River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 62.51 8 | (24.13) | 1143 8 | (3750) | 44 |
| 1-N-185 | Arkansas River (I) | Severe 12 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 3.17 4 | (1.22) | 914.4 8 | (3000) | 46 |
| 1-N-186 | Mays Branch (P) | Severe 12 | Moderate 8 | 1.0% 4 | Agricultural-Pasture 10 | 4.71 4 | (1.82) | 762 8 | (2500) | 46 |
| 1-N-187 | Mays Branch (P) | Severe 12 | Moderate 8 | 1.0% 4 | Agricultural-Pasture 10 | 4.76 4 | (1.84) | 838.2 8 | (2750) | 46 |
| 1-N-188 | Mays Branch (P) | Severe 12 | Moderate 8 | 1.0% 4 | Agricultural-Pasture 10 | 4.78 4 | (1.85) | 914.4 8 | (3000) | 46 |
| 1-N-189 | Mays Branch | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Agricultural-Pasture 10 | 25.4 8 | (9.8) | 762 8 | (2500) | 48 |
| 1-N-190 | Mays Branch (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 1.19 4 | (.46) | 609.6 8 | (2000) | 38 |
| 1-N-191 | Mays Branch (I) | Severe 12 | Moderate 8 | 2.0% 4 | Pasture-Forest 6 | 0.36 4 | (.14) | 152.4 4 | (500) | 38 |
| 1-N-192 | Mays Branch (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture-Forest 6 | 0.57 4 | (.22) | 152.4 4 | (500) | 34 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|------------------|-----------------------|--------------------|------------|----------------------------|-------------------------------------|----------|------------------------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 1-N-193 | Frog Bayou | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture 8 | 303.04 12 | (116.96) | 5791.2 12 | (19000) | 52 |
| 1-N-194 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 303.04 12 | (116.96) | 6096 12 | (20000) | 50 |
| 1-N-195 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 303.04 12 | (116.96) | 6324.6 12 | (20750) | 50 |
| 1-N-196 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Agricultural-Pasture 10 | 1.69 4 | (.65) | 685.8 8 | (2250) | 42 |
| 1-N-197 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Agricultural-Pasture 10 | 1.51 4 | (.58) | 533.4 8 | (1750) | 42 |
| 1-N-198 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 0.54 4 | (.21) | 762 8 | (2500) | 44 |
| 1-N-199 | Frog Bayou (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 1.95 4 | (.75) | 457.2 8 | (1500) | 44 |
| 2-A-001 | Pepper Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Forest 4 | 0.55 4 | (.21) | 304.8 4 | (1000) | 38 |
| 2-A-002 | Pepper Creek | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 13.94 8 | (5.38) | 7848.6 12 | (25750) | 52 |
| 2-A-003 | Pepper Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.18 4 | (.07) | 381 8 | (1250) | 36 |
| 2-A-004 | Almond Creek (P) | Moderate 8 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 1.91 4 | (.74) | 457.2 8 | (1500) | 42 |
| 2-A-005 | Almond Creek (I) | Moderate 8 | Moderate 8 | 10.0% 8 | Forest 4 | 0.22 4 | (.09) | 152.4 4 | (500) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-------------------|----------------------|-------------|---------------------|-------------------------------------|--------|------------------------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 2-B-006 | Almond Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 1.55 4 | (.6) | 838.2 8 | (2750) | 44 |
| 2-B-007 | Almond Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 13.0% 12 | Forest 4 | 0.21 4 | (.08) | 533.4 8 | (1750) | 44 |
| 2-B-008 | Almond Creek (I) | Moderate 8 | Moderate 8 | 10.0% 8 | Forest 4 | 1.81 4 | (.7) | 228.6 4 | (750) | 36 |
| 2-B-009 | Almond Creek | Moderate-Low 6 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 3.39 4 | (1.31) | 1524 8 | (5000) | 44 |
| 2-B-010 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 5.82 4 | (2.24) | 1828.8 12 | (6000) | 44 |
| 2-B-011 | Carters Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 9.21 4 | (3.55) | 685.8 8 | (2250) | 40 |
| 2-B-012 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture 8 | 0.68 4 | (.26) | 609.6 8 | (2000) | 42 |
| 2-B-013 | Carters Creek | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 4.37 4 | (1.69) | 838.2 8 | (2750) | 40 |
| 2-B-014 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 0.52 4 | (.2) | 609.6 8 | (2000) | 38 |
| 2-B-015 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 2.16 4 | (.83) | 1905 12 | (6250) | 44 |
| 2-B-016 | Coon Creek | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 4.1 4 | (1.58) | 1371.6 8 | (4500) | 38 |
| 2-B-017 | Coon Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.93 4 | (.36) | 1447.8 8 | (4750) | 34 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-------------------|--------------------|------------|---------------------|-------------------------------------|--------|------------------------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 2-B-018 | Allen Branch | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 0.64 4 | (.25) | 685.8 8 | (2250) | 40 |
| 2-B-019 | Opossum Creek (P) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 0.79 4 | (.31) | 685.8 8 | (2250) | 40 |
| 2-B-020 | Opossum Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 0.62 4 | (.24) | 457.2 8 | (1500) | 40 |
| 2-B-021 | Opossum Creek | Moderate 8 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 1.8 4 | (.7) | 685.8 8 | (2250) | 42 |
| 2-B-022 | Opossum Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 1.46 4 | (.56) | 838.2 8 | (2750) | 36 |
| 2-B-023 | Opossum Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 0.98 4 | (.38) | 685.8 8 | (2250) | 36 |
| 2-B-024 | Cow Creek | Moderate-Low 6 | Moderate 8 | 10.0% 8 | Pasture-Forest 6 | 1.7 4 | (.66) | 762 8 | (2500) | 40 |
| 2-B-025 | Cow Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 0.51 4 | (.2) | 990.6 8 | (3250) | 38 |
| 2-B-026 | Pryor Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 0.89 4 | (.34) | 685.8 8 | (2250) | 38 |
| 2-B-027 | Pryor Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.5% 4 | Forest 4 | 0.43 4 | (.17) | 304.8 4 | (1000) | 28 |
| 2-B-028 | Pryor Creek (P) | Moderate 8 | Moderate 8 | 5.5% 8 | Forest 4 | 4.21 4 | (1.62) | 838.2 8 | (2750) | 40 |
| 2-B-029 | Pryor Creek (I) | Moderate-Low 6 | Moderate 8 | 9.0% 8 | Forest 4 | 0.28 4 | (.11) | 609.6 8 | (2000) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-------------------|--------------------|------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-B-030 | Pryor Creek | Moderate 8 | Moderate 8 | 10.0% 8 | Forest 4 | 2.84 4 | (1.1) | 1219.2 8 | (4000) | 40 |
| 2-C-031 | Caney Creek (I) | Moderate 8 | Moderate 8 | 7.0% 8 | Forest 4 | 0.75 4 | (.29) | 990.6 8 | (3250) | 40 |
| 2-C-032 | Caney Creek (P) | Moderate 8 | Moderate-Slow 6 | 7.0% 8 | Forest 4 | 1.64 4 | (.63) | 457.2 8 | (1500) | 38 |
| 2-C-033 | Caney Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 1.05 4 | (.41) | 914.4 8 | (3000) | 34 |
| 2-C-034 | Caney Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.28 4 | (.11) | 914.4 8 | (3000) | 34 |
| 2-C-035 | Caney Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.05 4 | (.02) | 304.8 4 | (1000) | 32 |
| 2-C-036 | Hickory Creek | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.17 4 | (.06) | 685.8 8 | (2250) | 34 |
| 2-C-037 | Hickory Creek (I) | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 0.29 4 | (.11) | 609.6 8 | (2000) | 36 |
| 2-C-038 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.55 4 | (.21) | 838.2 8 | (2750) | 36 |
| 2-C-039 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.32 4 | (.12) | 838.2 8 | (2750) | 34 |
| 2-C-040 | Barren Creek | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 10.9 4 | (4.21) | 762 8 | (2500) | 34 |
| 2-C-041 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 0.94 4 | (.36) | 609.6 8 | (2000) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | |
|---|-------------------|-------------------|--------------------|-----------|---------------------|-------------------------------------|------------------------------------|-----------|--|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | Crossing Distance Meters (Feet) | WQI Score | |
| 2-C-042 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.68 (0.26) 4 | 762 (2500) 8 | 36 | |
| 2-C-043 | Buffalo Creek | Moderate 8 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 18.39 (7.1) 8 | 1524 (5000) 8 | 46 | |
| 2-C-044 | Buffalo Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 2.08 (0.8) 4 | 533.4 (1750) 8 | 40 | |
| 2-C-045 | Buffalo Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.37 (0.53) 4 | 1295.4 (4250) 8 | 34 | |
| 2-C-046 | Dry Creek | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.29 (0.5) 4 | 609.6 (2000) 8 | 34 | |
| 2-C-047 | Sixmile Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.02 (0.01) 4 | 228.6 (750) 4 | 32 | |
| 2-C-048 | Sixmile Creek (I) | Moderate 8 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 0.37 (0.14) 4 | 990.6 (3250) 8 | 42 | |
| 2-C-049 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.25 (0.1) 4 | 304.8 (1000) 4 | 30 | |
| 2-C-050 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 2.73 (1.05) 4 | 533.4 (1750) 8 | 34 | |
| 2-C-051 | Sixmile Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.36 (0.14) 4 | 457.2 (1500) 8 | 36 | |
| 2-C-052 | Sixmile Creek | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 34.25 (13.22) 8 | 4495.8 (14750) 12 | 44 | |
| 2-C-053 | Mike Creek | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.51 (2.13) 4 | 3352.8 (11000) 12 | 40 | |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------|-------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-C-054 | Mike Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.57 4 | (.22) | 457.2 8 | (1500) | 34 |
| 2-C-055 | Mike Creek | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 4.69 4 | (1.81) | 1371.6 8 | (4500) | 36 |
| 2-C-056 | Mike Creek (I) | Moderate 8 | Moderate-Slow 6 | 6.0% 8 | Forest 4 | 0.2 4 | (.08) | 457.2 8 | (1500) | 38 |
| 2-C-057 | Joshling Creek | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 0.42 4 | (.16) | 685.8 8 | (2250) | 38 |
| 2-C-058 | Twomile Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.87 4 | (.33) | 838.2 8 | (2750) | 32 |
| 2-C-059 | Mill Creek | Moderate-Low 6 | Rapid-Moderate 10 | 10.5% 12 | Forest 4 | 4.71 4 | (1.82) | 762 8 | (2500) | 44 |
| 2-C-060 | Twomile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.19 4 | (.07) | 457.2 8 | (1500) | 36 |
| 2-C-061 | Twomile Creek | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 25.85 8 | (9.98) | 1371.6 8 | (4500) | 42 |
| 2-C-062 | Thompson Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 1.37 4 | (.53) | 1066.8 8 | (3500) | 38 |
| 2-C-063 | Thompson Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 1.38 4 | (.53) | 1447.8 8 | (4750) | 38 |
| 2-D-064 | McKinney Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.08 4 | (.42) | 685.8 8 | (2250) | 36 |
| 2-D-065 | McKinney Creek | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture 8 | 5.43 4 | (2.09) | 762 8 | (2500) | 42 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|---------------------|-------------------------------------|---------|------------------------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 2-D-066 | Rock Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 0.56 4 | (.22) | 914.4 8 | (3000) | 38 |
| 2-D-067 | Rock Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 1.18 4 | (.46) | 838.2 8 | (2750) | 34 |
| 2-D-068 | Prairie Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 2.47 4 | (.95) | 2514.6 12 | (8250) | 42 |
| 2-D-069 | Prairie Creek (P) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 10.96 4 | (4.23) | 762 8 | (2500) | 38 |
| 2-E-070 | Prairie Creek | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 21.61 8 | (8.34) | 1752.6 12 | (5750) | 44 |
| 2-E-071 | Prairie Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 1.28 4 | (.49) | 228.6 4 | (750) | 34 |
| 2-E-072 | Carter Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.56 4 | (.22) | 533.4 8 | (1750) | 38 |
| 2-E-073 | Prairie Creek (I) | Moderate 8 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 26.22 8 | (10.12) | 1371.6 8 | (4500) | 46 |
| 2-F-074 | Ouachita River (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 4.61 4 | (1.78) | 762 8 | (2500) | 36 |
| 2-F-075 | Ouachita River | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 92.22 12 | (35.59) | 2667 12 | (8750) | 48 |
| 2-F-076 | Lick Branch | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 1.42 4 | (.55) | 1371.6 8 | (4500) | 36 |
| 2-F-077 | Lick Branch | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.44 4 | (.17) | 457.2 8 | (1500) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-F-078 | Chances Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.21 4 | (.08) | 533.4 8 | (1750) | 36 |
| 2-G-079 | Gap Creek | Moderate 8 | Moderate 8 | 6.0% 8 | Forest 4 | 7.21 4 | (2.78) | 3505.2 12 | (11500) | 44 |
| 2-G-080 | Gap Creek | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 6.28 4 | (2.42) | 3352.8 12 | (11000) | 44 |
| 2-G-081 | Gap Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 0.27 4 | (.1) | 228.6 4 | (750) | 30 |
| 2-G-082 | Gap Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 0.81 4 | (.31) | 76.2 4 | (250) | 30 |
| 2-G-083 | Gap Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.39 4 | (.15) | 304.8 4 | (1000) | 30 |
| 2-G-084 | Cedar Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 13.0% 12 | Forest 4 | 0.46 4 | (.18) | 609.6 8 | (2000) | 44 |
| 2-G-085 | Cedar Creek (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 1.12 4 | (.43) | 1219.2 8 | (4000) | 34 |
| 2-G-086 | Cedar Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.17 4 | (.07) | 533.4 8 | (1750) | 36 |
| 2-G-087 | Cedar Creek (P) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 2.05 4 | (.79) | 609.6 8 | (2000) | 42 |
| 2-G-088 | Cedar Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 2.47 4 | (.95) | 685.8 8 | (2250) | 48 |
| 2-G-089 | Johnson Creek (P) | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 2.05 4 | (.79) | 381 8 | (1250) | 42 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------------|-----------------------|----------------------|-------------|---------------------|-------------------------------------|----------|------------------------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 2-G-090 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 1.74 4 | (.67) | 914.4 8 | (3000) | 48 |
| 2-G-091 | Johnson Creek (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 0.25 4 | (.1) | 533.4 8 | (1750) | 42 |
| 2-G-092 | Johnson Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 1.53 4 | (.59) | 685.8 8 | (2250) | 36 |
| 2-G-093 | Johnson Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Forest 4 | 1.91 4 | (.74) | 609.6 8 | (2000) | 48 |
| 2-G-094 | Johnson Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 15.0% 12 | Forest 4 | 0.34 4 | (.13) | 685.8 8 | (2250) | 48 |
| 2-G-095 | Johnson Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 0.15 4 | (.06) | 609.6 8 | (2000) | 44 |
| 2-H-096 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Pasture-Forest 6 | 6.76 4 | (2.61) | 457.2 8 | (1500) | 50 |
| 2-H-097 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Forest 4 | 1.44 4 | (.56) | 228.6 4 | (750) | 44 |
| 2-H-098 | Fourche LaFave River | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 336.41 12 | (129.84) | 11658.6 12 | (38250) | 48 |
| 2-H-099 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 9.0% 8 | Forest 4 | 0.21 4 | (.08) | 304.8 4 | (1000) | 38 |
| 2-H-100 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 0.6 4 | (.23) | 76.2 4 | (250) | 38 |
| 2-H-101 | Fourche LaFave River (P) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.44 4 | (.56) | 609.6 8 | (2000) | 44 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-H-102 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 0.28 4 | (.11) | 762 8 | (2500) | 42 |
| 2-H-103 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.2 4 | (.08) | 685.8 8 | (2250) | 38 |
| 2-H-104 | Northern Creek (I) | Severe 12 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 0.4 4 | (.15) | 76.2 4 | (250) | 38 |
| 2-H-105 | Northern Creek | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 9.11 4 | (3.51) | 685.8 8 | (2250) | 36 |
| 2-H-106 | Northern Creek (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.42 4 | (.16) | 381 8 | (1250) | 34 |
| 2-H-107 | Buffalo Creek | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 18.09 8 | (6.98) | 4495.8 12 | (14750) | 44 |
| 2-H-108 | Little Buffalo Creek | Moderate 8 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 10.84 4 | (4.18) | 1066.8 8 | (3500) | 46 |
| 2-H-109 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 2.17 4 | (.84) | 533.4 8 | (1750) | 48 |
| 2-H-110 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.55 4 | (.21) | 457.2 8 | (1500) | 48 |
| 2-H-111 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.17 4 | (.07) | 685.8 8 | (2250) | 48 |
| 2-H-112 | Ross Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.28 4 | (.11) | 685.8 8 | (2250) | 38 |
| 2-H-113 | Ross Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 26.12 8 | (10.08) | 1143 8 | (3750) | 42 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-H-114 | Ross Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 0.38 4 | (.15) | 457.2 8 | (1500) | 42 |
| 2-H-115 | Ross Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.26 4 | (.1) | 533.4 8 | (1750) | 36 |
| 2-H-116 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.16 4 | (.06) | 457.2 8 | (1500) | 36 |
| 2-I-117 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.28 4 | (.11) | 457.2 8 | (1500) | 36 |
| 2-I-118 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.17 4 | (.07) | 762 8 | (2500) | 38 |
| 2-I-119 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 14.12 8 | (5.45) | 609.6 8 | (2000) | 42 |
| 2-I-120 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.38 4 | (.15) | 228.6 4 | (750) | 38 |
| 2-I-121 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.38 4 | (.15) | 381 8 | (1250) | 42 |
| 2-I-122 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.5 4 | (.19) | 762 8 | (2500) | 40 |
| 2-I-123 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture 8 | 0.08 4 | (.03) | 228.6 4 | (750) | 36 |
| 2-I-124 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 0.35 4 | (.14) | 457.2 8 | (1500) | 40 |
| 2-I-125 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.21 4 | (.08) | 228.6 4 | (750) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-----------------------|-----------------------|--------------------|------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-I-126 | Poteau River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 3.91 4 | (1.51) | 1676.4 12 | (5500) | 44 |
| 2-I-127 | Poteau River | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 166.54 12 | (64.28) | 1524 8 | (5000) | 48 |
| 2-I-128 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.15 4 | (.06) | 304.8 4 | (1000) | 34 |
| 2-I-129 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.35 4 | (.14) | 381 8 | (1250) | 38 |
| 2-I-130 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.2 4 | (.08) | 457.2 8 | (1500) | 36 |
| 2-I-131 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.21 4 | (.08) | 381 8 | (1250) | 36 |
| 2-I-132 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 2.78 4 | (1.07) | 838.2 8 | (2750) | 42 |
| 2-I-133 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate 8 | 9.0% 8 | Forest 4 | 0.92 4 | (.35) | 914.4 8 | (3000) | 42 |
| 2-I-134 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Forest 4 | 1.23 4 | (.47) | 838.2 8 | (2750) | 42 |
| 2-I-135 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.11 4 | (.04) | 381 8 | (1250) | 36 |
| 2-I-136 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.5 4 | (.19) | 381 8 | (1250) | 38 |
| 2-I-137 | Packsaddle Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.56 4 | (.22) | 152.4 4 | (500) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|----------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-I-138 | Packsaddle Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 5.11 4 | (1.97) | 152.4 4 | (500) | 34 |
| 2-I-139 | Packsaddle Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture-Forest 6 | 0.8 4 | (.31) | 685.8 8 | (2250) | 38 |
| 2-J-140 | Old Freedom Creek | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 7.6 4 | (2.93) | 685.8 8 | (2250) | 48 |
| 2-J-141 | Brushy Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.13 4 | (.05) | 228.6 4 | (750) | 34 |
| 2-J-142 | Brushy Creek (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 10.02 4 | (3.87) | 1295.4 8 | (4250) | 40 |
| 2-J-143 | Brushy Creek | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.2 4 | (.08) | 304.8 4 | (1000) | 38 |
| 2-J-144 | Brushy Creek (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.45 4 | (.17) | 685.8 8 | (2250) | 36 |
| 2-J-145 | Kings Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 9.55 4 | (3.68) | 1143 8 | (3750) | 38 |
| 2-J-146 | Carnes Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 1.35 4 | (.52) | 609.6 8 | (2000) | 38 |
| 2-J-147 | Rock Creek | Severe-Moderate 10 | Rapid-Moderate 10 | 13.5% 12 | Pasture-Forest 6 | 45.26 8 | (17.47) | 1066.8 8 | (3500) | 54 |
| 2-J-148 | Pitit Jean Creek | Severe 12 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.58 4 | (.22) | 304.8 4 | (1000) | 36 |
| 2-J-149 | Pitit Jean Creek (I) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 0.28 4 | (.11) | 304.8 4 | (1000) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-J-150 | Coop Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.5% 4 | Pasture-Forest 6 | 0.19 | (.07) | 533.4 | (1750) | 38 |
| 2-J-151 | Coop Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.5% 4 | Pasture-Forest 6 | 0.29 | (.11) | 533.4 | (1750) | 38 |
| 2-J-152 | Cherokee Creek (P) | Severe-Moderate 10 | Moderate 8 | 5.5% 8 | Pasture 8 | 1.86 | (.72) | 685.8 | (2250) | 46 |
| 2-J-153 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 1.09 | (.42) | 1066.8 | (3500) | 40 |
| 2-J-154 | Cherokee Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.5% 4 | Pasture-Forest 6 | 0.77 | (.3) | 914.4 | (3000) | 36 |
| 2-J-155 | Cherokee Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.5% 4 | Pasture 8 | 0.66 | (.25) | 381 | (1250) | 38 |
| 2-J-156 | Old Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 6.71 | (2.59) | 1371.6 | (4500) | 40 |
| 2-J-157 | Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 40.78 | (15.74) | 838.2 | (2750) | 44 |
| 2-K-158 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 3.48 | (1.34) | 1447.8 | (4750) | 40 |
| 2-K-159 | Prairie Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.85 | (.33) | 609.6 | (2000) | 42 |
| 2-K-160 | Prairie Creek (I) | Severe 12 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 0.49 | (.19) | 609.6 | (2000) | 42 |
| 2-K-161 | Prairie Creek (I) | Severe 12 | Moderate 8 | 0.5% 4 | Pasture 8 | 0.3 | (.11) | 228.6 | (750) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-K-162 | Prairie Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 2.76 4 | (1.07) | 914.4 8 | (3000) | 40 |
| 2-K-163 | Prairie Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.82 4 | (.32) | 1371.6 8 | (4500) | 42 |
| 2-K-164 | Vineyard Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 2.33 4 | (.9) | 1143 8 | (3750) | 38 |
| 2-K-165 | Vineyard Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 1.32 4 | (.51) | 381 8 | (1250) | 40 |
| 2-K-166 | Adamson Creek | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 2.4 4 | (.92) | 762 8 | (2500) | 40 |
| 2-K-167 | Adamson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.65 4 | (.25) | 533.4 8 | (1750) | 38 |
| 2-K-168 | Adamson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.93 4 | (.36) | 1295.4 8 | (4250) | 38 |
| 2-K-169 | Hester Creek | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Pasture 8 | 2.46 4 | (.95) | 1828.8 12 | (6000) | 42 |
| 2-K-170 | Hester Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 0.3 4 | (.11) | 457.2 8 | (1500) | 44 |
| 2-K-171 | Hester Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 0.34 4 | (.13) | 685.8 8 | (2250) | 40 |
| 2-L-172 | Bear Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 3.7 4 | (1.43) | 1447.8 8 | (4750) | 36 |
| 2-L-173 | Prairie Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.49 4 | (.19) | 609.6 8 | (2000) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------------------|-----------------------|--------------------|-----------|---------------------|-----------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-L-174 | Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 9.58 4 | (3.7) | 1981.2 12 | (6500) | 44 |
| 2-L-175 | Little Vache Grasse Creek (I) | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Pasture 8 | 0.15 4 | (.06) | 381 8 | (1250) | 38 |
| 2-L-176 | Little Vache Grasse Creek (I) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.23 4 | (.09) | 152.4 4 | (500) | 34 |
| 2-L-177 | Little Vache Grasse Creek | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 3.76 4 | (1.45) | 1752.6 12 | (5750) | 42 |
| 2-L-178 | Little Vache Grasse Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.34 4 | (.13) | 152.4 4 | (500) | 34 |
| 2-L-179 | Little Vache Grasse Creek (P) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Forest 4 | 3.26 4 | (1.26) | 228.6 4 | (750) | 34 |
| 2-L-180 | Little Vache Grasse Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.78 4 | (.3) | 1143 8 | (3750) | 40 |
| 2-M-181 | Little Vache Grasse Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 1.93 4 | (.75) | 533.4 8 | (1750) | 40 |
| 2-M-182 | Little Vache Grasse Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.24 4 | (2.02) | 3124.2 12 | (10250) | 42 |
| 2-M-183 | Arkansas River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.59 4 | (2.16) | 1371.6 8 | (4500) | 38 |
| 2-M-184 | Arkansas River | Moderate 8 | Slow 4 | 0.5% 4 | Forest 4 | 389928.45 12 | (150498.7) | 1143 8 | (3750) | 40 |
| 2-M-185 | Arkansas River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 62.8 8 | (24.24) | 1295.4 8 | (4250) | 44 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|----------------------|-----------|----------------------------|---------------|-------------|-------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 2-N-186 | Arkansas River (I) | Severe 12 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 3.04 4 | (1.17) | 838.2 8 | (2750) | 46 |
| 2-N-187 | Mays Branch | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Agricultural-Pasture 10 | 25.73 8 | (9.93) | 1676.4 12 | (5500) | 52 |
| 2-N-188 | Mays Branch (I) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 0.72 4 | (.28) | 381 8 | (1250) | 40 |
| 2-N-189 | Mays Branch (I) | Severe 12 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 1.29 4 | (.5) | 457.2 8 | (1500) | 42 |
| 2-N-190 | Mays Branch (I) | Severe 12 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 1.01 4 | (.39) | 1295.4 8 | (4250) | 40 |
| 2-N-191 | Frog Bayou (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.92 4 | (.35) | 990.6 8 | (3250) | 40 |
| 2-N-192 | Prairie Branch | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture 8 | 5.69 4 | (2.2) | 457.2 8 | (1500) | 40 |
| 2-N-193 | Frog Bayou | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Agricultural-Pasture 10 | 303.04 12 | (116.96) | 4876.8 12 | (16000) | 54 |
| 2-N-194 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 0.54 4 | (.21) | 762 8 | (2500) | 44 |
| 2-N-195 | Frog Bayou (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 1.95 4 | (.75) | 457.2 8 | (1500) | 44 |
| 3-A-001 | Bear Creek (I) | Severe-Moderate 10 | Moderate 8 | 4.0% 4 | Forest 4 | 0.31 4 | (.12) | 381 8 | (1250) | 38 |
| 3-A-002 | Bear Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 6.0% 8 | Forest 4 | 2.44 4 | (.94) | 1828.8 12 | (6000) | 48 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------|-------------------|----------------------|-------------|-------------|---------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-A-003 | Bear Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 2.18 4 | (.84) | 1676.4 12 | (5500) | 44 |
| 3-A-004 | Bear Creek (I) | Moderate 8 | Moderate 8 | 10.0% 8 | Forest 4 | 0.27 4 | (.1) | 457.2 8 | (1500) | 40 |
| 3-A-005 | Bear Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 0.44 4 | (.17) | 457.2 8 | (1500) | 40 |
| 3-A-006 | Bear Creek (P) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 6.03 4 | (2.33) | 3886.2 12 | (12750) | 38 |
| 3-A-007 | Bear Creek (I) | Moderate 8 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 4.11 4 | (1.59) | 2514.6 12 | (8250) | 50 |
| 3-A-008 | Bear Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 2.21 4 | (.85) | 914.4 8 | (3000) | 34 |
| 3-A-009 | Cossatot River (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 0.47 4 | (.18) | 609.6 8 | (2000) | 40 |
| 3-A-010 | Cossatot River (I) | Moderate 8 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.35 4 | (.14) | 533.4 8 | (1750) | 46 |
| 3-A-011 | Almond Creek (P) | Moderate 8 | Moderate 8 | 10.0% 8 | Forest 4 | 2.57 4 | (.99) | 1143 8 | (3750) | 40 |
| 3-B-012 | Almond Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 1.8 4 | (.7) | 685.8 8 | (2250) | 44 |
| 3-B-013 | Almond Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 14.0% 12 | Forest 4 | 0.41 4 | (.16) | 762 8 | (2500) | 44 |
| 3-B-014 | Almond Creek | Moderate-Low 6 | Moderate 8 | 10.0% 8 | Forest 4 | 6.28 4 | (2.42) | 1981.2 12 | (6500) | 42 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-B-015 | Sycamore Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture 8 | 0.11 4 | (.04) | 762 8 | (2500) | 42 |
| 3-B-016 | Sycamore Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 0.5 4 | (.19) | 1828.8 12 | (6000) | 42 |
| 3-B-017 | Carters Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 6.43 4 | (2.48) | 304.8 4 | (1000) | 28 |
| 3-B-018 | Carters Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 9.52 4 | (3.68) | 685.8 8 | (2250) | 34 |
| 3-B-019 | Carters Creek | Moderate 8 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 5.09 4 | (1.96) | 1371.6 8 | (4500) | 42 |
| 3-B-020 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 0.34 4 | (.13) | 381 8 | (1250) | 40 |
| 3-B-021 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 10.0% 8 | Forest 4 | 0.38 4 | (.15) | 228.6 4 | (750) | 34 |
| 3-B-022 | Carters Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 15.0% 12 | Forest 4 | 2.56 4 | (.99) | 685.8 8 | (2250) | 44 |
| 3-B-023 | Coon Creek | Moderate-Low 6 | Rapid-Moderate 10 | 11.0% 12 | Pasture-Forest 6 | 1.54 4 | (.6) | 1371.6 8 | (4500) | 46 |
| 3-B-024 | Coon Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 2.46 4 | (.95) | 152.4 4 | (500) | 34 |
| 3-B-025 | Coon Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.23 4 | (.09) | 609.6 8 | (2000) | 34 |
| 3-B-026 | Allen Branch | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 1.41 4 | (.54) | 1371.6 8 | (4500) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-------------------|--------------------|------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-B-027 | Opossum Creek (P) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.48 4 | (.57) | 762 8 | (2500) | 40 |
| 3-B-028 | Opossum Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 0.39 4 | (.15) | 685.8 8 | (2250) | 38 |
| 3-B-029 | Opossum Creek (I) | Moderate 8 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.02 4 | (.4) | 152.4 4 | (500) | 38 |
| 3-B-030 | Opossum Creek | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 2.23 4 | (.86) | 304.8 4 | (1000) | 36 |
| 3-B-031 | Opossum Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 2.13 4 | (.82) | 762 8 | (2500) | 36 |
| 3-B-032 | Opossum Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 1.49 4 | (.58) | 990.6 8 | (3250) | 36 |
| 3-B-033 | Cow Creek | Moderate-Low 6 | Moderate 8 | 10.0% 8 | Pasture-Forest 6 | 2.15 4 | (.83) | 457.2 8 | (1500) | 40 |
| 3-B-034 | Cow Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 3.72 4 | (1.44) | 533.4 8 | (1750) | 38 |
| 3-B-035 | Cow Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.51 4 | (.2) | 914.4 8 | (3000) | 32 |
| 3-B-036 | Pryor Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 6.11 4 | (2.36) | 1905 12 | (6250) | 42 |
| 3-B-037 | Pryor Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 0.38 4 | (.15) | 533.4 8 | (1750) | 38 |
| 3-B-038 | Pryor Creek | Moderate 8 | Moderate 8 | 9.0% 8 | Forest 4 | 3.01 4 | (1.16) | 1219.2 8 | (4000) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-C-039 | Caney Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.15 4 | (.06) | 685.8 8 | (2250) | 32 |
| 3-C-040 | Caney Creek | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 1.65 4 | (.64) | 228.6 4 | (750) | 30 |
| 3-C-041 | Caney Creek (I) | Moderate 8 | Moderate-Slow 6 | 7.0% 8 | Pasture-Forest 6 | 1.09 4 | (.42) | 609.6 8 | (2000) | 40 |
| 3-C-042 | Flat Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.24 4 | (.09) | 533.4 8 | (1750) | 32 |
| 3-C-043 | Flat Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 1.36 4 | (.53) | 609.6 8 | (2000) | 32 |
| 3-C-044 | Flat Creek | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.89 4 | (.73) | 990.6 8 | (3250) | 40 |
| 3-C-045 | Barren Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 3.48 4 | (1.34) | 1600.2 12 | (5250) | 44 |
| 3-C-046 | Buffalo Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 1.25 4 | (.48) | 762 8 | (2500) | 32 |
| 3-C-047 | Buffalo Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.16 4 | (.06) | 152.4 4 | (500) | 30 |
| 3-C-048 | Buffalo Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.96 4 | (.37) | 609.6 8 | (2000) | 36 |
| 3-C-049 | Buffalo Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.59 4 | (.23) | 609.6 8 | (2000) | 36 |
| 3-C-050 | Buffalo Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.28 4 | (.5) | 1219.2 8 | (4000) | 34 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-C-051 | Sixmile Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 1.01 4 | (.39) | 533.4 8 | (1750) | 44 |
| 3-C-052 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.13 4 | (.05) | 304.8 4 | (1000) | 28 |
| 3-C-053 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.43 4 | (.17) | 685.8 8 | (2250) | 32 |
| 3-C-054 | Sixmile Creek | Moderate 8 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 7.66 4 | (2.96) | 228.6 4 | (750) | 38 |
| 3-C-055 | Sixmile Creek (P) | Moderate 8 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 5.58 4 | (2.15) | 304.8 4 | (1000) | 38 |
| 3-C-056 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.14 4 | (.05) | 457.2 8 | (1500) | 34 |
| 3-C-057 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.45 4 | (.17) | 533.4 8 | (1750) | 32 |
| 3-C-058 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.32 4 | (.12) | 609.6 8 | (2000) | 32 |
| 3-C-059 | Mike Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 0.53 4 | (.2) | 381 8 | (1250) | 38 |
| 3-C-060 | Mike Creek (I) | Moderate 8 | Moderate-Slow 6 | 6.0% 8 | Forest 4 | 0.83 4 | (.32) | 228.6 4 | (750) | 34 |
| 3-C-061 | Mike Creek (I) | Moderate 8 | Moderate-Slow 6 | 6.0% 8 | Forest 4 | 0.37 4 | (.14) | 381 8 | (1250) | 38 |
| 3-C-062 | Twomile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 0.26 4 | (.1) | 762 8 | (2500) | 32 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-C-063 | Mill Creek | Moderate 8 | Moderate 8 | 9.0% 8 | Forest 4 | 4.35 4 | (1.68) | 609.6 8 | (2000) | 40 |
| 3-C-064 | Twomile Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 0.3 4 | (.11) | 457.2 8 | (1500) | 38 |
| 3-C-065 | Twomile Creek | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 24.65 8 | (9.51) | 1447.8 8 | (4750) | 36 |
| 3-C-066 | Thompson Creek (P) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 1.35 4 | (.52) | 762 8 | (2500) | 38 |
| 3-C-067 | Thompson Creek (I) | Moderate 8 | Moderate 8 | 10.0% 8 | Forest 4 | 0.56 4 | (.22) | 1447.8 8 | (4750) | 40 |
| 3-D-068 | McKinney Creek (P) | Moderate-Low 6 | Moderate 8 | 9.0% 8 | Forest 4 | 1.7 4 | (.66) | 685.8 8 | (2250) | 38 |
| 3-D-069 | Dallas Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 0.41 4 | (.16) | 228.6 4 | (750) | 34 |
| 3-D-070 | Dallas Creek (I) | Moderate 8 | Rapid-Moderate 10 | 22.0% 12 | Forest 4 | 0.85 4 | (.33) | 1295.4 8 | (4250) | 46 |
| 3-D-071 | Dallas Creek (I) | Severe 12 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.16 4 | (.06) | 304.8 4 | (1000) | 34 |
| 3-D-072 | Carter Creek (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 1.64 4 | (.63) | 457.2 8 | (1500) | 42 |
| 3-D-073 | Carter Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 2.09 4 | (.81) | 762 8 | (2500) | 38 |
| 3-D-074 | Carter Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.62 4 | (.24) | 304.8 4 | (1000) | 34 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-D-075 | Carter Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 0.19 4 | (.07) | 990.6 8 | (3250) | 44 |
| 3-D-076 | Carter Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.26 4 | (.1) | 76.2 4 | (250) | 34 |
| 3-D-077 | Carter Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.56 4 | (.22) | 914.4 8 | (3000) | 36 |
| 3-D-078 | Carter Creek (P) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 2.07 4 | (.8) | 152.4 4 | (500) | 40 |
| 3-D-079 | Carter Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.51 4 | (.2) | 381 8 | (1250) | 36 |
| 3-E-080 | Carter Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 16.65 8 | (6.42) | 838.2 8 | (2750) | 44 |
| 3-E-081 | Carter Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 1.6 4 | (.62) | 914.4 8 | (3000) | 34 |
| 3-E-082 | Carter Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.14 4 | (.44) | 1143 8 | (3750) | 38 |
| 3-E-083 | Prairie Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 29.23 8 | (11.28) | 990.6 8 | (3250) | 40 |
| 3-F-084 | Ouachita River (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 4.61 4 | (1.78) | 762 8 | (2500) | 36 |
| 3-F-085 | Ouachita River | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 92.22 12 | (35.59) | 2667 12 | (8750) | 48 |
| 3-F-086 | Lick Branch | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 1.19 4 | (.46) | 1066.8 8 | (3500) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|-------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-F-087 | Lick Branch | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.86 4 | (.33) | 762 8 | (2500) | 38 |
| 3-F-088 | Chances Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.32 4 | (.12) | 533.4 8 | (1750) | 36 |
| 3-G-089 | Chances Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.37 4 | (.14) | 457.2 8 | (1500) | 36 |
| 3-G-090 | Gap Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.79 4 | (.3) | 76.2 4 | (250) | 32 |
| 3-G-091 | Gap Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 2.69 4 | (1.04) | 2362.2 12 | (7750) | 40 |
| 3-G-092 | Cedar Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 0.51 4 | (.2) | 609.6 8 | (2000) | 36 |
| 3-G-093 | Cedar Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.69 4 | (.27) | 152.4 4 | (500) | 32 |
| 3-G-094 | Cedar Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 0.66 4 | (.25) | 152.4 4 | (500) | 38 |
| 3-G-095 | Cedar Creek (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 0.73 4 | (.28) | 685.8 8 | (2250) | 42 |
| 3-G-096 | Cedar Creek (I) | Severe-Moderate 10 | Slow 4 | 5.0% 4 | Forest 4 | 2.42 4 | (.94) | 228.6 4 | (750) | 30 |
| 3-G-097 | Cedar Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 7.15 4 | (2.76) | 2895.6 12 | (9500) | 40 |
| 3-G-098 | Cedar Creek | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 7.81 4 | (3.01) | 4038.6 12 | (13250) | 52 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-G-099 | Cedar Creek | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 8.04 4 | (3.1) | 4419.6 12 | (14500) | 46 |
| 3-G-100 | Cedar Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 11.32 4 | (4.37) | 5638.8 12 | (18500) | 40 |
| 3-G-101 | Cedar Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 16.24 8 | (6.27) | 6400.8 12 | (21000) | 44 |
| 3-G-102 | Cedar Creek (P) | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Forest 4 | 5.32 4 | (2.05) | 762 8 | (2500) | 34 |
| 3-G-103 | Johnson Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 1.32 4 | (.51) | 381 8 | (1250) | 34 |
| 3-G-104 | Johnson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.34 4 | (.13) | 381 8 | (1250) | 36 |
| 3-G-105 | Johnson Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 2.47 4 | (.95) | 533.4 8 | (1750) | 38 |
| 3-G-106 | Johnson Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.35 4 | (.13) | 685.8 8 | (2250) | 38 |
| 3-G-107 | Johnson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.11 4 | (.04) | 304.8 4 | (1000) | 34 |
| 3-G-108 | Johnson Creek (P) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 2.07 4 | (.8) | 228.6 4 | (750) | 30 |
| 3-G-109 | Johnson Creek (I) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.42 4 | (.16) | 76.2 4 | (250) | 30 |
| 3-G-110 | Johnson Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 1.83 4 | (.7) | 457.2 8 | (1500) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-G-111 | Johnson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 2.09 4 | (.81) | 914.4 8 | (3000) | 36 |
| 3-G-112 | Johnson Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 0.24 4 | (.09) | 304.8 4 | (1000) | 44 |
| 3-G-113 | Johnson Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 15.0% 12 | Forest 4 | 0.49 4 | (.19) | 685.8 8 | (2250) | 48 |
| 3-G-114 | Johnson Creek (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 0.21 4 | (.08) | 533.4 8 | (1750) | 44 |
| 3-H-115 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Pasture-Forest 6 | 6.76 4 | (2.61) | 457.2 8 | (1500) | 50 |
| 3-H-116 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Forest 4 | 1.44 4 | (.56) | 228.6 4 | (750) | 44 |
| 3-H-117 | Fourche LaFave River | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 336.41 12 | (129.84) | 15392.4 12 | (50500) | 48 |
| 3-H-118 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 9.0% 8 | Forest 4 | 0.21 4 | (.08) | 304.8 4 | (1000) | 38 |
| 3-H-119 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 0.6 4 | (.23) | 76.2 4 | (250) | 38 |
| 3-H-120 | Fourche LaFave River (P) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.44 4 | (.56) | 609.6 8 | (2000) | 44 |
| 3-H-121 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 0.28 4 | (.11) | 762 8 | (2500) | 42 |
| 3-H-122 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.2 4 | (.08) | 685.8 8 | (2250) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-H-123 | Northern Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.38 4 | (.15) | 152.4 4 | (500) | 34 |
| 3-H-124 | Northern Creek (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.16 4 | (.06) | 152.4 4 | (500) | 38 |
| 3-H-125 | Northern Creek | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 7.53 4 | (2.91) | 533.4 8 | (1750) | 38 |
| 3-H-126 | Buffalo Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.18 4 | (.07) | 76.2 4 | (250) | 34 |
| 3-H-127 | Buffalo Creek | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 14.83 8 | (5.72) | 457.2 8 | (1500) | 40 |
| 3-H-128 | Turkey Creek | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 1.87 4 | (.72) | 152.4 4 | (500) | 38 |
| 3-H-129 | Turkey Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.53 4 | (.21) | 304.8 4 | (1000) | 32 |
| 3-H-130 | Turkey Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Forest 4 | 0.21 4 | (.08) | 533.4 8 | (1750) | 42 |
| 3-H-131 | Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.11 4 | (.04) | 381 8 | (1250) | 48 |
| 3-H-132 | Ross Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 0.44 4 | (.17) | 609.6 8 | (2000) | 48 |
| 3-H-133 | Ross Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 27.69 8 | (10.69) | 1066.8 8 | (3500) | 42 |
| 3-H-134 | Ross Creek (I) | Severe-Moderate 10 | Moderate 8 | 9.0% 8 | Forest 4 | 0.08 4 | (.03) | 381 8 | (1250) | 42 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-H-135 | Ross Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 0.15 4 | (.06) | 533.4 8 | (1750) | 42 |
| 3-H-136 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.32 4 | (.12) | 228.6 4 | (750) | 32 |
| 3-I-137 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.38 4 | (.15) | 533.4 8 | (1750) | 36 |
| 3-I-138 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.17 4 | (.07) | 762 8 | (2500) | 38 |
| 3-I-139 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 14.12 8 | (5.45) | 609.6 8 | (2000) | 42 |
| 3-I-140 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.38 4 | (.15) | 228.6 4 | (750) | 38 |
| 3-I-141 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.38 4 | (.15) | 381 8 | (1250) | 42 |
| 3-I-142 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.5 4 | (.19) | 762 8 | (2500) | 40 |
| 3-I-143 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture 8 | 0.08 4 | (.03) | 228.6 4 | (750) | 36 |
| 3-I-144 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 0.35 4 | (.14) | 533.4 8 | (1750) | 40 |
| 3-I-145 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.28 4 | (.11) | 762 8 | (2500) | 40 |
| 3-I-146 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.37 4 | (.14) | 533.4 8 | (1750) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-----------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-I-147 | Poteau River (P) | Severe 12 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 4.02 4 | (1.55) | 685.8 8 | (2250) | 42 |
| 3-I-148 | Poteau River | Severe 12 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 121.73 12 | (46.98) | 990.6 8 | (3250) | 50 |
| 3-I-149 | Square Rock Creek | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 44.39 8 | (17.13) | 2743.2 12 | (9000) | 48 |
| 3-I-150 | Square Rock Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.32 4 | (.12) | 381 8 | (1250) | 38 |
| 3-I-151 | Square Rock Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 0.45 4 | (.17) | 304.8 4 | (1000) | 34 |
| 3-I-152 | Square Rock Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.7 4 | (.27) | 381 8 | (1250) | 38 |
| 3-I-153 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.83 4 | (.32) | 304.8 4 | (1000) | 32 |
| 3-I-154 | Square Rock Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 3.1 4 | (1.2) | 762 8 | (2500) | 48 |
| 3-I-155 | Packsaddle Creek (P) | Severe-Moderate 10 | Moderate 8 | 5.5% 8 | Forest 4 | 1.21 4 | (.47) | 914.4 8 | (3000) | 42 |
| 3-I-156 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 1.37 4 | (.53) | 762 8 | (2500) | 42 |
| 3-I-157 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.15 4 | (.06) | 381 8 | (1250) | 38 |
| 3-I-158 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.54 4 | (.21) | 381 8 | (1250) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|----------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-I-159 | Packsaddle Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.55 4 | (.21) | 76.2 4 | (250) | 36 |
| 3-I-160 | Packsaddle Creek (P) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 5.12 4 | (1.97) | 152.4 4 | (500) | 36 |
| 3-I-161 | Packsaddle Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture-Forest 6 | 0.83 4 | (.32) | 685.8 8 | (2250) | 38 |
| 3-J-162 | Old Freedom Creek | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 7.6 4 | (2.93) | 685.8 8 | (2250) | 48 |
| 3-J-163 | Brushy Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.13 4 | (.05) | 228.6 4 | (750) | 34 |
| 3-J-164 | Brushy Creek (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 10.02 4 | (3.87) | 1295.4 8 | (4250) | 40 |
| 3-J-165 | Brushy Creek | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.2 4 | (.08) | 304.8 4 | (1000) | 38 |
| 3-J-166 | Kings Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 9.81 4 | (3.78) | 990.6 8 | (3250) | 38 |
| 3-J-167 | Carnes Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 0.08 4 | (.03) | 152.4 4 | (500) | 34 |
| 3-J-168 | Carnes Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 3.02 4 | (1.17) | 838.2 8 | (2750) | 38 |
| 3-J-169 | Rock Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 45.67 8 | (17.63) | 762 8 | (2500) | 42 |
| 3-J-170 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 1.38 4 | (.53) | 228.6 4 | (750) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|---------------------|-------------------------------------|---------|------------------------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 3-J-171 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Forest 4 | 0.62 4 | (.24) | 1143 8 | (3750) | 36 |
| 3-J-172 | Rock Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.23 4 | (.09) | 76.2 4 | (250) | 36 |
| 3-J-173 | Rock Creek (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.75 4 | (.68) | 228.6 4 | (750) | 36 |
| 3-J-174 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.5% 4 | Pasture-Forest 6 | 0.36 4 | (.14) | 381 8 | (1250) | 38 |
| 3-J-175 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate 8 | 5.5% 8 | Pasture 8 | 1.28 4 | (.49) | 457.2 8 | (1500) | 46 |
| 3-J-176 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.23 4 | (.09) | 685.8 8 | (2250) | 38 |
| 3-J-177 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.5% 4 | Pasture-Forest 6 | 0.2 4 | (.08) | 609.6 8 | (2000) | 38 |
| 3-J-178 | Cherokee Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 0.4 4 | (.16) | 990.6 8 | (3250) | 38 |
| 3-J-179 | Cherokee Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 0.32 4 | (.12) | 304.8 4 | (1000) | 34 |
| 3-J-180 | Old Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.5% 4 | Pasture 8 | 6.63 4 | (2.56) | 762 8 | (2500) | 40 |
| 3-J-181 | Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 40.78 8 | (15.74) | 838.2 8 | (2750) | 44 |
| 3-K-182 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 3.48 4 | (1.34) | 1447.8 8 | (4750) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|---------|--------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-K-183 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 4.16 4 | (1.61) | 1143 8 | (3750) | 40 |
| 3-K-184 | Prairie Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 2.85 4 | (1.1) | 1447.8 8 | (4750) | 40 |
| 3-K-185 | Vineyard Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.92 4 | (.36) | 1219.2 8 | (4000) | 38 |
| 3-K-186 | Adamson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.19 4 | (.07) | 762 8 | (2500) | 38 |
| 3-K-187 | Elder Branch (I) | Moderate-Low 6 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.53 4 | (.2) | 609.6 8 | (2000) | 36 |
| 3-K-188 | Elder Branch (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.73 4 | (.28) | 609.6 8 | (2000) | 36 |
| 3-K-189 | Elder Branch (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.74 4 | (.28) | 609.6 8 | (2000) | 38 |
| 3-K-190 | Elder Branch (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.65 4 | (.25) | 838.2 8 | (2750) | 36 |
| 3-K-191 | Hester Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Pasture 8 | 0.32 4 | (.12) | 457.2 8 | (1500) | 44 |
| 3-L-192 | Bear Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 4.12 4 | (1.59) | 1143 8 | (3750) | 40 |
| 3-L-193 | Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 13.14 8 | (5.07) | 2057.4 12 | (6750) | 46 |
| 3-L-194 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.72 4 | (.28) | 381 8 | (1250) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------------------|-----------------------|--------------------|-----------|---------------------|-------------------------------------|------------|------------------------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| 3-L-195 | Prairie Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 0.34 4 | (.13) | 1143 8 | (3750) | 40 |
| 3-L-196 | Little Vache Grasse Creek | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 4.47 4 | (1.73) | 2133.6 12 | (7000) | 42 |
| 3-L-197 | Little Vache Grasse Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.31 4 | (.12) | 228.6 4 | (750) | 34 |
| 3-L-198 | Little Vache Grasse Creek (P) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Forest 4 | 3.2 4 | (1.24) | 304.8 4 | (1000) | 34 |
| 3-L-199 | Little Vache Grasse Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.72 4 | (.28) | 685.8 8 | (2250) | 40 |
| 3-M-200 | Little Vache Grasse Creek (P) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 1.91 4 | (.74) | 533.4 8 | (1750) | 42 |
| 3-M-201 | Little Vache Grasse Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.24 4 | (2.02) | 3124.2 12 | (10250) | 42 |
| 3-M-202 | Arkansas River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.85 4 | (2.26) | 1371.6 8 | (4500) | 38 |
| 3-M-203 | Arkansas River | Moderate 8 | Slow 4 | 0.5% 4 | Forest 4 | 389928.45 12 | (150498.7) | 1524 8 | (5000) | 40 |
| 3-M-204 | Arkansas River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 63.05 8 | (24.34) | 1143 8 | (3750) | 44 |
| 3-N-205 | Arkansas River (I) | Severe 12 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 2.63 4 | (1.02) | 990.6 8 | (3250) | 46 |
| 3-N-206 | Arkansas River (P) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Agricultural 12 | 2.3 4 | (.89) | 762 8 | (2500) | 46 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|----------------------------|---------------|-------------|-------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| 3-N-207 | Mays Branch (P) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Agricultural-Pasture 10 | 4.78 4 | (1.84) | 533.4 8 | (1750) | 44 |
| 3-N-208 | Mays Branch (I) | Severe 12 | Moderate-Slow 6 | 2.5% 4 | Pasture-Forest 6 | 1.51 4 | (.58) | 762 8 | (2500) | 40 |
| 3-N-209 | Mays Branch (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture 8 | 0.29 4 | (.11) | 762 8 | (2500) | 40 |
| 3-N-210 | Frog Bayou (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.82 4 | (.32) | 914.4 8 | (3000) | 38 |
| 3-N-211 | Frog Bayou | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 303.04 12 | (116.96) | 6019.8 12 | (19750) | 50 |
| 3-N-212 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Agricultural-Pasture 10 | 1.69 4 | (.65) | 685.8 8 | (2250) | 42 |
| 3-N-213 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Agricultural-Pasture 10 | 1.51 4 | (.58) | 533.4 8 | (1750) | 42 |
| 3-N-214 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 0.54 4 | (.21) | 762 8 | (2500) | 44 |
| 3-N-215 | Frog Bayou (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 1.95 4 | (.75) | 457.2 8 | (1500) | 44 |
| P1-E-067 | Ward Creek | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 11.59 4 | (4.48) | 685.8 8 | (2250) | 38 |
| P1-E-068 | Brier Creek | Moderate 8 | Moderate 8 | 6.0% 8 | Forest 4 | 9.98 4 | (3.85) | 1752.6 12 | (5750) | 44 |
| P1-F-069 | Ouachita River (P) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 2.6 4 | (1) | 1066.8 8 | (3500) | 34 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|----------------------|-----------------------|----------------------|-------------|---------------------|-------------------------------------|----------|------------------------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| P1-F-070 | Ouachita River (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.73 4 | (.28) | 685.8 8 | (2250) | 36 |
| P1-F-071 | Ouachita River | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 68.66 8 | (26.5) | 1066.8 8 | (3500) | 42 |
| P1-F-072 | Ouachita River (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.18 4 | (.45) | 762 8 | (2500) | 36 |
| P1-F-073 | Chances Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 2.48 4 | (.96) | 381 8 | (1250) | 36 |
| P1-F-074 | Chances Creek (P) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 6.76 4 | (2.61) | 381 8 | (1250) | 36 |
| P1-F-075 | Chances Creek | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 7.09 4 | (2.74) | 2286 12 | (7500) | 40 |
| P1-F-076 | Lick Branch | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 1.25 4 | (.48) | 1219.2 8 | (4000) | 36 |
| P1-F-077 | Lick Branch | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.72 4 | (.28) | 685.8 8 | (2250) | 38 |
| P1-F-078 | Chances Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.25 4 | (.1) | 533.4 8 | (1750) | 36 |
| P1-H-096 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Pasture-Forest 6 | 6.76 4 | (2.61) | 457.2 8 | (1500) | 50 |
| P1-H-097 | Johnson Creek (P) | Severe-Moderate 10 | Rapid-Moderate 10 | 13.0% 12 | Forest 4 | 1.44 4 | (.56) | 228.6 4 | (750) | 44 |
| P1-H-098 | Fourche LaFave River | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 336.41 12 | (129.84) | 11658.6 12 | (38250) | 48 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|----------|--------------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P1-H-099 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 9.0% 8 | Forest 4 | 0.21 4 | (.08) | 304.8 4 | (1000) | 38 |
| P1-H-100 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 0.6 4 | (.23) | 76.2 4 | (250) | 38 |
| P1-H-101 | Fourche LaFave River (P) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.44 4 | (.56) | 609.6 8 | (2000) | 44 |
| P1-H-102 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 0.28 4 | (.11) | 762 8 | (2500) | 42 |
| P1-H-103 | Fourche LaFave River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.2 4 | (.08) | 685.8 8 | (2250) | 38 |
| P1-H-104 | Northern Creek (I) | Severe 12 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 0.4 4 | (.15) | 76.2 4 | (250) | 38 |
| P1-H-105 | Northern Creek | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 9.11 4 | (3.51) | 685.8 8 | (2250) | 36 |
| P1-H-106 | Northern Creek (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.42 4 | (.16) | 381 8 | (1250) | 34 |
| P1-H-107 | Buffalo Creek | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 18.09 8 | (6.98) | 4495.8 12 | (14750) | 44 |
| P1-H-108 | Little Buffalo Creek | Moderate 8 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 10.84 4 | (4.18) | 1066.8 8 | (3500) | 46 |
| P1-H-109 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 2.17 4 | (.84) | 533.4 8 | (1750) | 48 |
| P1-H-110 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.55 4 | (.21) | 457.2 8 | (1500) | 48 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------------------|-----------------------|----------------------|-------------|---------------------|-------------------------------------|---------|------------------------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| P1-H-111 | Little Buffalo Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.17 4 | (.07) | 685.8 8 | (2250) | 48 |
| P1-H-112 | Ross Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.28 4 | (.11) | 685.8 8 | (2250) | 38 |
| P1-H-113 | Ross Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 26.12 8 | (10.08) | 1143 8 | (3750) | 42 |
| P1-H-114 | Ross Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 0.38 4 | (.15) | 457.2 8 | (1500) | 42 |
| P1-H-115 | Ross Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.26 4 | (.1) | 533.4 8 | (1750) | 36 |
| P1-H-116 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.16 4 | (.06) | 457.2 8 | (1500) | 36 |
| P1-L-171 | Bear Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture 8 | 3.5 4 | (1.35) | 1219.2 8 | (4000) | 40 |
| P1-L-172 | Prairie Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 1.27 4 | (.49) | 1295.4 8 | (4250) | 38 |
| P1-L-173 | Prairie Creek | Severe 12 | Moderate 8 | 1.0% 4 | Forest 4 | 10.18 4 | (3.93) | 76.2 4 | (250) | 36 |
| P1-L-174 | Prairie Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.7 4 | (.27) | 685.8 8 | (2250) | 40 |
| P1-L-175 | Little Vache Grasse Creek (I) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.16 4 | (.06) | 304.8 4 | (1000) | 34 |
| P1-L-176 | Little Vache Grasse Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 4.02 4 | (1.55) | 1600.2 12 | (5250) | 44 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------------------|-------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P1-L-177 | Little Vache Grasse Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.34 4 | (.13) | 228.6 4 | (750) | 34 |
| P1-L-178 | Little Vache Grasse Creek (P) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Forest 4 | 3.27 4 | (1.26) | 228.6 4 | (750) | 34 |
| P1-L-179 | Little Vache Grasse Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.82 4 | (.32) | 609.6 8 | (2000) | 40 |
| P2-C-031 | Caney Creek (I) | Moderate 8 | Moderate 8 | 7.0% 8 | Forest 4 | 0.75 4 | (.29) | 990.6 8 | (3250) | 40 |
| P2-C-032 | Caney Creek (P) | Moderate 8 | Moderate-Slow 6 | 7.0% 8 | Forest 4 | 1.64 4 | (.63) | 457.2 8 | (1500) | 38 |
| P2-C-033 | Caney Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 1.05 4 | (.41) | 914.4 8 | (3000) | 34 |
| P2-C-034 | Caney Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.28 4 | (.11) | 914.4 8 | (3000) | 34 |
| P2-C-035 | Caney Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.05 4 | (.02) | 304.8 4 | (1000) | 32 |
| P2-C-036 | Hickory Creek | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.17 4 | (.06) | 685.8 8 | (2250) | 34 |
| P2-C-037 | Hickory Creek (I) | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 0.29 4 | (.11) | 609.6 8 | (2000) | 36 |
| P2-C-038 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.55 4 | (.21) | 838.2 8 | (2750) | 36 |
| P2-C-039 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.32 4 | (.12) | 838.2 8 | (2750) | 34 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P2-C-040 | Barren Creek | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 10.9 4 | (4.21) | 762 8 | (2500) | 34 |
| P2-C-041 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 0.94 4 | (.36) | 609.6 8 | (2000) | 36 |
| P2-C-042 | Barren Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.68 4 | (.26) | 762 8 | (2500) | 36 |
| P2-C-043 | Buffalo Creek | Moderate 8 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 18.39 8 | (7.1) | 1524 8 | (5000) | 46 |
| P2-C-044 | Buffalo Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 2.08 4 | (.8) | 533.4 8 | (1750) | 40 |
| P2-C-045 | Buffalo Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.37 4 | (.53) | 1295.4 8 | (4250) | 34 |
| P2-C-046 | Dry Creek | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.29 4 | (.5) | 609.6 8 | (2000) | 34 |
| P2-C-047 | Sixmile Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.02 4 | (.01) | 228.6 4 | (750) | 32 |
| P2-C-048 | Sixmile Creek (I) | Moderate 8 | Moderate 8 | 7.0% 8 | Pasture-Forest 6 | 0.37 4 | (.14) | 990.6 8 | (3250) | 42 |
| P2-C-049 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.25 4 | (.1) | 304.8 4 | (1000) | 30 |
| P2-C-050 | Sixmile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 2.73 4 | (1.05) | 533.4 8 | (1750) | 34 |
| P2-C-051 | Sixmile Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.36 4 | (.14) | 457.2 8 | (1500) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|----------|--------------------|-------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P2-C-052 | Sixmile Creek | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 34.25 8 | (13.22) | 4495.8 12 | (14750) | 44 |
| P2-C-053 | Mike Creek | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.51 4 | (2.13) | 3352.8 12 | (11000) | 40 |
| P2-C-054 | Mike Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.57 4 | (.22) | 457.2 8 | (1500) | 34 |
| P2-C-055 | Mike Creek | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 4.69 4 | (1.81) | 1371.6 8 | (4500) | 36 |
| P2-C-056 | Mike Creek (I) | Moderate 8 | Moderate-Slow 6 | 6.0% 8 | Forest 4 | 0.2 4 | (.08) | 457.2 8 | (1500) | 38 |
| P2-C-057 | Joshling Creek | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 0.42 4 | (.16) | 685.8 8 | (2250) | 38 |
| P2-C-058 | Twomile Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.87 4 | (.33) | 838.2 8 | (2750) | 32 |
| P2-C-059 | Mill Creek | Moderate-Low 6 | Rapid-Moderate 10 | 10.5% 12 | Forest 4 | 4.71 4 | (1.82) | 762 8 | (2500) | 44 |
| P2-C-060 | Twomile Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.19 4 | (.07) | 457.2 8 | (1500) | 36 |
| P2-C-061 | Twomile Creek | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 25.85 8 | (9.98) | 1371.6 8 | (4500) | 42 |
| P2-C-062 | Thompson Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 1.37 4 | (.53) | 1066.8 8 | (3500) | 38 |
| P2-C-063 | Thompson Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 1.38 4 | (.53) | 1447.8 8 | (4750) | 38 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P2-D-064 | McKinney Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.08 4 | (.42) | 685.8 8 | (2250) | 36 |
| P2-D-065 | McKinney Creek | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture 8 | 5.43 4 | (2.09) | 762 8 | (2500) | 42 |
| P2-D-066 | Rock Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 0.56 4 | (.22) | 914.4 8 | (3000) | 38 |
| P2-D-067 | Rock Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 1.18 4 | (.46) | 838.2 8 | (2750) | 34 |
| P2-D-068 | Prairie Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 2.47 4 | (.95) | 2514.6 12 | (8250) | 42 |
| P2-D-069 | Prairie Creek (P) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 10.96 4 | (4.23) | 762 8 | (2500) | 38 |
| P2-I-117 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.28 4 | (.11) | 457.2 8 | (1500) | 36 |
| P2-I-118 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.17 4 | (.07) | 762 8 | (2500) | 38 |
| P2-I-119 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 14.12 8 | (5.45) | 609.6 8 | (2000) | 42 |
| P2-I-120 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.38 4 | (.15) | 228.6 4 | (750) | 38 |
| P2-I-121 | Haw Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.38 4 | (.15) | 381 8 | (1250) | 42 |
| P2-I-122 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.5 4 | (.19) | 762 8 | (2500) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|----------|-----------------------|-----------------------|--------------------|------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P2-I-123 | Haw Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture 8 | 0.08 4 | (.03) | 228.6 4 | (750) | 36 |
| P2-I-124 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 0.35 4 | (.14) | 457.2 8 | (1500) | 40 |
| P2-I-125 | Poteau River (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.21 4 | (.08) | 228.6 4 | (750) | 36 |
| P2-I-126 | Poteau River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 3.91 4 | (1.51) | 1676.4 12 | (5500) | 44 |
| P2-I-127 | Poteau River | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 166.54 12 | (64.28) | 1524 8 | (5000) | 48 |
| P2-I-128 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.15 4 | (.06) | 304.8 4 | (1000) | 34 |
| P2-I-129 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.35 4 | (.14) | 381 8 | (1250) | 38 |
| P2-I-130 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.2 4 | (.08) | 457.2 8 | (1500) | 36 |
| P2-I-131 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.21 4 | (.08) | 381 8 | (1250) | 36 |
| P2-I-132 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate 8 | 10.0% 8 | Forest 4 | 2.78 4 | (1.07) | 838.2 8 | (2750) | 42 |
| P2-I-133 | Square Rock Creek (I) | Severe-Moderate 10 | Moderate 8 | 9.0% 8 | Forest 4 | 0.92 4 | (.35) | 914.4 8 | (3000) | 42 |
| P2-I-134 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate 8 | 6.0% 8 | Forest 4 | 1.23 4 | (.47) | 838.2 8 | (2750) | 42 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | |
|---|-------------------------------|-----------------------|----------------------|-----------|---------------------|-------------------------------------|------------------------------------|-----------|--|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | Crossing Distance Meters (Feet) | WQI Score | |
| P2-I-135 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 0.11 (.04) 4 | 381 (1250) 8 | 36 | |
| P2-I-136 | Packsaddle Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.5 (.19) 4 | 381 (1250) 8 | 38 | |
| P2-I-137 | Packsaddle Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.56 (.22) 4 | 152.4 (500) 4 | 38 | |
| P2-I-138 | Packsaddle Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 5.11 (1.97) 4 | 152.4 (500) 4 | 34 | |
| P2-I-139 | Packsaddle Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture-Forest 6 | 0.8 (.31) 4 | 685.8 (2250) 8 | 38 | |
| P2-M-181 | Little Vache Grasse Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 1.93 (.75) 4 | 533.4 (1750) 8 | 40 | |
| P2-M-182 | Little Vache Grasse Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.24 (2.02) 4 | 3124.2 (10250) 12 | 42 | |
| P2-M-183 | Arkansas River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 5.59 (2.16) 4 | 1371.6 (4500) 8 | 38 | |
| P2-M-184 | Arkansas River | Moderate 8 | Slow 4 | 0.5% 4 | Forest 4 | 389928.45 (150498.7) 12 | 1143 (3750) 8 | 40 | |
| P2-M-185 | Arkansas River (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Pasture 8 | 62.8 (24.24) 8 | 1295.4 (4250) 8 | 44 | |
| P3-A-001 | Bear Creek (I) | Severe-Moderate 10 | Moderate 8 | 4.0% 4 | Forest 4 | 0.31 (.12) 4 | 381 (1250) 8 | 38 | |
| P3-A-002 | Bear Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 6.0% 8 | Forest 4 | 2.44 (.94) 4 | 1828.8 (6000) 12 | 48 | |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-------------------|----------------------|-------------|-------------|---------------|-------------|-------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P3-A-003 | Bear Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 2.18 4 | (.84) | 1676.4 12 | (5500) | 44 |
| P3-A-004 | Bear Creek (I) | Moderate 8 | Moderate 8 | 10.0% 8 | Forest 4 | 0.27 4 | (.1) | 457.2 8 | (1500) | 40 |
| P3-A-005 | Bear Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 0.44 4 | (.17) | 457.2 8 | (1500) | 40 |
| P3-A-006 | Bear Creek (P) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 6.03 4 | (2.33) | 3886.2 12 | (12750) | 38 |
| P3-A-007 | Bear Creek (I) | Moderate 8 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 4.11 4 | (1.59) | 2514.6 12 | (8250) | 50 |
| P3-A-008 | Bear Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 2.21 4 | (.85) | 914.4 8 | (3000) | 34 |
| P3-A-009 | Cossatot River (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Forest 4 | 0.47 4 | (.18) | 609.6 8 | (2000) | 40 |
| P3-A-010 | Cossatot River (I) | Moderate 8 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 0.35 4 | (.14) | 533.4 8 | (1750) | 46 |
| P3-A-011 | Almond Creek (P) | Moderate 8 | Moderate 8 | 10.0% 8 | Forest 4 | 2.57 4 | (.99) | 1143 8 | (3750) | 40 |
| P3-B-012 | Almond Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 11.0% 12 | Forest 4 | 1.8 4 | (.7) | 685.8 8 | (2250) | 44 |
| P3-B-013 | Almond Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 14.0% 12 | Forest 4 | 0.41 4 | (.16) | 762 8 | (2500) | 44 |
| P3-B-014 | Almond Creek | Moderate-Low 6 | Moderate 8 | 10.0% 8 | Forest 4 | 6.28 4 | (2.42) | 1981.2 12 | (6500) | 42 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P3-B-015 | Sycamore Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Pasture 8 | 0.11 4 | (.04) | 762 8 | (2500) | 42 |
| P3-B-016 | Sycamore Creek (I) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Forest 4 | 0.5 4 | (.19) | 1828.8 12 | (6000) | 42 |
| P3-B-017 | Carters Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 6.43 4 | (2.48) | 304.8 4 | (1000) | 28 |
| P3-B-018 | Carters Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 9.52 4 | (3.68) | 685.8 8 | (2250) | 34 |
| P3-B-019 | Carters Creek | Moderate 8 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 5.09 4 | (1.96) | 1371.6 8 | (4500) | 42 |
| P3-B-020 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 9.0% 8 | Pasture-Forest 6 | 0.34 4 | (.13) | 381 8 | (1250) | 40 |
| P3-B-021 | Carters Creek (I) | Moderate-Low 6 | Moderate 8 | 10.0% 8 | Forest 4 | 0.38 4 | (.15) | 228.6 4 | (750) | 34 |
| P3-B-022 | Carters Creek (I) | Moderate-Low 6 | Rapid-Moderate 10 | 15.0% 12 | Forest 4 | 2.56 4 | (.99) | 685.8 8 | (2250) | 44 |
| P3-B-023 | Coon Creek | Moderate-Low 6 | Rapid-Moderate 10 | 11.0% 12 | Pasture-Forest 6 | 1.54 4 | (.6) | 1371.6 8 | (4500) | 46 |
| P3-B-024 | Coon Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 2.46 4 | (.95) | 152.4 4 | (500) | 34 |
| P3-B-025 | Coon Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 0.23 4 | (.09) | 609.6 8 | (2000) | 34 |
| P3-B-026 | Allen Branch | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 1.41 4 | (.54) | 1371.6 8 | (4500) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-------------------|--------------------|------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P3-B-027 | Opossum Creek (P) | Moderate-Low 6 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.48 4 | (.57) | 762 8 | (2500) | 40 |
| P3-B-028 | Opossum Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 0.39 4 | (.15) | 685.8 8 | (2250) | 38 |
| P3-B-029 | Opossum Creek (I) | Moderate 8 | Moderate 8 | 6.0% 8 | Pasture-Forest 6 | 1.02 4 | (.4) | 152.4 4 | (500) | 38 |
| P3-B-030 | Opossum Creek | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 2.23 4 | (.86) | 304.8 4 | (1000) | 36 |
| P3-B-031 | Opossum Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 2.13 4 | (.82) | 762 8 | (2500) | 36 |
| P3-B-032 | Opossum Creek (P) | Moderate-Low 6 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 1.49 4 | (.58) | 990.6 8 | (3250) | 36 |
| P3-B-033 | Cow Creek | Moderate-Low 6 | Moderate 8 | 10.0% 8 | Pasture-Forest 6 | 2.15 4 | (.83) | 457.2 8 | (1500) | 40 |
| P3-B-034 | Cow Creek (I) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 3.72 4 | (1.44) | 533.4 8 | (1750) | 38 |
| P3-B-035 | Cow Creek (I) | Moderate-Low 6 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.51 4 | (.2) | 914.4 8 | (3000) | 32 |
| P3-B-036 | Pryor Creek (P) | Moderate-Low 6 | Moderate 8 | 7.0% 8 | Forest 4 | 6.11 4 | (2.36) | 1905 12 | (6250) | 42 |
| P3-B-037 | Pryor Creek (I) | Moderate-Low 6 | Moderate 8 | 8.0% 8 | Forest 4 | 0.38 4 | (.15) | 533.4 8 | (1750) | 38 |
| P3-B-038 | Pryor Creek | Moderate 8 | Moderate 8 | 9.0% 8 | Forest 4 | 3.01 4 | (1.16) | 1219.2 8 | (4000) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-----------------------|----------------------|-------------|---------------------|-------------------------------------|--------|------------------------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area Sq. Km (Sq. Miles) | | Crossing Distance Meters (Feet) | | WQI Score |
| P3-G-089 | Chances Creek (I) | Moderate 8 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.37 4 | (.14) | 457.2 8 | (1500) | 36 |
| P3-G-090 | Gap Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.79 4 | (.3) | 76.2 4 | (250) | 32 |
| P3-G-091 | Gap Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 2.69 4 | (1.04) | 2362.2 12 | (7750) | 40 |
| P3-G-092 | Cedar Creek | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 0.51 4 | (.2) | 609.6 8 | (2000) | 36 |
| P3-G-093 | Cedar Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 0.69 4 | (.27) | 152.4 4 | (500) | 32 |
| P3-G-094 | Cedar Creek (I) | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 0.66 4 | (.25) | 152.4 4 | (500) | 38 |
| P3-G-095 | Cedar Creek (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Forest 4 | 0.73 4 | (.28) | 685.8 8 | (2250) | 42 |
| P3-G-096 | Cedar Creek (I) | Severe-Moderate 10 | Slow 4 | 5.0% 4 | Forest 4 | 2.42 4 | (.94) | 228.6 4 | (750) | 30 |
| P3-G-097 | Cedar Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 7.15 4 | (2.76) | 2895.6 12 | (9500) | 40 |
| P3-G-098 | Cedar Creek | Severe-Moderate 10 | Rapid-Moderate 10 | 12.0% 12 | Forest 4 | 7.81 4 | (3.01) | 4038.6 12 | (13250) | 52 |
| P3-G-099 | Cedar Creek | Severe-Moderate 10 | Moderate 8 | 7.0% 8 | Forest 4 | 8.04 4 | (3.1) | 4419.6 12 | (14500) | 46 |
| P3-G-100 | Cedar Creek | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Forest 4 | 11.32 4 | (4.37) | 5638.8 12 | (18500) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|---------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P3-G-101 | Cedar Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 16.24 | (6.27) | 6400.8 | (21000) | 44 |
| P3-G-102 | Cedar Creek (P) | Moderate 8 | Moderate-Slow 6 | 1.5% 4 | Forest 4 | 5.32 | (2.05) | 762 | (2500) | 34 |
| P3-G-103 | Johnson Creek (I) | Moderate 8 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 1.32 | (.51) | 381 | (1250) | 34 |
| P3-G-104 | Johnson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Forest 4 | 0.34 | (.13) | 381 | (1250) | 36 |
| P3-G-105 | Johnson Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 2.47 | (.95) | 533.4 | (1750) | 38 |
| P3-G-106 | Johnson Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.35 | (.13) | 685.8 | (2250) | 38 |
| P3-G-107 | Johnson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.11 | (.04) | 304.8 | (1000) | 34 |
| P3-G-108 | Johnson Creek (P) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 2.07 | (.8) | 228.6 | (750) | 30 |
| P3-G-109 | Johnson Creek (I) | Moderate 8 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.42 | (.16) | 76.2 | (250) | 30 |
| P3-G-110 | Johnson Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Forest 4 | 1.83 | (.7) | 457.2 | (1500) | 36 |
| P3-G-111 | Johnson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Forest 4 | 2.09 | (.81) | 914.4 | (3000) | 36 |
| P3-G-112 | Johnson Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 0.24 | (.09) | 304.8 | (1000) | 44 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|-------------------|-----------------------|----------------------|-------------|---------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P3-G-113 | Johnson Creek (I) | Severe-Moderate 10 | Rapid-Moderate 10 | 15.0% 12 | Forest 4 | 0.49 4 | (.19) | 685.8 8 | (2250) | 48 |
| P3-G-114 | Johnson Creek (I) | Severe-Moderate 10 | Moderate 8 | 8.0% 8 | Pasture-Forest 6 | 0.21 4 | (.08) | 533.4 8 | (1750) | 44 |
| P3-J-162 | Old Freedom Creek | Severe-Moderate 10 | Rapid-Moderate 10 | 16.0% 12 | Forest 4 | 7.6 4 | (2.93) | 685.8 8 | (2250) | 48 |
| P3-J-163 | Brushy Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Forest 4 | 0.13 4 | (.05) | 228.6 4 | (750) | 34 |
| P3-J-164 | Brushy Creek (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 10.02 4 | (3.87) | 1295.4 8 | (4250) | 40 |
| P3-J-165 | Brushy Creek | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture 8 | 0.2 4 | (.08) | 304.8 4 | (1000) | 38 |
| P3-J-166 | Kings Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 9.81 4 | (3.78) | 990.6 8 | (3250) | 38 |
| P3-J-167 | Carnes Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Pasture-Forest 6 | 0.08 4 | (.03) | 152.4 4 | (500) | 34 |
| P3-J-168 | Carnes Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 3.02 4 | (1.17) | 838.2 8 | (2750) | 38 |
| P3-J-169 | Rock Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 45.67 8 | (17.63) | 762 8 | (2500) | 42 |
| P3-J-170 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture 8 | 1.38 4 | (.53) | 228.6 4 | (750) | 36 |
| P3-J-171 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Forest 4 | 0.62 4 | (.24) | 1143 8 | (3750) | 36 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|----------|--------------------|-----------------------|--------------------|-----------|---------------------|---------------|-------------|-------------------|--------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P3-J-172 | Rock Creek (I) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.23 4 | (.09) | 76.2 4 | (250) | 36 |
| P3-J-173 | Rock Creek (I) | Severe 12 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 1.75 4 | (.68) | 228.6 4 | (750) | 36 |
| P3-J-174 | Rock Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.5% 4 | Pasture-Forest 6 | 0.36 4 | (.14) | 381 8 | (1250) | 38 |
| P3-J-175 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate 8 | 5.5% 8 | Pasture 8 | 1.28 4 | (.49) | 457.2 8 | (1500) | 46 |
| P3-J-176 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.23 4 | (.09) | 685.8 8 | (2250) | 38 |
| P3-J-177 | Cherokee Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 4.5% 4 | Pasture-Forest 6 | 0.2 4 | (.08) | 609.6 8 | (2000) | 38 |
| P3-J-178 | Cherokee Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 0.4 4 | (.16) | 990.6 8 | (3250) | 38 |
| P3-J-179 | Cherokee Creek (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 0.32 4 | (.12) | 304.8 4 | (1000) | 34 |
| P3-J-180 | Old Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.5% 4 | Pasture 8 | 6.63 4 | (2.56) | 762 8 | (2500) | 40 |
| P3-J-181 | Prairie Creek | Severe-Moderate 10 | Moderate-Slow 6 | 4.0% 4 | Pasture 8 | 40.78 8 | (15.74) | 838.2 8 | (2750) | 44 |
| P3-K-182 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture 8 | 3.48 4 | (1.34) | 1447.8 8 | (4750) | 40 |
| P3-K-183 | Prairie Creek (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 4.16 4 | (1.61) | 1143 8 | (3750) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

| SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES | | | | | | | | | | |
|---|--------------------|-----------------------|--------------------|-----------|----------------------------|---------------|-------------|-------------------|--------|-----------|
| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P3-K-184 | Prairie Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 2.85 4 | (1.1) | 1447.8 8 | (4750) | 40 |
| P3-K-185 | Vineyard Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Pasture-Forest 6 | 0.92 4 | (.36) | 1219.2 8 | (4000) | 38 |
| P3-K-186 | Adamson Creek (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.19 4 | (.07) | 762 8 | (2500) | 38 |
| P3-K-187 | Elder Branch (I) | Moderate-Low 6 | Moderate-Slow 6 | 1.0% 4 | Pasture 8 | 0.53 4 | (.2) | 609.6 8 | (2000) | 36 |
| P3-K-188 | Elder Branch (I) | Moderate 8 | Moderate-Slow 6 | 4.0% 4 | Pasture-Forest 6 | 0.73 4 | (.28) | 609.6 8 | (2000) | 36 |
| P3-K-189 | Elder Branch (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.0% 4 | Pasture-Forest 6 | 0.74 4 | (.28) | 609.6 8 | (2000) | 38 |
| P3-K-190 | Elder Branch (I) | Moderate 8 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.65 4 | (.25) | 838.2 8 | (2750) | 36 |
| P3-K-191 | Hester Creek (I) | Moderate 8 | Moderate 8 | 8.0% 8 | Pasture 8 | 0.32 4 | (.12) | 457.2 8 | (1500) | 44 |
| P3-N-205 | Arkansas River (I) | Severe 12 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 2.63 4 | (1.02) | 990.6 8 | (3250) | 46 |
| P3-N-206 | Arkansas River (P) | Severe 12 | Moderate-Slow 6 | 1.0% 4 | Agricultural 12 | 2.3 4 | (.89) | 762 8 | (2500) | 46 |
| P3-N-207 | Mays Branch (P) | Severe 12 | Moderate-Slow 6 | 1.5% 4 | Agricultural-Pasture 10 | 4.78 4 | (1.84) | 533.4 8 | (1750) | 44 |
| P3-N-208 | Mays Branch (I) | Severe 12 | Moderate-Slow 6 | 2.5% 4 | Pasture-Forest 6 | 1.51 4 | (.58) | 762 8 | (2500) | 40 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

SUMMARY OF DRAINAGE UNITS, PARAMETER VALUES, AND WQI SCORES

| ID | Drainage | Erosion | Runoff | Relief | Land Use | Drainage Area | | Crossing Distance | | WQI Score |
|----------|-----------------|-----------------------|--------------------|-----------|----------------------------|---------------|-------------|-------------------|---------|-----------|
| | | | | | | Sq. Km | (Sq. Miles) | Meters | (Feet) | |
| P3-N-209 | Mays Branch (I) | Severe-Moderate 10 | Moderate-Slow 6 | 2.5% 4 | Pasture 8 | 0.29 4 | (.11) | 762 8 | (2500) | 40 |
| P3-N-210 | Frog Bayou (I) | Severe-Moderate 10 | Moderate-Slow 6 | 5.0% 4 | Pasture-Forest 6 | 0.82 4 | (.32) | 914.4 8 | (3000) | 38 |
| P3-N-211 | Frog Bayou | Severe-Moderate 10 | Moderate-Slow 6 | 3.0% 4 | Pasture-Forest 6 | 303.04 12 | (116.96) | 6019.8 12 | (19750) | 50 |
| P3-N-212 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.5% 4 | Agricultural-Pasture 10 | 1.69 4 | (.65) | 685.8 8 | (2250) | 42 |
| P3-N-213 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 1.0% 4 | Agricultural-Pasture 10 | 1.51 4 | (.58) | 533.4 8 | (1750) | 42 |
| P3-N-214 | Frog Bayou (P) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 0.54 4 | (.21) | 762 8 | (2500) | 44 |
| P3-N-215 | Frog Bayou (I) | Severe-Moderate 10 | Moderate-Slow 6 | 0.5% 4 | Agricultural 12 | 1.95 4 | (.75) | 457.2 8 | (1500) | 44 |

(I) Unnamed intermittent tributary to named stream

(P) Unnamed perennial tributary to named stream

Appendix G
JOINT PUBLIC NOTICE - SECTION 404 PERMIT APPLICATION



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

CESWL-CO-R

November 1, 1996

APPLICATION ID NO. 13110

JOINT PUBLIC NOTICE
CORPS OF ENGINEERS - STATE OF ARKANSAS
(30-Day Comment Period)
(Comment Expiration Date - December 1, 1996)

TO WHOM IT MAY CONCERN: Comments are invited on the work described below. Please see the Public Involvement section for details on submitting comments.

Project Information. Pursuant to Section 404 of the Clean Water Act (33 U.S. Code 1344), notice is hereby given that

ARKANSAS STATE HIGHWAY AND
TRANSPORTATION DEPARTMENT (AHTD)
P.O. BOX 2261
LITTLE ROCK, ARKANSAS 72203

has applied for Department of the Army (DA) authorization for the discharge of dredged or fill material into wetlands and other "waters of the United States" to construct a four-lane divided highway along a preferred alignment to upgrade U.S. Highway 71 to interstate standard between DeQueen and I-40 near Alma in Arkansas. (Job No. 001747) The proposed highway would extend approximately 125 miles across the Ouachita/Red River and Arkansas River basins.

The new highway would accommodate the traffic volumes projected through the year 2020, and increase regional mobility in western Arkansas. Also, it would help satisfy the need for an interstate facility between Kansas City, Missouri and Shreveport, Louisiana.

A Draft Environmental Impact Statement (Draft EIS) prepared for the project outlines a study of potential alternative alignments on new location and a selection of a preferred alternative. The Corps of Engineers participated as a cooperating agency in preparing the Draft EIS and is working with the AHTD and their consultant, under the Guidelines of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), to expedite the required NEPA/404 evaluation. The study involves three alternative alignments on new location for the entire project length, plus the existing I-540 bypass for the reach around Fort Smith, Arkansas (Tables Nos. 2 through 4). The preferred alignment was selected from combined segments of each of the three alternative alignments studied on new location (Table No. 1). The applicant is now requesting Section 404 authorization for the required fill to construct a fully controlled access highway, with an average right-of-way width between 300 and 500 feet, along the preferred alignment.

cc: Robert Walters - AHTD
Lynn Malbrough - AHTD

The construction of a highway along the preferred alignment for the proposed upgrade would impact approximately 51.9 acres of wetlands at 35 different sites (Table No. 5) and require 23 bridge crossings of waters of the United States (Table No. 6). Also, the new highway would cross the western side of Fort Chaffee (turnback property) and one of the proposed bridge crossings would span an undeveloped area of a Corps of Engineers public use area (Springhill Park) and the Arkansas River (navigable waterway).

The issuance of a DA Standard permit would authorize the discharge of dredged or fill material into approximately 18.6 acres of wetlands at nine of the locations that are considered to be adjacent to a 5-CFS stream in the Arkansas River Basin. The remaining 33.3 acres of wetlands, at the other 26 sites in both basins, are located in areas considered to be above the "headwaters." Fourteen of the wetland sites are one acre or less and their authorization would be verified pursuant to 33 Code of Federal Regulation (CFR) 330, Appendix A, part B, by DA Nationwide Permit (NWP) No. 26. The other twelve wetland sites exceed the one acre limit and require "notification" prior to their authorization being verified under the NWP. The resource agencies are being notified of the applicant's intent to fill these twelve areas by this public notice. Each of the NWP verifications would be issued provided that permit conditions are met and the AHTD's Standard Erosion Control Measures are implemented.

Twenty-two of the proposed bridge crossings would be authorized pursuant to 33 Code of Federal Regulations (CFR) 325.5, by DA Regional General Permit (GP) GB (Table No. 6). These GP authorizations would be issued under the same conditions as the NWP verifications. Should the design standards for any of the bridge crossings not meet the GP's criteria for authorization, the DA Standard permit issued under this public notice would be revised to include their authorization. The proposed bridge crossing of the Arkansas River would require a separate evaluation and permit authorization from the United States Coast Guard pursuant to Section 9 of the Rivers and Harbors Act, since it is a navigable waterway. Their evaluation would be within the riverward limits of the abutments constructed for the bridge, which would include impacts to Springhill Park. The south end of a required bridge crossing of the river along the preferred alignment would span the park. The Corps' Section 404 authorization of the Arkansas River Bridge would be under NWP No. 15.

Mitigation sites are currently under review to offset the adverse impact to all wetlands by highway construction along the preferred alignment. A site in each of the two drainage basins, Ouachita/Red River and Arkansas River, are being considered. A summary of wetland impacts and the proposed replacement ratio

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The construction of a highway along the preferred alignment for the proposed upgrade would impact approximately 51.9 acres of wetlands at 35 different sites (Table No. 5) and require 23 bridge crossings of waters of the United States (Table No. 6). Also, the new highway would cross the western side of Fort Chaffee (turnback property) and one of the proposed bridge crossings would span an undeveloped area of a Corps of Engineers public use area (Springhill Park) and the Arkansas River (navigable waterway).

The issuance of a DA Standard permit would authorize the discharge of dredged or fill material into approximately 18.6 acres of wetlands at nine of the locations that are considered to be adjacent to a 5-CFS stream in the Arkansas River Basin. The remaining 33.3 acres of wetlands, at the other 26 sites in both basins, are located in areas considered to be above the "headwaters." Fourteen of the wetland sites are one acre or less and their authorization would be verified pursuant to 33 Code of Federal Regulation (CFR) 330, Appendix A, part B, by DA Nationwide Permit (NWP) No. 26. The other twelve wetland sites exceed the one acre limit and require "notification" prior to their authorization being verified under the NWP. The resource agencies are being notified of the applicant's intent to fill these twelve areas by this public notice. Each of the NWP verifications would be issued provided that permit conditions are met and the AHTD's Standard Erosion Control Measures are implemented.

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Mitigation sites are currently under review to offset the adverse impact to all wetlands by highway construction along the preferred alignment. A site in each of the two drainage basins, Ouachita/Red River and Arkansas River, are being considered. A summary of wetland impacts and the proposed replacement ratio

and acreage in each river basin are outlined in the enclosed Table Nos. 7 and 8. Compensatory mitigation would primarily include wetland creation activities. Created wetlands would be similar to those areas impacted and be addressed in the Final EIS.

The Draft EIS for the project is available for review at the offices of the AHTD in Little Rock, Arkansas. The AHTD will be holding a sequence of five public hearings. As part of the evaluation of this application, the Corps of Engineers will participate in the public hearings. The hearings would be held at the following places, dates, and times:

1. DeQueen High School, December 2, 1996, 4:00 to 7:00 P.M.
2. Mena Middle School, December 3, 1996, 4:00 to 7:00 P.M.
3. Waldron Elementary School, December 4, 1996, 4:00 to 7:00 P.M.
4. Cook Elementary School, Fort Smith, December 5, 1996, 4:00 to 7:00 P.M.
5. Tate Elementary School, Kibler, December 6, 1996, 4:00 to 7:00 P.M.

The location and general plan for the proposed work are shown on the enclosed sheets.

Points of Contact. If additional information is desired, it may be obtained from the applicant or by contacting Mr. Larry Harrison, Little Rock District Corps of Engineers, Regulatory Branch, Room 6110, Federal Building, 700 West Capitol, Little Rock, Arkansas, telephone number (501) 324-5296 (mailing address: P.O. Box 867, Little Rock, Arkansas 72203-0867).

Water Quality Certification. By copy of this public notice, the applicant is requesting water quality certification from the Arkansas Department of Pollution Control and Ecology (ADPC&E) in accordance with Section 401(a)(1) of the Clean Water Act. Upon completion of the comment period and public hearings, a determination relative to water quality certification will be made. Evidence of this water quality certification or waiver of the right to certify must be submitted prior to the issuance of a Corps of Engineers permit.

Cultural Resources. The National Register of Historic Places has been consulted; and it has been determined that there are no properties currently listed in the Register, or eligible for inclusion therein, which would be affected by the proposed work. The consultation of the National Register will constitute the full extent of cultural resources investigation by this office

unless we are made aware, as a result of comments received in response to this notice or by other means, of the existence of specific structures or sites which might be affected by the proposed work.

Endangered Species. Our preliminary determination is that the proposed activity will not affect listed Endangered Species or their critical habitat. A copy of this notice is being furnished the U.S. Fish and Wildlife Service and appropriate state agencies and constitutes a request to those agencies for information on whether any listed or proposed-to-be-listed endangered or threatened species may be present in the area which would be affected by the proposed activity.

Section 404(b)(1) Guidelines. The evaluation of activities to be authorized under this permit which involves the discharge of dredged or fill material will include application of guidelines promulgated by the Administrator, Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act. These guidelines are contained in 40 Code of Federal Regulations (CFR) 230.

Public Involvement. Any interested party is invited to submit to this office written comments or objections relative to the proposed work on or before December 1, 1996. Substantive comments, both favorable and unfavorable, will be accepted and made a part of the record and will receive full consideration in determining whether this work would be in the public interest. The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on

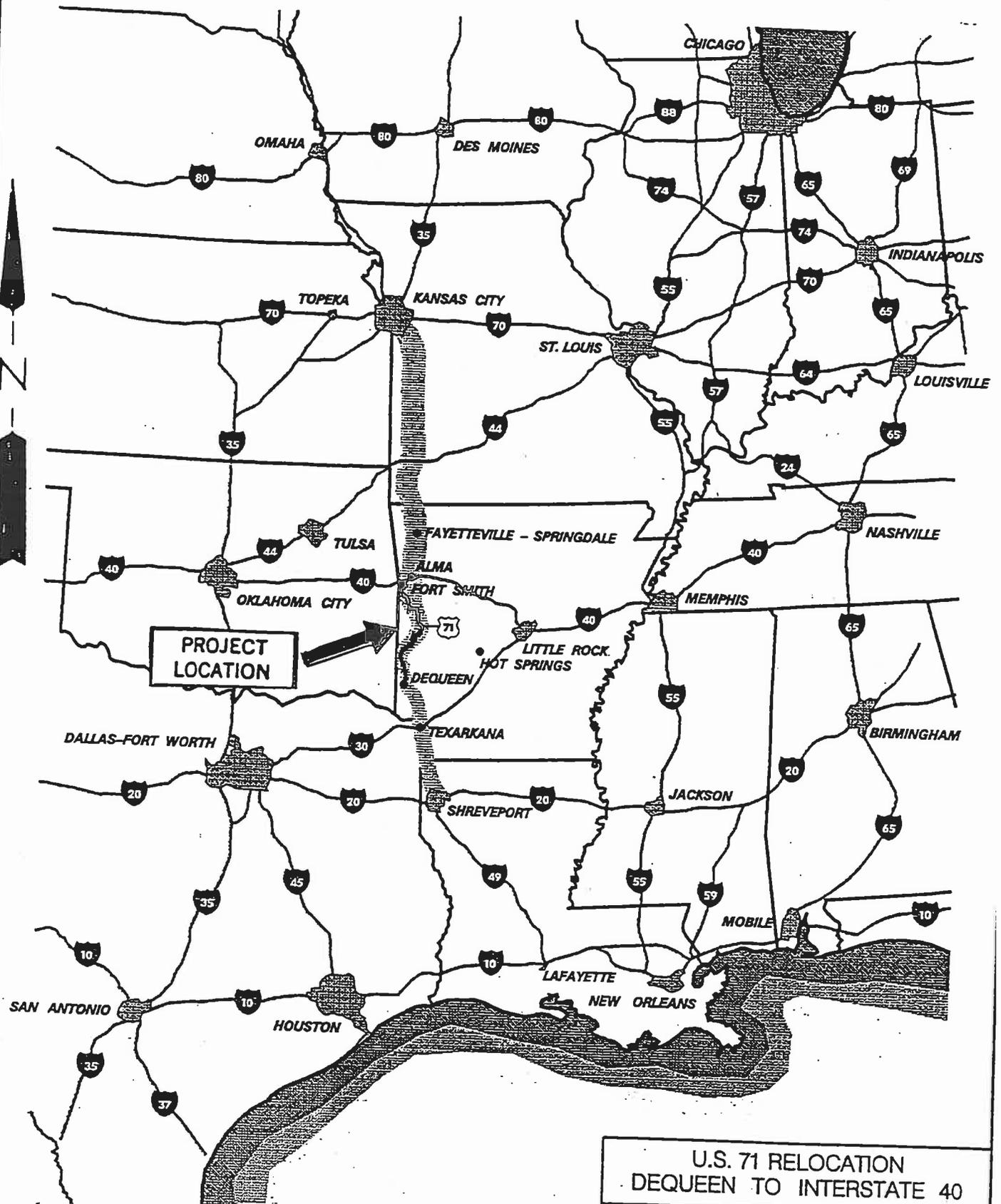
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endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a specific public hearing by the Corps of Engineers and to determine the overall public interest of the proposed activity.

Any person may request in writing within the comment period specified in this notice that another public hearing be held by the Corps of Engineers to consider this application. The Corps of Engineers reserves the right to hold an additional public hearing if determined to be necessary to make a decision on the permit application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. The District Engineer will determine if the issues raised are substantial and whether a hearing is needed.

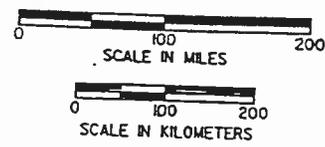
NOTE: The mailing list for this Public Notice is arranged by watershed. Due to the size of this list, selective mailing is not practical. Please discard notices that are not of interest to you. If you have no need for any of these notices, please advise us so that your name can be removed from the mailing list.

Enclosures



U.S. 71 RELOCATION
DEQUEEN TO INTERSTATE 40

**Exhibit 1
REGIONAL PROJECT
LOCATION**



**Table 1
 ALTERNATIVES ANALYSIS
 PREFERRED 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 | Line 2 minimizes wetland impacts |
| | Line 2 | 0.0 | 0.0 | |
| | Line 3 | 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 Preferred Alignment in each segment.

**Table 2
 WETLAND IMPACTS BY ALIGNMENT**

| Line | 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 |
| 1 | 22 | 14.9 | 36.8 | 3 | 2.7 | 6.4 | 12 | 10.0 | 24.6 | 37 | 27.6 | 67.8 |
| 2 | 27 | 17.1 | 42.2 | 4 | 2.8 | 6.8 | 10 | 9.5 | 23.4 | 41 | 29.4 | 72.4 |
| 3 | 23 | 11.1 | 27.5 | 2 | 1.2 | 3.0 | 5 | 4.6 | 11.3 | 30 | 16.9 | 41.8 |
| Preferred | 25 | 14.0 | 34.5 | 2 | 0.6 | 1.5 | 8 | 6.4 | 15.9 | 35 | 21.0 | 51.9 |

**Table 3
 IMPACT COMPARISON
 I-540 vs. PROPOSED ALIGNMENTS***

| | I-540 | Line 1 | Line 2 | Line 3 | Preferred |
|------------------------|---------------|---------------|----------------|---------------|---------------|
| 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 |

*Impact figures for Lines 1, 2, 3 and the Preferred are from U.S. 71 near Rye Hill to I-40.

**Table 4
 WETLAND IMPACT COMPARISON
 I-540 vs. PROPOSED ALIGNMENTS***

| Line | 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 |
| 1 | 2 | 0.3 | 0.9 | 2 | 1.8 | 4.5 | 5 | 7.4 | 18.2 | 9 | 9.5 | 23.6 |
| 2 | 4 | 1.8 | 4.5 | 1 | 1.8 | 4.5 | 7 | 8.1 | 20.0 | 12 | 11.7 | 29.0 |
| 3 | 1 | 0.2 | 0.5 | 0 | - | - | 2 | 4.0 | 10.0 | 3 | 4.2 | 10.5 |
| Preferred | 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 Preferred are from U.S. 71 near Rye Hill to I-40.

**Table 5
 PREFERRED ALIGNMENT WETLAND IMPACTS (TOTAL)**

| Site ID | Wetland Type | Impact Acreage | Location |
|---------|--------------|----------------|--|
| 111 | Herbaceous | 1.5 | Located above headwaters |
| 112 | Herbaceous | 0.6 | Located above headwaters |
| 207 | Herbaceous | 0.4 | Located above headwaters |
| 214 | Herbaceous | 0.7 | Located above headwaters |
| 302 | Herbaceous | 2.1 | Located above headwaters |
| 303 | Forested | 0.8 | Located above headwaters |
| 304 | Scrub/Shrub | 1.2 | Located above headwaters |
| 305 | Herbaceous | 0.6 | Located above headwaters |
| 310 | Herbaceous | 2.0 | Located above headwaters |
| 315 | Forested | 1.5 | Located above headwaters |
| 317 | Herbaceous | 0.7 | Located above headwaters |
| 401 | Herbaceous | 6.3 | Located above headwaters |
| 404 | Forested | 1.0 | Located above headwaters |
| 407 | Herbaceous | 0.7 | Located above headwaters |
| 408 | Herbaceous | 1.2 | Located above headwaters |
| 500 | Herbaceous | 0.8 | Located adjacent to Fourche LaFave River |
| 501 | Herbaceous | 2.1 | Located above headwaters |
| 502 | Herbaceous | 2.0 | Located above headwaters |
| 506 | Herbaceous | 1.6 | Located adjacent to Fourche LaFave River |
| 614 | Scrub/Shrub | 0.3 | Located adjacent to Poteau River |
| 615 | Herbaceous | 2.9 | Located adjacent to Poteau River |
| 616 | Herbaceous | 2.2 | Located adjacent to Poteau River |
| 618 | Herbaceous | 0.6 | Located adjacent to Poteau River |
| 620 | Herbaceous | 0.4 | Located adjacent to Poteau River |
| 700 | Herbaceous | 0.4 | Located above headwaters |
| 701 | Herbaceous | 0.4 | Located above headwaters |
| 702 | Forested | 0.7 | Located above headwaters |
| 705 | Herbaceous | 0.3 | Located above headwaters |
| 708 | Herbaceous | 2.3 | Located above headwaters |
| 801 | Herbaceous | 1.1 | Located above headwaters |
| 818 | Forested | 0.4 | Located above headwaters |
| 819 | Forested | 1.8 | Located above headwaters |
| 904 | Forested | 8.8 | Located adjacent to Vache Grasse Creek |
| 1003 | Herbaceous | 0.5 | Located above headwaters |
| 1015 | Forested | 1.0 | Located adjacent to Frog Bayou |

1. The wetland areas that are considered to be above the "headwaters" are subject to authorization under Nationwide Permit No. 26.
2. The wetland areas that are considered to be adjacent to a 5 cfs stream would require a Section 404 Department of the Army Standard Permit.

**Table 6
 PROPOSED BRIDGE CROSSINGS ALONG THE PREFERRED ALIGNMENT**

| Waterbody | Flow Regime (cubic feet/sec at point of crossing) |
|-----------------------|--|
| Carter Creek Branch | < 5 cfs |
| Carter Creek | < 5 cfs |
| Six-Mile Creek | > 5 cfs |
| Two-Mile Creek | > 5 cfs |
| McKinney Creek | < 5 cfs |
| Brier Creek | < 5 cfs |
| Ouachita River | < 5 cfs |
| Chances Creek | < 5 cfs |
| Fourche LaFave River | > 5 cfs |
| Buffalo Creek | < 5 cfs |
| Ross Creek | < 5 cfs |
| Haw Creek | < 5 cfs |
| Poteau River | > 5 cfs |
| Brushy Creek | < 5 cfs |
| Kings Creek | < 5 cfs |
| Rock Creek | < 5 cfs |
| Old Prairie Creek | < 5 cfs |
| Dickson Creek | < 5 cfs |
| Prairie Creek | < 5 cfs |
| Arkansas River | > 5 cfs |
| Arkansas River Relief | < 5 cfs |
| Mays Branch | < 5 cfs |
| Frog Bayou | > 5 cfs |

1. The preferred alignment would bridge the Arkansas River (Navigable Waterway). The permit application requesting authorization for this bridge crossing would be evaluated by the U.S. Coast Guard under Section 9 of the Rivers and Harbors Act.
2. The remaining 22 bridged crossings would be authorized under a Regional General Permit for minor bridge crossings, provided the required criteria is met in each of the final bridge designs. Should any of the bridged crossings exceed the criteria needed to be authorized under the General Permit, the issued standard permit for the highway project would require a revision to reflect their authorization.

LEGEND

ION 5 - CFS — <
 - CFS ———— >

**Table 7
 MITIGATION OFFERED TO OFFSET WETLAND
 IMPACTS IN THE ARKANSAS RIVER BASIN**

| Site ID | Wetland Type | Impact Acreage |
|---------|--------------|----------------|
| 500 | Herbaceous | 0.8 |
| 501 | Herbaceous | 2.1 |
| 502 | Herbaceous | 2.0 |
| 506 | Herbaceous | 1.6 |
| 614 | Scrub/Shrub | 0.3 |
| 615 | Herbaceous | 2.9 |
| 616 | Herbaceous | 2.2 |
| 618 | Herbaceous | 0.6 |
| 620 | Herbaceous | 0.4 |
| 700 | Herbaceous | 0.4 |
| 701 | Herbaceous | 0.4 |
| 702 | Forested | 0.7 |
| 705 | Herbaceous | 0.3 |
| 708 | Herbaceous | 2.3 |
| 801 | Herbaceous | 1.1 |
| 818 | Forested | 0.4 |
| 819 | Forested | 1.7 |
| 904 | Forested | 8.8 |
| 1003 | Herbaceous | 0.5 |
| 1015 | Forested | 1.0 |

| Wetland Type | Impact Acreage | Replacement Ratio | Replacement Acreage |
|--------------|----------------|-------------------|---------------------|
| Herbaceous | 17.6 | 1:1 | 17.6 |
| Scrub/Shrub | 0.3 | 2:1 | 0.6 |
| Forested | 12.7 | 2:1 | 25.4 |

| | |
|--------------------------------------|-------------|
| TOTAL REPLACEMENT ACREAGE | 43.6 |
|--------------------------------------|-------------|

1. Potential wetland mitigation sites are currently being reviewed in the Arkansas River Basin for the "Total Replacement Acreage" listed above.

Table 8
MITIGATION OFFERED TO OFFSET WETLAND
IMPACTS IN THE OUACHITA/RED RIVER BASIN

| Site ID | Wetland Type | Impact Acreage |
|---------|--------------|----------------|
| 111 | Herbaceous | 1.5 |
| 112 | Herbaceous | 0.6 |
| 207 | Herbaceous | 0.4 |
| 214 | Herbaceous | 0.7 |
| 302 | Herbaceous | 2.1 |
| 303 | Forested | 0.8 |
| 304 | Scrub/Shrub | 1.2 |
| 305 | Herbaceous | 0.6 |
| 310 | Herbaceous | 2.0 |
| 315 | Forested | 1.5 |
| 317 | Herbaceous | 0.7 |
| 401 | Herbaceous | 6.3 |
| 404 | Forested | 1.0 |
| 407 | Herbaceous | 0.7 |
| 408 | Herbaceous | 1.2 |

| Wetland Type | Impact Acreage | Replacement Ratio | Replacement Acreage |
|--------------|----------------|-------------------|---------------------|
| Herbaceous | 16.8 | 1:1 | 16.8 |
| Scrub/Shrub | 1.2 | 2:1 | 2.4 |
| Forested | 3.3 | 2:1 | 6.6 |

| | |
|--------------------------------------|-------------|
| TOTAL REPLACEMENT ACREAGE | 25.8 |
|--------------------------------------|-------------|

1. Potential wetland mitigation sites are currently being reviewed in the Ouachita / Red River Basin for the "Total Replacement Acreage" listed above.

Appendix H
FARMLAND CONVERSION IMPACT RATING FORMS

August 21, 1996

Michael Baker Jr., Inc.*A Unit of Michael Baker Corporation*2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901(501) 783-7790
FAX (501) 783-7091Mr. Herman Jarrett
District Conservationist
Natural Resources Conservation Service
3913 Brooken Hill Drive
Fort Smith, Arkansas 72908RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
Farmland Impacts for Crawford, Sebastian, and Scott Counties

Dear Mr. Jarrett:

We are currently compiling the Draft Environmental Impact statement (DEIS) for the above project. In compliance with the Farmlands Protection Policy Act (FPPA) of 1984, we have summarized the potential impact of each alignment on prime and statewide important farmlands to facilitate the required farmland impact evaluation. The location of soils determined to be prime and statewide important were obtained from the published Soil Surveys of Sebastian and Crawford Counties and from unpublished information obtained directly from your office for Scott County. The locations of these soils were entered into a Geographic Information System and the area converted for each alignment within the proposed highway construction limits was calculated.

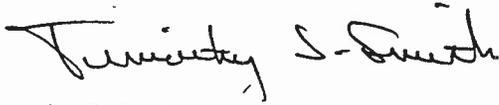
| FARMLAND IMPACT COMPARISON BY ALIGNMENT | | | | |
|---|-----------|-------|---------------------|-----------------------|
| County | Line | Prime | Statewide Important | Total Acres Converted |
| Crawford | Line 1 | 109.3 | 26.7 | 361.6 |
| | Line 2 | 91.8 | 45.4 | 361.6 |
| | Line 3 | 115.2 | 29.8 | 384.6 |
| | Preferred | 114.8 | 29.8 | 382.7 |
| Sebastian | Line 1 | 141.7 | 84.5 | 931.4 |
| | Line 2 | 151.4 | 78.7 | 880.6 |
| | Line 3 | 142.4 | 88.4 | 941.5 |
| | Preferred | 142.4 | 82.6 | 924.3 |
| Scott | Line 1 | 115.6 | 117.8 | 1,782.8 |
| | Line 2 | 103.6 | 127.9 | 1,809.6 |
| | Line 3 | 110.2 | 137.8 | 1,705.9 |
| | Preferred | 109.0 | 134.9 | 1,700.2 |



Enclosed is Form AD-1006, the Farmland Conversion Impact Rating with the appropriate information for each alignment for Scott, Sebastian and Crawford Counties. In addition, we are providing mapping that shows the three alignments within the above counties. The preferred alignment has been identified (cross-hatched) for your review. We would appreciate your completion of these forms and an analysis of impacts to prime and statewide important farmlands in these counties. To help maintain our current project schedule, we would appreciate your response by September 20, 1996. Please contact us at (501) 783-7790 if you need additional information. Thank you for your assistance with this matter.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in cursive script that reads "Timothy J. Smith".

Timothy J. Smith
Sr. Environmental Scientist

Attachment

cc: Bob Walters - AHTD
William D. Richardson - FHWA

UNITED STATES
DEPARTMENT OF
AGRICULTURE

Natural Resources
Conservation
Service

3913 Brooken Hill Drive
Suite 200
Fort Smith, AR 72908-9289

September 20, 1996

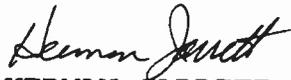
Tim Smith, Evt. Scientist
Michael Baker Jr. Inc.
2912 Rogers Ave, Suite A & B
Fort Smith, AR 72901

SUBJECT: FARMLAND IMPACTS FOR CRAWFORD, SEBASTIAN, & SCOTT COUNTIES

Enclosed are the AD-1006 forms "Farmland Conversion Impact Rating" for the subject job.

Call me at 501 646-6256 if you have any questions.

Thank You,



HERMAN JARRETT
District Conservationist

dlr/TSmith

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

| | | | |
|--|--|---------------------------------|--------------------------------|
| PART I (To be completed by Federal Agency) Job # 001747 | | Date Of Land Evaluation Request | 8/22/96 |
| Name Of Project U.S. 71 Relocation - DeQueen to I-40 | | Federal Agency Involved | Federal Highway Administration |
| Proposed Land Use Construction of Highway | | County And State | Crawford County Arkansas |

| | | | |
|---|---|---|--|
| PART II (To be completed by SCS) | | Date Request Received By SCS | August 22, 1996 |
| Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form) | | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Acres Irrigated: 184 Average Farm Size: 184 |
| Major Crop(s) Soybeans | Farmable Land In Govt. Jurisdiction Acres 121,708 % 32 | Amount Of Farmland As Defined in FPPA Acres 121,708 % 32 | |
| Name Of Land Evaluation System Used FBSA | Name Of Local Site Assessment System FBSA | Date Land Evaluation Returned By SCS 9/20/96 | |

| | | | | |
|---|-------------------------|--------|--------|-----------|
| PART III (To be completed by Federal Agency) | Alternative Site Rating | | | |
| | Line 1 | Line 2 | Line 3 | Preferred |
| A. Total Acres To Be Converted Directly | 361.6 | 361.6 | 384.6 | 382.7 |
| B. Total Acres To Be Converted Indirectly | 0 | 0 | 0 | 0 |
| C. Total Acres In Site | 361.6 | 361.6 | 384.6 | 382.7 |

| | | | | |
|--|-------|-------|-------|-------|
| PART IV (To be completed by SCS) Land Evaluation Information | | | | |
| A. Total Acres Prime And Unique Farmland | 109.3 | 91.8 | 115.2 | 114.8 |
| B. Total Acres Statewide And Local Important Farmland | 26.7 | 45.4 | 29.8 | 29.8 |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | 1001% | 1001% | 1001% | 1001% |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | 86 | 86 | 86 | 86 |

| | | | | |
|---|----|----|----|----|
| PART V (To be completed by SCS) Land Evaluation Criterion | | | | |
| Relative Value Of Farmland To Be Converted (Scale Of 0 to 100 Points) | 75 | 75 | 75 | 75 |

| | | | | | | |
|---|--------------------------------|----------------|----|----|----|----|
| PART VI (To be completed by Federal Agency) | | Maximum Points | | | | |
| Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b)) | | | | | | |
| 1. Area In Nonurban Use | 15 | 15 | 15 | 15 | 15 | 15 |
| 2. Perimeter In Nonurban Use | 10 | 10 | 10 | 10 | 10 | 10 |
| 3. Percent Of Site Being Farmed | 20 | 17 | 17 | 18 | 18 | 18 |
| 4. Protection Provided By State And Local Government | 20 | 0 | 0 | 0 | 0 | 0 |
| 5. Distance From Urban Builtup Area | Not Used Corridor-type Project | | | | | |
| 6. Distance To Urban Support Services | Not Used Corridor-type Project | | | | | |
| 7. Size Of Present Farm Unit Compared To Average | 10 | 10 | 10 | 10 | 10 | 10 |
| 8. Creation Of Nonfarmable Farmland | 25 | 10 | 10 | 10 | 10 | 10 |
| 9. Availability Of Farm Support Services | 5 | 5 | 5 | 5 | 5 | 5 |
| 10. On-Farm Investments | 20 | 15 | 15 | 15 | 15 | 15 |
| 11. Effects Of Conversion On Farm Support Services | 25 | 0 | 0 | 0 | 0 | 0 |
| 12. Compatibility With Existing Agricultural Use | 10 | 5 | 5 | 5 | 5 | 5 |
| TOTAL SITE ASSESSMENT POINTS | 160 | 87 | 87 | 88 | 88 | 88 |

| | | | | | | |
|---|-----|-----|-----|-----|-----|-----|
| PART VII (To be completed by Federal Agency) | | | | | | |
| Relative Value Of Farmland (From Part V) | 100 | 75 | 75 | 75 | 75 | 75 |
| Total Site Assessment (From Part VI above or a local site assessment) | 160 | 87 | 87 | 88 | 88 | 88 |
| TOTAL POINTS (Total of above 2 lines) | 260 | 162 | 162 | 163 | 163 | 163 |

| | | |
|-----------------------|--------------------|---|
| Site Selected: | Date Of Selection: | Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Reason For Selection: | | |

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

| | |
|---|--|
| ART I (To be completed by Federal Agency) Job # 001747 | Date Of Land Evaluation Request 8/22/96 |
| Name Of Project U.S. 71 Relocation - DeQueen to I-40 | Federal Agency Involved Federal Highway Administration |
| Proposed Land Use Construction of Highway | County And State Sebastian County, Arkansas |

| | |
|--|---|
| ART II (To be completed by SCS) | Date Request Received By SCS August 22, 1996 |
| Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form) | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Acres Irrigated 167 Average Farm Size |
| Major Crop(s) Soybeans | Farmable Land In Govt. Jurisdiction Acres 176,669 % 53 Amount Of Farmland As Defined In FPPA Acres 176,669 % 53 |
| Name Of Land Evaluation System Used NRECA | Name Of Local Site Assessment System NRECA Date Land Evaluation Returned By SCS 9/20/96 |

| ART III (To be completed by Federal Agency) | Alternative Site Rating | | | |
|---|-------------------------|--------|--------|-----------|
| | Line 1 | Line 2 | Line 3 | Preferred |
| A. Total Acres To Be Converted Directly | 931.4 | 880.6 | 941.5 | 924.3 |
| B. Total Acres To Be Converted Indirectly | 0 | 0 | 0 | 0 |
| C. Total Acres In Site | 931.4 | 880.6 | 941.5 | 924.3 |

| ART IV (To be completed by SCS) Land Evaluation Information | Line 1 | Line 2 | Line 3 | Preferred |
|--|--------|--------|--------|-----------|
| A. Total Acres Prime And Unique Farmland | 141.7 | 151.4 | 142.4 | 142.4 |
| B. Total Acres Statewide And Local Important Farmland | 84.5 | 78.7 | 88.4 | 82.6 |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | 001% | 001% | 001% | 001% |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | 82 | 82 | 82 | 82 |

| ART V (To be completed by SCS) Land Evaluation Criterion | Line 1 | Line 2 | Line 3 | Preferred |
|---|--------|--------|--------|-----------|
| Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points) | 63 | 63 | 63 | 63 |

| ART VI (To be completed by Federal Agency) Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b)) | Maximum Points | Line 1 | Line 2 | Line 3 | Preferred |
|--|----------------|----------------------------------|--------|--------|-----------|
| 1. Area In Nonurban Use | 15 | 15 | 15 | 15 | 15 |
| 2. Perimeter In Nonurban Use | 10 | 10 | 10 | 10 | 10 |
| 3. Percent Of Site Being Farmed | 20 | 9 | 11 | 9 | 9 |
| 4. Protection Provided By State And Local Government | 20 | 0 | 0 | 0 | 0 |
| 5. Distance From Urban Builtup Area | | Not used - Corridor-type Project | | | |
| 6. Distance To Urban Support Services | | Not used - Corridor-type Project | | | |
| 7. Size Of Present Farm Unit Compared To Average | 10 | 10 | 10 | 10 | 10 |
| 8. Creation Of Nonfarmable Farmland | 25 | 10 | 10 | 10 | 10 |
| 9. Availability Of Farm Support Services | 5 | 5 | 5 | 5 | 5 |
| 10. On-Farm Investments | 20 | 10 | 10 | 10 | 10 |
| 11. Effects Of Conversion On Farm Support Services | 25 | 0 | 0 | 0 | 0 |
| 12. Compatibility With Existing Agricultural Use | 10 | 5 | 5 | 5 | 5 |
| TOTAL SITE ASSESSMENT POINTS | 160 | 74 | 76 | 74 | 74 |

| ART VII (To be completed by Federal Agency) | Maximum Points | Line 1 | Line 2 | Line 3 | Preferred |
|---|----------------|--------|--------|--------|-----------|
| Relative Value Of Farmland (From Part V) | 100 | 63 | 63 | 63 | 63 |
| Total Site Assessment (From Part VI above or a local site assessment) | 160 | 74 | 76 | 74 | 74 |
| TOTAL POINTS (Total of above 2 lines) | 260 | 137 | 139 | 137 | 137 |

| | | |
|----------------|-------------------|--|
| Site Selected: | Date Of Selection | Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/> |
|----------------|-------------------|--|

Reason For Selection:

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

| | | | |
|--|--------------------------------------|---------------------------------|---------|
| PART I (To be completed by Federal Agency) Job # 001747 | | Date Of Land Evaluation Request | 8/22/96 |
| Name Of Project | U.S. 71 Relocation - DeQueen to I-40 | | |
| Proposed Land Use | Construction of Highway | | |
| Federal Agency Involved | | Federal Highway Administration | |
| County And State | | Scott County, Arkansas | |

| | | | |
|---|--|--|-----------------------------|
| PART II (To be completed by SCS) | | Date Request Received By SCS | August 22, 1996 |
| Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form) | | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| Major Group(s) | Farmable Land In Govt. Jurisdiction Acres: 121,925 % 21 | Amount Of Farmland As Defined In FPPA Acres: 121,925 % 21 | Average Farm Size 188 |
| Name Of Land Evaluation System Used | Name Of Local Site Assessment System | Date Land Evaluation Returned By SCS | |
| NRSA | NRSA | 9/26/96 | |

| | | | | |
|---|-------------------------|---------|---------|-----------|
| PART III (To be completed by Federal Agency) | Alternative Site Rating | | | |
| A. Total Acres To Be Converted Directly | Line 1 | Line 2 | Line 3 | Preferred |
| B. Total Acres To Be Converted Indirectly | 1,782.8 | 1,809.6 | 1,705.9 | 1,700.2 |
| C. Total Acres In Site | 0 | 0 | 0 | 0 |
| | 1,782.8 | 1,809.6 | 1,705.9 | 1,700.2 |

| | | | | |
|--|-------|-------|-------|-------|
| PART IV (To be completed by SCS) Land Evaluation Information | | | | |
| A. Total Acres Prime And Unique Farmland | 115.6 | 103.6 | 116.2 | 109.0 |
| B. Total Acres Statewide And Local Important Farmland | 117.8 | 127.9 | 137.8 | 134.9 |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | 002% | 002% | 002% | 002% |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | 77 | 77 | 77 | 77 |
| PART V (To be completed by SCS) Land Evaluation Criterion | | | | |
| Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points) | 70 | 70 | 70 | 70 |

| | | | | | |
|---|----------------|----------------------------------|----|----|----|
| PART VI (To be completed by Federal Agency) | Maximum Points | | | | |
| Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b)) | | | | | |
| 1. Area In Nonurban Use | 15 | 15 | 15 | 15 | 15 |
| 2. Perimeter In Nonurban Use | 10 | 10 | 10 | 10 | 10 |
| 3. Percent Of Site Being Farmed | 20 | 20 | 20 | 20 | 20 |
| 4. Protection Provided By State And Local Government | 20 | 0 | 0 | 0 | 0 |
| 5. Distance From Urban Builtup Area | | | | | |
| 6. Distance To Urban Support Services | | Not used - Corridor-type Project | | | |
| 7. Size Of Present Farm Unit Compared To Average | | Not used - Corridor-type Project | | | |
| 8. Creation Of Nonfarmable Farmland | 10 | 10 | 10 | 10 | 10 |
| 9. Availability Of Farm Support Services | 25 | 10 | 10 | 10 | 10 |
| 10. On-Farm Investments | 5 | 5 | 5 | 5 | 5 |
| 11. Effects Of Conversion On Farm Support Services | 20 | 10 | 10 | 10 | 10 |
| 12. Compatibility With Existing Agricultural Use | 25 | 0 | 0 | 0 | 0 |
| | 10 | 5 | 5 | 5 | 5 |
| TOTAL SITE ASSESSMENT POINTS | 160 | 85 | 85 | 85 | 85 |

| | | | | | |
|---|-----|-----|-----|-----|-----|
| PART VII (To be completed by Federal Agency) | | | | | |
| Relative Value Of Farmland (From Part V) | 100 | 70 | 70 | 70 | 70 |
| Total Site Assessment (From Part VI above or a local site assessment) | 160 | 85 | 85 | 85 | 85 |
| TOTAL POINTS (Total of above 2 lines) | 260 | 155 | 155 | 155 | 155 |

| | | |
|-----------------------|-------------------|--|
| Site Selected: | Date Of Selection | Was A Local Site Assessment Used? |
| Reason For Selection: | | Yes <input type="checkbox"/> No <input type="checkbox"/> |

Baker

August 21, 1996

Michael Baker Jr., Inc.*A Unit of Michael Baker Corporation*2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901(501) 783-7790
FAX (501) 783-7091Mr. Kirk Nichols
District Conservationist
Natural Resources Conservation Service
309 West Collin Raye Drive
Suite 2
DeQueen, Arkansas 71832RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
Farmland Impacts for Sevier County

Dear Mr. Nichols:

We are currently compiling the Draft Environmental Impact statement (DEIS) for the above project. In compliance with the Farmlands Protection Policy Act (FPPA) of 1984, we have summarized the potential impact of each alignment on prime and statewide important farmlands to facilitate the required farmland impact evaluation. The location of soils determined to be prime and statewide important were obtained from unpublished soils information acquired directly from your Sevier County office. The locations of these soils were entered into a Geographic Information System and the area converted for each alignment within the proposed highway construction limits was calculated.

| FARMLAND IMPACT COMPARISON BY ALIGNMENT | | | | |
|---|-----------|-------|---------------------|-----------------------|
| County | Line | Prime | Statewide Important | Total Acres Converted |
| Sevier | Line 1 | 36.4 | 15.6 | 388.3 |
| | Line 2 | 15.0 | 12.2 | 411.2 |
| | Line 3 | 15.7 | 19.7 | 412.2 |
| | Preferred | 15.7 | 19.7 | 412.2 |

Enclosed is Form AD-1006, the Farmland Conversion Impact Rating with the appropriate information for each alignment for Sevier County. In addition, we are providing mapping that shows the three alignments within Sevier County. The preferred alignment has been identified (cross-hatched) for your review. We would appreciate your completion of these forms and an

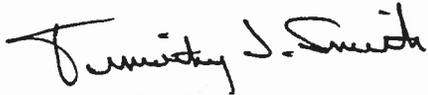


A Total Quality Corporation

analysis of impacts to prime and statewide important farmlands in these counties. To help maintain our current project schedule, we would appreciate your response by September 20, 1996. Please contact us at (501) 783-7790 if you need additional information. Thank you for your assistance with this matter.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in black ink that reads "Timothy J. Smith". The signature is written in a cursive style with a large initial 'T'.

Timothy J. Smith
Sr. Environmental Scientist

Attachment

cc: Bob Walters - AHTD
William D. Richardson - FHWA

FARMLAND CONVERSION IMPACT RATING

| | | | | | |
|--|-------------------|---|-----------------------------|---|-------------------|
| PART I (To be completed by Federal Agency) Job # 001747 | | Date Of Land Evaluation Request 8/22/96 | | | |
| Name Of Project U.S. 71 Relocation DeQueen to F-40 | | Federal Agency Involved Federal Highway Administration | | | |
| Proposed Land Use Construction of Highway | | County And State Sevier County, Arkansas | | | |
| PART II (To be completed by SCS) | | Date Request Received By SCS 8-26-96 | | | |
| Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form). | | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Acres Irrigated | Average Farm Size |
| Major Crop(s) Pasture/Hay/Bermuda | | Farmable Land In Govt. Jurisdiction Acres: 188955 % 53.6 | | Amount Of Farmland As Defined in FPPA Acres: 188955 % 53.6 | |
| Name Of Land Evaluation System/Used LE-SCS | | Name Of Local Site Assessment System LE-SCS | | Date Land Evaluation Returned By SCS 10/18/96 | |
| PART III (To be completed by Federal Agency) | | Alternative Site Rating | | | |
| | | Line 1 | Line 2 | Line 3 | Preferred |
| A. Total Acres To Be Converted Directly | | 388.3 | 411.2 | 412.2 | 412.2 |
| B. Total Acres To Be Converted Indirectly | | 0 | 0 | 0 | 0 |
| C. Total Acres In Site | | 388.3 | 411.2 | 412.2 | 412.2 |
| PART IV (To be completed by SCS) Land Evaluation Information | | | | | |
| A. Total Acres Prime And Unique Farmland | | 36.4 | 15.0 | 15.7 | 15.7 |
| B. Total Acres Statewide And Local Important Farmland | | 15.6 | 12.2 | 19.7 | 19.7 |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | | 0.02751 | 0.01439 | 0.01873 | 0.01873 |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | | 44.4 | 44.4 | 44.4 | 44.4 |
| PART V (To be completed by SCS) Land Evaluation Criterion | | | | | |
| Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points) | | 65 | 65 | 65 | 65 |
| PART VI (To be completed by Federal Agency) | | | | | |
| Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b)) | Maximum Points | | | | |
| 1. Area In Nonurban Use | 15 | 15 | 15 | 15 | 15 |
| 2. Perimeter In Nonurban Use | 10 | 10 | 10 | 10 | 10 |
| 3. Percent Of Site Being Farmed | 20 | 20 | 20 | 20 | 20 |
| 4. Protection Provided By State And Local Government | 20 | 0 | 0 | 0 | 0 |
| 5. Distance From Urban Builtup Area | | | | | |
| 6. Distance To Urban Support Services | | Not used - Corridor-type Project | | | |
| 7. Size Of Present Farm Unit Compared To Average | | Not used - Corridor-type Project | | | |
| 8. Creation Of Nonfarmable Farmland | 10 | 10 | 10 | 10 | 10 |
| 9. Availability Of Farm Support Services | 25 | 10 | 10 | 10 | 10 |
| 10. On-Farm Investments | 5 | 5 | 5 | 5 | 5 |
| 11. Effects Of Conversion On Farm Support Services | 20 | 10 | 10 | 10 | 10 |
| 12. Compatibility With Existing Agricultural Use | 25 | 0 | 0 | 0 | 0 |
| TOTAL SITE ASSESSMENT POINTS | 160 | 85 | 85 | 85 | 85 |
| PART VII (To be completed by Federal Agency) | | | | | |
| Relative Value Of Farmland (From Part V) | 100 | 65 | 65 | 65 | 65 |
| Total Site Assessment (From Part VI above or a local site assessment) | 160 | 85 | 85 | 85 | 85 |
| TOTAL POINTS (Total of above 2 lines) | 260 | 150 | 150 | 150 | 150 |
| Site Selected: | Date Of Selection | Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/> | | | |
| Reason For Selection: | | | | | |



August 21, 1996

Michael Baker Jr., Inc.

A Unit of Michael Baker Corporation

2912 Rogers Avenue
Suites A & B
Fort Smith, Arkansas 72901

(501) 783-7790
FAX (501) 783-7091

Mr. Merle Metcalf
District Conservationist
Natural Resources Conservation Service
508 7th Street
Mena, Arkansas 71953

RE: State Job No. 001747
U.S. 71 Relocation - DeQueen to I-40
Farmland Impacts for Polk County

Dear Mr. Metcalf:

We are currently compiling the Draft Environmental Impact statement (DEIS) for the above project. In compliance with the Farmlands Protection Policy Act (FPPA) of 1984, we have summarized the potential impact of each alignment on prime and statewide important farmlands to facilitate the required farmland impact evaluation. The location of soils determined to be prime and statewide important were obtained from unpublished soils information acquired directly from your Polk County office. The locations of these soils were entered into a Geographic Information System and the area converted for each alignment within the proposed highway construction limits was calculated.

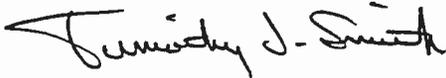
| FARMLAND IMPACT COMPARISON BY ALIGNMENT | | | | |
|---|-----------|-------|---------------------|-----------------------|
| County | Line | Prime | Statewide Important | Total Acres Converted |
| Polk | Line 1 | 96.0 | 87.7 | 1881.2 |
| | Line 2 | 110.2 | 82.6 | 1862.2 |
| | Line 3 | 129.5 | 51.4 | 1865.9 |
| | Preferred | 108.8 | 92.8 | 1806.5 |

Enclosed is Form AD-1006, the Farmland Conversion Impact Rating with the appropriate information for each alignment for Polk County. In addition, we are providing mapping that shows the three alignments within Polk County. The preferred alignment has been identified (cross-hatched) for your review. We would appreciate your completion of these forms and an analysis of impacts to prime and statewide important farmlands in these counties. To help

maintain our current project schedule, we would appreciate your response by September 20, 1996. Please contact us at (501) 783-7790 if you need additional information. Thank you for your assistance with this matter.

Sincerely yours,

MICHAEL BAKER JR., INC.

A handwritten signature in black ink that reads "Timothy J. Smith". The signature is written in a cursive style with a large initial 'T'.

Timothy J. Smith
Sr. Environmental Scientist

Attachment

cc: Bob Walters - AHTD
William D. Richardson - FHWA

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency) Job # 001747 Date Of Land Evaluation Request 8/22/96

Name Of Project U.S. 71 Relocation DeQueen to I-40 Federal Agency Involved Federal Highway Administration

Proposed Land Use Construction of Highway County And State Polk County, Arkansas

PART II (To be completed by SCS) Date Request Received By SCS 8-26-96

Does the site contain prime, unique, statewide or local important farmland? Yes No

(If no, the FPPA does not apply - do not complete additional parts of this form)

Acres Irrigated _____ Average Farm Size 139

Major Crop(s) Bermuda grass Pasture/Hay Farmable Land In Govt. Jurisdiction Acres: 163,900 % 29.7

Name Of Land Evaluation System Used LE-SCS Name Of Local Site Assessment System _____ Amount Of Farmland As Defined in FPPA Acres: 163,900 % 29

Date Land Evaluation Returned By SCS 10/18/96

PART III (To be completed by Federal Agency)

| | Alternative Site Rating | | | |
|---|-------------------------|--------|--------|----------|
| | Line 1 | Line 2 | Line 3 | Preferre |
| A. Total Acres To Be Converted Directly | 1881.2 | 1862.2 | 1865.9 | 1806.5 |
| B. Total Acres To Be Converted Indirectly | 0 | 0 | 0 | 0 |
| C. Total Acres In Site | 1881.2 | 1862.2 | 1865.9 | 1806.5 |

PART IV (To be completed by SCS) Land Evaluation Information

| | | | | |
|--|---------|---------|---------|--------|
| A. Total Acres Prime And Unique Farmland | 96 | 110.2 | 129.5 | 108.8 |
| B. Total Acres Statewide And Local Important Farmland | 87.7 | 82.6 | 51.4 | 92.8 |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | 0.11208 | 0.11763 | 0.11037 | 0.1230 |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | 55.5 | 55.5 | 55.5 | 55.5 |

PART V (To be completed by SCS) Land Evaluation Criterion

| Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points) | Line 1 | Line 2 | Line 3 | Preferre |
|---|--------|--------|--------|----------|
| | 79 | 79 | 79 | 79 |

PART VI (To be completed by Federal Agency)

| Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b)) | Maximum Points | Line 1 | Line 2 | Line 3 | Preferre |
|---|----------------|--------|--------|--------|----------|
| 1. Area In Nonurban Use | 15 | 15 | 15 | 15 | 15 |
| 2. Perimeter In Nonurban Use | 10 | 10 | 10 | 10 | 10 |
| 3. Percent Of Site Being Farmed | 20 | 20 | 20 | 20 | 20 |
| 4. Protection Provided By State And Local Government | 20 | 0 | 0 | 0 | 0 |
| 5. Distance From Urban Builtup Area | 10 | 10 | 10 | 10 | 10 |
| 6. Distance To Urban Support Services | 20 | 0 | 0 | 0 | 0 |
| 7. Size Of Present Farm Unit Compared To Average | 10 | 10 | 10 | 10 | 10 |
| 8. Creation Of Nonfarmable Farmland | 25 | 10 | 10 | 10 | 10 |
| 9. Availability Of Farm Support Services | 5 | 5 | 5 | 5 | 5 |
| 10. On-Farm Investments | 20 | 10 | 10 | 10 | 10 |
| 11. Effects Of Conversion On Farm Support Services | 25 | 0 | 0 | 0 | 0 |
| 12. Compatibility With Existing Agricultural Use | 10 | 5 | 5 | 5 | 5 |
| TOTAL SITE ASSESSMENT POINTS | 160 | 85 | 85 | 85 | 85 |

PART VII (To be completed by Federal Agency)

| | | | | | |
|---|-----|-----|-----|-----|-----|
| Relative Value Of Farmland (From Part V) | 100 | 79 | 79 | 79 | 79 |
| Total Site Assessment (From Part VI above or a local site assessment) | 160 | 85 | 85 | 85 | 85 |
| TOTAL POINTS (Total of above 2 lines) | 260 | 164 | 164 | 164 | 164 |

Site Selected: _____ Date Of Selection _____ Was A Local Site Assessment Used? Yes No

Reason For Selection: _____

Baker

March 21, 1997

Mr. Alex L. Winfrey
 Resource Soil Scientist
 Natural Resources Conservation Service
 2733 B Caddo Street
 Arkadelphia, Arkansas 71923-6716

Michael Baker Jr., Inc.*A Unit of Michael Baker Corporation*

2912 Rogers Avenue
 Suites A & B
 Fort Smith, Arkansas 72901

(501) 783-7790
 FAX (501) 783-7091

RE: State Job No. 001747
 U.S. 71 Relocation - DeQueen to I-40
Changes to Farmland Impacts for Polk County

Dear Mr. Winfrey:

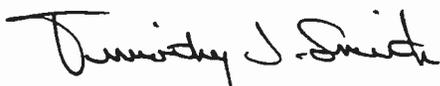
We are currently preparing the Final Environmental Impact Statement (FEIS) for the above project. The Selected Alignment has been modified slightly in Polk County resulting in fewer impacts to both prime and statewide important farmlands than the Preferred Alignment in the Draft EIS. In compliance with the Farmlands Protection Policy Act (FPPA) of 1984, we have summarized the potential impact of each alignment on prime and statewide important farmlands to facilitate the required farmland impact evaluation.

| FARMLAND IMPACT COMPARISON BY ALIGNMENT | | | | |
|---|-----------------|-------------|---------------------|-----------------------|
| County | Line | Prime | Statewide Important | Total Acres Converted |
| Polk | Line 1 | 96.0 | 87.7 | 1881.2 |
| | Line 2 | 110.2 | 82.6 | 1862.2 |
| | Line 3 | 129.5 | 51.4 | 1865.9 |
| | Selected | 87.4 | 83.1 | 1733.7 |

Please note that the impacts on Lines 1, 2, and 3 have not changed from the Draft EIS numbers. Subsequently only one column (the Selected Alignment) on Form AD-1006 will need to be re-computed. To facilitate completion of a new form, we are providing the October 18, 1996 Form AD-1006 that you had previously prepared for this project. To help maintain our current project schedule, we would appreciate your response by April 14, 1997. Please contact us at (501) 783-7790 if you need additional information. Thank you for your assistance with this matter.

Sincerely yours,

MICHAEL BAKER JR., INC.



Timothy J. Smith
 Sr. Environmental Scientist

Attachment

cc: Lynn Malbrough - AHTD w/o att
 Carl Kraehmer - FHWA w/o att



A Total Quality Corporation

FARMLAND CONVERSION IMPACT RATING

| | | | | | |
|---|---|---|-------------------|---------|----------|
| RT I (To be completed by Federal Agency) Job # 001747 | | Date Of Land Evaluation Request 3/21/97 | | | |
| Name Of Project U.S. 71 Relocation - DeQueen to I-40 | | Federal Agency Involved Federal Highway Administration | | | |
| Proposed Land Use Construction of Highway | | County And State Polk County, Arkansas | | | |
| RT II (To be completed by SCS) | | Date Request Received By SCS 3/22/97 | | | |
| Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form). <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Acres Irrigated | Average Farm Size | | |
| | | | 139 | | |
| Major Crop(s) Bermuda grass pasture/hay | Farmable Land In Govt. Jurisdiction Acres: 163,900 % 29.7 | Amount Of Farmland As Defined In FPPA Acres: 163,900 % 29 | | | |
| Name Of Land Evaluation System Used FPPA-SCS | Name Of Local Site Assessment System | Date Land Evaluation Returned By SCS 4/16/97 | | | |
| RT III (To be completed by Federal Agency) | | Alternative Site Rating | | | |
| | | Line 1 | Line 2 | Line 3 | Selected |
| A. Total Acres To Be Converted Directly | | 1881.2 | 1862.2 | 1865.9 | 1733.7 |
| B. Total Acres To Be Converted Indirectly | | 0 | 0 | 0 | 0 |
| C. Total Acres In Site | | 1881.2 | 1862.2 | 1865.9 | 1733.7 |
| RT IV (To be completed by SCS) Land Evaluation Information | | | | | |
| A. Total Acres Prime And Unique Farmland | | 96 | 110.2 | 129.5 | 87.4 |
| B. Total Acres Statewide And Local Important Farmland | | 87.7 | 82.6 | 51.4 | 83.7 |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | | 0.11208 | 0.11763 | 0.11037 | 0.1041 |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | | 55.5 | 55.5 | 55.5 | 55.5 |
| RT V (To be completed by SCS) Land Evaluation Criterion Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points) | | | | | |
| | | 79 | 79 | 79 | 79 |
| RT VI (To be completed by Federal Agency) Assessment Criteria (These criteria are explained in 7 CFR 658.5(b)) | | Maximum Points | | | |
| 1. Area In Nonurban Use | 15 | 15 | 15 | 15 | 15 |
| 2. Perimeter In Nonurban Use | 10 | 10 | 10 | 10 | 10 |
| 3. Percent Of Site Being Farmed | 20 | 20 | 20 | 20 | 20 |
| 4. Protection Provided By State And Local Government | 20 | 0 | 0 | 0 | 0 |
| 5. Distance From Urban Builtup Area | | Not used - Corridor Type Project | | | |
| 6. Distance To Urban Support Services | | Not used - Corridor Type Project | | | |
| 7. Size Of Present Farm Unit Compared To Average | 10 | 10 | 10 | 10 | 10 |
| 8. Creation Of Nonfarmable Farmland | 25 | 10 | 10 | 10 | 10 |
| 9. Availability Of Farm Support Services | 5 | 5 | 5 | 5 | 5 |
| 10. On-Farm Investments | 20 | 10 | 10 | 10 | 10 |
| 11. Effects Of Conversion On Farm Support Services | 25 | 0 | 0 | 0 | 0 |
| 12. Compatibility With Existing Agricultural Use | 10 | 5 | 5 | 5 | 5 |
| TOTAL SITE ASSESSMENT POINTS | 160 | 85 | 85 | 85 | 85 |
| RT VII (To be completed by Federal Agency) | | | | | |
| Relative Value Of Farmland (From Part V) | 100 | 79 | 79 | 79 | 79 |
| Total Site Assessment (From Part VI above or a local site assessment) | 160 | 85 | 85 | 85 | 85 |
| TOTAL POINTS (Total of above 2 lines) | 260 | 164 | 164 | 164 | 164 |
| Selected: | Date Of Selection | Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/> | | | |
| Reason For Selection: | | | | | |

Appendix I
STORMWATER RUNOFF MINIMIZATION MEASURES

STORMWATER RUNOFF MINIMIZATION MEASURES

The following measures should be implemented as a part of the design and construction phases of this project to reduce impacts resulting from stormwater.

PLAN DEVELOPMENT

Some basic principles which will be used during the development of the erosion and sediment control plan are:

- designing slopes consistent with soil properties
- limiting the area and duration of unprotected soil exposure
- protecting soil with vegetative cover, mulch, or erosion resistant material
- controlling concentration of runoff
- retarding runoff with planned engineering works
- trapping sediment with temporary or permanent barriers, basins or other measures as close to the source as possible
- consideration of measures which could also serve as permanent control measures for highway runoff, such as drainage basins.

Erosion and sediment control during construction is highly dependent on the temporary and permanent measures contained in the plans and available to the construction force. The designer will provide measures and guidance through the contract documents to ensure that a well conceived and timely implemented staged erosion and sediment control plan is presented to the contract forces.

HIGHWAY GEOMETRICS AFFECTING EROSION AND SEDIMENTATION

Highway geometrics can be advantageous in minimizing potential soil erosion and sedimentation problems and in selecting appropriate control measures. Project alignment and grade, the design cross section, as well as the number and involvement of stream crossings and encroachments are geometric features which have a range of flexibility. Within this range, adjustments will be made to reduce the damage potential and lessen the requirements and cost of control.

The alignment should be shifted when possible to eliminate or minimize encroachment into a surface water environment. Stream crossings should be made at stable reaches of a stream, avoiding meanders that are subject to rapid shifting and channel profiles that are degrading or aggrading. To reduce the potential for problems, every effort should be made to minimize the number of stream crossings and encroachments.

Roadway embankment or cut slopes vary with the height of cut or fill and directly affect erosion control and revegetation measures. Flat slopes (2:1 or flatter) favor the establishment and maintenance of vegetation and are therefore preferred. Slopes with a greater than 3:1 gradient should have permanent stabilization measures which do not require mowing. Benching (or terracing) is a method of breaking and controlling sheet flow on long steep slopes. Benching will be considered for any gradient with a slope from 2:1 to 3:1. Serrated cut slopes will be considered as an aid in the establishment of vegetative cover on decomposed rock or shale slopes.

SCHEDULING OPERATIONS

Proper planning and scheduling of the construction operations are major factors in controlling anticipated erosion and sediment problems. A schedule should be developed and conformed to which considers the probable weather conditions and the potential occurrence of storms, particularly if work in or adjacent to a stream is involved.

Clearing operations should be scheduled after perimeter controls are installed, and performed to provide for erosion control measures to follow immediately. Construction of permanent drainage facilities should also begin immediately after the area is cleared.

Throughout the construction phase the scheduled operations should provide for either temporary or permanent erosion control measures as soon as practical.

Operations should be scheduled with an individual or several natural drainage courses as a unit. The size of the unit should be determined considering the project earthwork balances, borrow pit locations, erodibility of the soil, number of watercourses and the contractor's ability to keep his finishing and turf establishment operations up with his earthwork operations.

CONTRACTOR'S RESPONSIBILITIES

The contractor will follow the staged erosion and sediment control plan, which sets forth the proposed construction sequences and the accompanying erosion control measures that will be employed.

Adequate inspection and maintenance, which is essential for erosion and sediment control during construction, will be performed.

CLEARING AND GRUBBING

The control of soil erosion is an essential consideration in clearing and grubbing operations. The contract documents should require that the work be performed in a manner which will cause

minimum soil disturbance. These documents should also provide a limitation on the amount of erodible surface area which may be exposed at any one time during the performance of the work.

EXCAVATION AND EMBANKMENT CONSTRUCTION

When practical, the excavation and formation of embankments should be performed in such a manner that cut and fill slopes will be completed to final slopes and grade in a continuous operation. Diversion ditches on the high side of cuts will be constructed in the first phase of the grading operation.

CONSTRUCTION IN OR NEAR WATERS OF THE UNITED STATES

Equipment work within stream channels will be kept to a minimum. Specifications or special provisions will include control of the contractor's operation when performing work in streams, particularly requiring conformance with regulations of water resource and fish and wildlife agencies. The contractor will not be permitted to disturb stream banks and beds or destroy vegetation unless it is absolutely necessary, and a commitment for suitable restoration is made. Some types of construction and stream conditions may necessitate the construction of diversion ditches, sediment basins, or other protective measures to avoid sediment problems. Embankment slopes that encroach on stream channels will be adequately protected against erosion. Some form of protective diversion or filter barrier will be installed parallel to the waterway to protect it as much as possible from sediment. Care will be taken in locating these measures to avoid obstructing waterway openings. Where practical, either a protective area of vegetative cover should be left, or established, between the highway embankment and adjacent stream channels.

Excavation from the roadway, channel changes, cofferdams, or other material will not be deposited in or near rivers, streams, impoundments, or wetlands where it might be washed away by high

water or run off to the detriment of the general environment.

When work is required in impounded water, a silt curtain or floating silt screen will be used to contain the suspended sediments within a specified area.

Sediment basins in lateral ditches leading to the waterways are essential, but additional features such as check dams may also be needed to slow the velocity of the water before it gets to the waterway. Temporary vegetation in the immediate work site areas can help to minimize surface runoff into the waterway. If it is necessary to pump the working area, the sediment laden effluent will not be discharged directly into a waterway. Sediment laden water will be discharged in a sediment basin or trap prior to release.

A serious concern exists where bridge construction takes place over an existing waterway. In this event, careful planning of construction operations to limit the disturbance of stream banks is essential. Rock riprap or concrete slope protection placed as soon as practicable will also retard surface erosion.

Whenever practicable, the construction site for a proposed culvert or footings will be located outside the existing stream channel. However, for hydraulic and environmental reasons, it is seldom possible to locate a culvert outside the water way boundaries and some provision must be made to accommodate the stream flow while the structure is being constructed.

For an intermittent stream crossing, construction can at times be scheduled during a dry period. With multiple barrel structures, it may be practicable to construct one barrel outside of the stream bed and divert the flow to the completed segment, while the remainder of the structure is completed.

In some instances, it may be necessary to construct a diversion channel to convey the flow around the construction site while the permanent structure is being constructed.

Appendix J
SECTION 106 PROGRAMMATIC AGREEMENT

PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION,
THE ARKANSAS STATE HISTORIC PRESERVATION OFFICER,
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING
THE CONSTRUCTION OF AHTD JOB NUMBER 1747,
FAP NUMBER DPS-A015(7)
U.S. 71 RELOCATION,
DEQUEEN TO INTERSTATE 40
SEVIER, POLK, SCOTT, SEBASTIAN AND CRAWFORD COUNTIES, ARKANSAS

WHEREAS, the Federal Highway Administration (FHWA) has determined that construction of the U.S. 71 Relocation between DeQueen, Arkansas and Interstate 40 near Alma, Arkansas (the Project) in Sevier, Polk, Scott, Sebastian and Crawford counties, Arkansas is necessary to serve the transportation needs of western Arkansas and to improve traffic flow, safety and capacity on existing U.S. 71; and

WHEREAS, the FHWA has determined that the Project may have an effect on properties on or eligible for listing in the National Register of Historic Places (the Register) and in accordance with 36 CFR 800, *Protection of Historic Resources*, regulations implementing Section 106 of the National Historic Preservation Act of 1966, (16 USC 470f), as amended, must address these effects; and

WHEREAS, a Preferred Alignment for the Project was identified in the October 1996 Draft Environmental Impact Statement (DEIS) based on the review of records of archeological resources, an analysis of high probability areas, and a survey of architectural resources within the area of potential effect (APE) of the Preferred Alignment. The cultural resources assessment for the DEIS

has been evaluated by the Arkansas State Historic Preservation Officer (SHPO), and the Preferred Alignment contains no known archeological sites listed in the Register nor any known archeological sites determined eligible for listing in the Register, nor any architectural resources considered eligible for listing in the Register; and

WHEREAS, a Phase I cultural resources pedestrian survey has been completed on 95 miles (76 %) of the Preferred Alignment, which corresponds to all areas for which property access could be obtained and all areas considered to be high probability in areas of densely vegetated pine plantations; and

WHEREAS, the archeological sites identified in Attachment 2 (Tables 1-4) have been recommended for Phase II archeological testing; and

WHEREAS, the FHWA, the Advisory Council on Historic Preservation (Council) and the SHPO agree that all identification, evaluation and reporting efforts will follow the Secretary of Interior's "Standards and Guidelines for Archeology and Historic Preservation" (48 FR 44716), *A Foundation for the Future: The Arkansas Historic Preservation Plan* (Baker ed. 1990, revised 1996), and *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1982, revised 1994); and

WHEREAS, the treatment of human remains and cultural items will follow the Advisory Council's Policy Statement and Policy Interpretation Memorandum 89-1 regarding the treatment of human remains and grave goods, and the procedures set forth in the Native American Grave Protection and Repatriation Act (P.L. 101-601), and guidelines promulgated under the Arkansas State Burial Law (Act 753 or 1991); and

WHEREAS, the Caddo Indian tribe of Oklahoma has participated in the Project studies to date and has been afforded the opportunity to comment; and

WHEREAS, the definitions of 36 CFR 800.2 are applicable throughout this agreement;

NOW, THEREFORE, the FHWA, SHPO and Council agree that this Project shall be implemented in accordance with the following stipulations in order to take into account the effect of this Project on historic properties.

STIPULATIONS

The FHWA shall ensure that the following Stipulations are carried out prior to taking any action that could have an effect on properties listed on or eligible for the Register:

I. PROJECT SCHEDULING

Due to the length and complexity of the Project, it has been divided into fourteen (14) Segments as shown on Attachment 1. These Segments will be used for sequencing the Section 106 process for this project and will be referred to in this agreement. The schedule for Project implementation will be developed as funding becomes available and once developed, will be coordinated with the SHPO. As a result, the Stipulations in this agreement may be carried out over a period of several years.

II. AREA OF POTENTIAL PROJECT EFFECT

The area of potential project effect (APE) is defined as the Selected Alignment identified in the Final Environmental Impact Statement. Should the area of potential project effect change, FHWA shall follow the stipulations for identification, evaluation and treatment of archeological and architectural resources (Stipulations IIIA, IIIB, IIIC and IV).

III. ARCHEOLOGICAL RESOURCES

- A. Archeological sites identified in Attachment 2 (Tables 1-4) in Segments A-O will be affected by construction of the Project and require Phase II archeological testing in order to determine significance.
 1. FHWA shall ensure that additional research and investigations are conducted as necessary to determine eligibility of these identified archeological sites for nomination to the Register. Fieldwork will be sufficient to determine National Register eligibility and will establish the area of potential effect, and as appropriate, include site size and boundary, contents of the archeological record, depth and integrity of cultural deposits, presence or absence of cultural features, site functions, age and cultural affiliation. These Phase II investigations will conform to the Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation" (48 FR 44716-39) and the standards for fieldwork and report writing in *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1982, revised 1994).

2. FHWA shall determine National Register eligibility in consultation with the SHPO. All National Register evaluations will follow the guidelines established in National Register Bulletin 15 (U.S. Department of the Interior, 1990). Disputes concerning eligibility will be resolved by the Keeper of the National Register (the Keeper).
3. FHWA shall ensure that a treatment plan is developed for any archeological sites that are determined eligible for listing in the Register that are adversely affected by the Project. This treatment plan will consider measures to avoid or mitigate for adverse effects on archeological sites such as 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. If adverse effects on archeological sites cannot be avoided, FHWA shall consult with the SHPO, the Caddo tribe, if appropriate, and other interested parties to determine the appropriate measures to mitigate adverse effects. These measures will be included in the treatment plan.
4. Avoidance will be the preferred treatment of adversely effected archeological sites, if possible. Any site that warrants preservation in place will be avoided, provided that prudent and feasible alternatives to the use of that site for highway construction exist.
5. If the appropriate treatment of an archeological sites involves data recovery, FHWA shall ensure that a data recovery plan is developed in consultation with the Council, the SHPO, and the Caddo tribe, if appropriate. Data recovery plans shall be consistent with the Secretary of the Interior's Standards and Guidelines for Archeological

Documentation (48 FR 44734-37) and take into account the Council's Publication, "Treatment of Archeological Properties" (Advisory Council on Historic Preservation 1980) and the standards in *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1982, revised 1994).

6. FHWA shall provide treatment plans and data recovery plans to the Council, the SHPO and the Caddo tribe, if appropriate, for review. Comments shall be provided by these reviewing agencies within thirty (30) calendar days. Failure to comment within thirty (30) calendar days of receipt shall be taken as concurrence with the submitted plan. Unless the reviewers object to the plan within thirty (30) days, FHWA shall ensure that they are implemented. If the SHPO or other reviewers request minor revisions to any plan, the reviewers shall be provided with 14 calendar days from receipt to review the revised plan; if in the opinion of FHWA the revisions are major, the reviewers shall be provided with thirty (30) calendar days from receipt for review of the revised plan. Failure to provide comments on the revised plan within the fourteen (14) day or thirty (30) day review period shall be taken as concurrence with the revised plan. Any disputes arising from such review shall be resolved in accordance with Stipulation XI of this agreement.

- B. FHWA shall ensure that a Phase I cultural resources pedestrian survey is conducted on the remaining 30.3 miles (24%) of the Preferred Alignment. Potentially eligible archeological sites that result from the pedestrian survey will be investigated as defined in Stipulation IIIA

above. The areas that remain to be subjected to the pedestrian survey fall into the following categories:

1. Densely vegetated pine plantations in low probability areas
2. Parcels for which landowners denied access to conduct the pedestrian survey
3. The Selected Alignment in Segment C-D (if different from the DEIS Preferred Alignment)
4. Other areas of the Selected Alignment that, for whatever reason, could not be completed prior to execution of this agreement.

C. Following completion of data recovery or other treatment plan, the appropriate analysis shall be conducted and the final reports shall be prepared. The FHWA shall ensure that all final archeological reports resulting from actions pursuant to this Programmatic Agreement are provided to all signatories and to the National Park Service for possible submission to the National Technical Information Services (NTIS). The FHWA shall ensure that all such reports are responsive to the contemporary professional standards identified in the Council's current Preparing Agreement Documents, and meet the Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation" and the standards in *A State Plan for the Conservation of Archeological Resources in Arkansas*, (Davis ed. 1982, revised 1994). Precise location data may be provided only in a separate appendix if it appears that its release could jeopardize archaeological sites.

- D. Following appropriate analysis, all material and data recovered as a result of the Project from public land and from private land with permission of the landowners shall be curated in a permanent curation facility approved by the SHPO in accordance with 36 CFR Part 79.

IV. ARCHITECTURAL RESOURCES

- A. Architectural resources are defined as all non-archeological resources consisting of historic buildings, structures, objects, and districts.
- B. The FHWA shall identify and evaluate any additional architectural resources located within the APE for National Register eligibility in accordance with 36 CFR 800.4. The assessment of architectural resources will consist of a level of effort required to determine National Register eligibility and adverse effect determination.
- C. If concurrence on eligibility of an architectural resource cannot be reached, FHWA shall obtain a determination from the Keeper in accordance with 36 CFR 800.4. If an adverse effect to an architectural resource determined eligible for inclusion in the Register occurs, a treatment plan as discussed in Stipulation III will be prepared. Avoidance shall be the preferred treatment in such instances, provided that prudent and feasible alternatives to the use of that land for highway construction exists.

V. HUMAN REMAINS

If human remains are encountered during the implementation of the terms of this agreement or during the implementation of the Project, all activity in the vicinity of the discovery will cease and Arkansas State Highway and Transportation Department will notify FHWA who will immediately

notify the SHPO and the Caddo tribe, if appropriate. If it can be determined that the remains are not Native American, there will be no need to consult with the Caddo tribe. Consultation should be with the descendants or other interested parties. FHWA shall consult with the SHPO and the Caddo tribe, if appropriate, the descendants, or other interested parties, to determine treatment of the human remains, including analysis, if any, and proposed plans for reburial.

VI. QUALIFICATIONS

The FHWA shall ensure that all historic, architectural, and/or archaeological work pursuant to this Programmatic Agreement is carried out by, or under the direct supervision of, a person or persons meeting the appropriate qualifications set forth in the Secretary of the Interior's "Professional Qualifications Standards for Historic Architecture" (48 FR 44739) and the Secretary of the Interior's "Professional Qualifications Standards for Archaeology" (48 FR 44739).

VII. COMMENCEMENT OF CONSTRUCTION

Construction may commence in a portion of the Project area once appropriate efforts to identify, evaluate, and mitigate adverse affects on historic properties in that portion have been completed and SHPO and FHWA have reviewed and commented on the results of the investigation and the SHPO concurs that the effort is consistent with the agreed upon treatment plan or data recovery plan.

Construction may commence if FHWA and SHPO concur that no adverse effect on eligible or listed cultural resources will occur as a result of construction in a specific area of the Project.

VIII. INTERESTED PARTY PARTICIPATION

- A. The FHWA shall ensure access by the public and the Caddo tribe, if appropriate, to all determinations made pursuant to this agreement and shall consider or respond to comments or objections by interested parties in a timely manner. Views of interested parties (including the Caddo tribe, if appropriate) will be solicited by the FHWA and will be taken into account in the consultation process when eligible or potentially eligible Native American properties are affected.

- B. Interested parties, the Caddo tribe, or members of the public may ask the Council to review a finding, become a party to consultation, or request the Keeper to review a determination of eligibility made under this agreement by the FHWA and/or the SHPO.

- C. Stipulation III.A.5 provides for Caddo tribe consultation in data recovery plans developed by FHWA and SHPO if the site involves prehistoric or historic Native American properties. If the tribe objects to the data recovery plan agreed to by FHWA and SHPO, the FHWA shall consult with the Council pursuant to 36 CFR Part 800 (see also Stipulation XII, Dispute Resolution).

IX. PROTECTING NATIONAL HISTORIC LANDMARKS

The FHWA shall follow the procedures for the Protection of National Historic Landmarks as set forth in the Council's regulations at 36 CFR Part 800.10.

X. DISCOVERY SITUATIONS

Pursuant to 36 CFR 800.11, if cultural material is discovered during the implementation of the project, the FHWA shall ensure that all construction activities will cease in the area of the discovery and the SHPO, the Caddo tribe, if appropriate, and other interested parties shall be notified. The FHWA and the SHPO will determine eligibility of the discovered properties for the Register and the treatment of historic properties. The Caddo tribe, if appropriate, and other interested parties will be provided with an opportunity to review and comment on proposed treatment measures. Disputes arising from such review will be resolved in accordance with Stipulation XII below.

XI. DOCUMENTATION AND REPORTING REQUIREMENTS

- A. Management summaries and reports for each phase of work will be prepared by reach of the project as shown on Attachment 1. Four reaches of the project will be used for reporting results: Segments A-D, Segments D-J, Segments J-O, and reaches of the project on U.S. Forest Service land. Management summaries will be prepared for the Phase I effort and the Phase II effort individually as it is completed. If Project timing is appropriate, four final reports will be prepared to document the Phase I and Phase II efforts undertaken for each reach of the Project. Otherwise, eight reports will be prepared to document the Phase I and Phase II efforts in each reach of the Project. Phase III management summaries and reports will be prepared by site. Additional management summaries will be needed for Phase I and possibly Phase II efforts in the areas outlined in IIIB above.

- B. All archeological reports must meet the Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation" (48 FR 44716) and the standards for fieldwork and report writing in *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1982, revised 1994).
- C. Standards for documenting architectural sites will conform to state requirements outlined in the Arkansas Historic Preservation Program architectural resources handbook (REF).
- D. The FHWA and the SHPO will ensure that site location information will be made available only to qualified persons in accordance with state and federal guidelines.
- E. The FHWA shall provide management summaries and Phase I, Phase II and Phase III reports to the SHPO for review. Appropriate documentation of architectural resources to determine eligibility and adverse effect findings will be provided to the SHPO for review. Comments shall be provided to FHWA within thirty (30) calendar days. Failure to comment within thirty (30) calendar days will be taken as concurrence with the findings of the report and recommendations on the need for future cultural resource investigations.
- F. All final reports will be distributed to the FHWA, the SHPO, the Caddo tribe, if appropriate, and the Arkansas Archeological Survey.

XII. DISPUTE RESOLUTION

Should the SHPO, the Council or the Caddo tribe, as appropriate, object within thirty (30) days to any findings, proposed actions or determinations made pursuant to this agreement, the FHWA shall consult with the objecting party to resolve the objection. If the FHWA determines that the objection

cannot be resolved, it shall request the further comments of the Council pursuant to 36 CFR Part 800.6(b). Any Council comment provided in response to such a request will be taken into account by the FHWA in accordance with 36 CFR Part 800.6(c)(2) with reference only to the subject of the dispute; the FHWA's responsibility to carry out all actions under this agreement that are not subject to the dispute will remain unchanged.

The Council, SHPO, FHWA, Caddo tribe, or one or more of the parties in cooperation may monitor the undertaking carried out pursuant to this Programmatic Agreement.

XIII. AMENDING THE PROGRAMMATIC AGREEMENT

Should any of the parties to this agreement believe that the terms of this agreement are not being met or cannot be met, that party shall immediately notify the other signatories and request consultation in accordance with 36 CFR Part 800.13 to amend this agreement. The process to amend this agreement shall be conducted in a manner similar to that leading to the execution of this agreement.

XIV. TERMINATING THE PROGRAMMATIC AGREEMENT

Any party to this Programmatic Agreement may terminate it by providing thirty (30) calendar days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the FHWA shall comply with 36 CFR Part 800.4 through 800.6 with regard to the Project covered by the Programmatic Agreement.

XV. FAILURE TO CARRY OUT THE PROGRAMMATIC AGREEMENT

In the event the FHWA does not carry out the terms of this Programmatic Agreement, the FHWA shall comply with 36 CFR 800.4 through 800.6 with regard to the Project covered by this agreement.

XVI. FULFILLMENT OF SECTION 106 RESPONSIBILITIES

Execution and implementation of this Programmatic Agreement evidences that the FHWA has afforded the Council a reasonable opportunity to comment pursuant to 36 CFR Part 800.13 on the construction of U.S. 71 Relocation, DeQueen to Interstate 40 in Sevier, Polk, Scott, Sebastian and Crawford Counties, Arkansas and its effect on cultural resources, and that FHWA has taken into account the effect of the Project on cultural resources.

Carl A. Kachun
Federal Highway Administration

4-22-97
Date

Steve Teague
Arkansas State Highway and Transportation Department

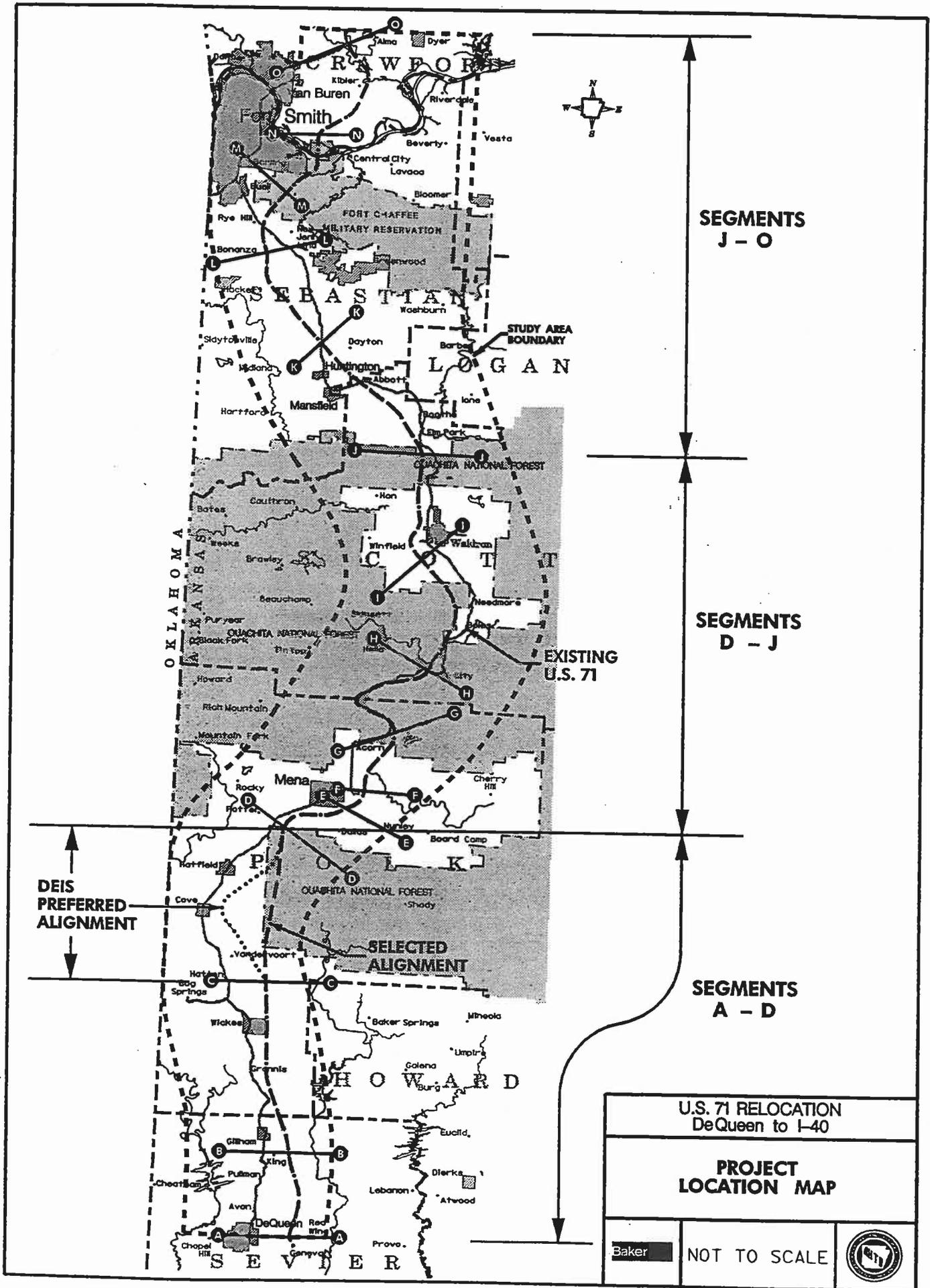
4-17-97
Date

Cathryn Slater
Arkansas State Historic Preservation Officer

5-4-97
Date

John M. Sulu
Advisory Council on Historic Preservation

5/20/97
Date



**Table 1
A SUMMARY OF SITES WITHIN SEGMENTS A-D OF THE PREFERRED ALIGNMENT***

| SITE NO. | SITE TYPE / CULTURAL AFFILIATION | NRHP STATUS | RECOMMENDATION |
|-------------------|--|-------------|------------------------|
| 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 |
| Structures | | | |
| 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

*Sites found in Segment C-D of the Preferred Alignment have been excluded.

| Table 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 |

**Table 2 (cont.)
A SUMMARY OF SITES WITHIN SEGMENTS D-J OF THE PREFERRED ALIGNMENT**

| SITE NO. | SITE TYPE / CULTURAL AFFILIATION | NRHP STATUS | RECOMMENDATION |
|-------------------|--|-------------|--------------------|
| 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 |
| Structures | | | |
| 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 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 |
| 3SC1025 | 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 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
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.

