

SECTION 4: ENVIRONMENTAL IMPACTS ASSESSMENT

4.1 INTRODUCTION

The primary purpose of this environmental assessment (EA) is to outline potential impacts of the proposed road building action on the environment. The evaluation includes a consideration of both context and degree of impact on potential habitat for threatened and endangered species. It also generally identifies some of the other resources that may be impacted by road building activities. Where feasible, distinction is made between short-term and long-term impacts, and negligible and adverse impacts. A negligible impact may have an inconsequential effect or be unlikely to occur, while an adverse effect would have negative consequences. When the proposed action does not noticeably affect a given resource a determination of “no impact” is given. If the current condition of a resource is improved or an undesirable impact is lessened, the impact is considered beneficial. Where appropriate, cumulative impacts are discussed. Cumulative impacts include those impacts that occur over a long period of time and those that result from combining two or more unrelated actions. The evaluation conducted for the Draft Environmental Impact Statement (DEIS) encompassed four alternatives (A, B, C and D). Alternative A was selected as the preferred DEIS alternative. Additional, more, detailed evaluations of wetlands, cultural resources and threatened/endangered species were conducted along the Alternative A corridor. The data resulting from the evaluations contributed to the decision to make minor alignment changes to the DEIS alternative A. Alternative A with the resulting changes has been evaluated as the Preferred Alternative in the FEIS.

4.2 CLIMATE AND AIR QUALITY

4.2.1 Climate

No impacts are expected to the climate of the project area from implementation of the Preferred Alternative. No indirect impacts to the regional climate are expected to result from implementation of the proposed project.

Under the No-Action Alternative, no impacts are expected to the climate. No indirect impacts to the regional climate are expected to result from the No-Action Alternative.

4.2.2 Air Quality

Under the Clean Air Act of 1970, the EPA established National Ambient Air Quality Standards (NAAQS) for the protection of public health and welfare. The NAAQS addresses six major pollutants: Carbon Monoxide (CO), Ozone (O₃), Nitrogen Dioxide (NO₂) Sulfur Dioxide (SO₂), Particulate Matter (PM₁₀), and Lead (Pb). Of these six pollutants, FHWA requires an evaluation of Carbon Monoxide (CO) and Ozone (O₃) for highway projects. The Conway, Arkansas, area is currently in attainment with the NAAQS 1-hour ozone standard. Ozone attainment and the state implementation plan (SIP) are being addressed by the Metropolitan Planning Organization (MPO) and the Arkansas Department of Environmental Quality (ADEQ). Since this is a regional issue, ozone is not evaluated in this document. Conformity does not apply and this project will not violate the SIP for Faulkner County or other counties within the MPO.

The primary source of air pollution emissions associated with this project are those caused by motor vehicles using the existing and future roadway system. An air quality assessment was performed using the intersection of Highway 60 with Donaghey Avenue intersection as the “worse-case” scenario. This intersection has the highest traffic volumes based on the on-site peak hour traffic volumes. CO concentrations were modeled for the year 2000 and were predicted for the year 2025. The predicted concentrations for year 2025 ranged from 7.4 to 9.1 ppm in the vicinity of the intersection. All modeled concentrations included a 2 ppm background concentration.

The Arkansas State Highway and Transportation Department (AHTD) has determined that 8-hour CO concentrations are typically 60 to 70 percent of the 1-hour concentration. A persistence factor of 0.65 was used to determine the 8-hour concentration for CO. The results of the worse case scenario are included in **Table 4-1**.

The modeled results were compared to the NAAQS. This comparison determined that the modeled concentrations do not result in a violation of either the 1-hour or the 8-hour primary and secondary standards for CO (35 PPM and 9 PPM, respectively).

**TABLE 4-1
SUMMARY OF MODELED CARBON MONOXIDE IMPACTS**

Scenario	Intersection	1-hr. Concentration (ppm)	8-hr. Concentration (ppm)
Existing Worse Case Scenario (Year 2000)	Highway 60 & Donaghey	7.4	4.8
Future Worse Case Scenario (Year 2025)	Highway 60 & Donaghey	9.1	5.9

Construction activities can have a short-term impact on local air quality during periods of site preparation with particulate matter, also known as fugitive dust, having the greatest impact. This impact would occur in association with excavation and earth moving, asphalt aggregate handling, heavy equipment operation, use of haul roads and wind erosion of exposed areas and material storage piles. The effect of fugitive dust would be temporary and would vary in scale depending on local weather conditions, the degree of construction activity and the nature of the construction activity.

Information included in **Table 4-1** indicates mitigation is not required for CO in the project area because there are no projected violations of the 1-hour or the 8-hour CO standards.

If construction activity warrants mitigation, the following mitigation measures may be implemented to avoid and minimize the impact of construction related particulate matter:

- Reduce or avoid the occurrence of exposed erodible storage piles
- Stabilize exposed earth with ground cover or plants
- Use dust suppressive agent in construction staging areas and on unpaved surfaces
- Cover stock pile material
- Pave unpaved roads

Under the No-Action Alternative, no impacts are expected to air quality. No indirect impacts to the regional air quality are expected to result from the No-Action Alternative.

4.3 GEOLOGY, SOILS AND TOPOGRAPHY

The Preferred Alternative will impact areas containing sandstone and shale rock of the Pennsylvanian-age Atoka Formation.

Some shales in the Atoka and Hartshorne formations may contain pyrite. The sulfur in this mineral, when exposed to water, may generate acidic run-off causing an impact to local surface water quality. However, these impacts are not considered to be significant due to the low occurrence of the necessary conditions along the proposed alternatives.

Soils of all six types found in the project area, Leadvale-Taft, Linker-Mountainburg, Roxana-Gallion, Muskogee-Sallisaw, Moreland-Perry and Spadra-Ouachita-May will be disturbed by construction activities. With the addition of new roads, stormwater runoff may move oils and other automobile fluids spilled on roads into soils along the adjacent right-of-way. Potential impacts to soils are expected to be minor.

Cadron Ridge and Donnell Ridge have sideslopes that are too severe for traffic. To pass the roadway across these ridges, an opening must be utilized. Implementation of the Preferred Alternative will utilize the existing passage through Cadron Ridge along the extension of Hogan Lane. To accommodate additional lanes, this passage will need to be widened and/or stabilized. A new rock cut will be required at the Donnell Ridge crossing, where rock excavation methods will be warranted. This would result in a change in the topography of Cadron Ridge and Donnell Ridge.

Design Conditions in the final alignment should be investigated by a site-specific geotechnical investigation, including adequate subsurface exploration. However, general design conditions have been developed for use in preliminary consideration of the Preferred Alignment.

- The subgrade soils are typically poor in many areas in the south, where the terrain is flat an undercut may be warranted. Undercut depths will vary with site conditions and grading plans. However, undercuts of 2 to 4 feet, or more are typical in the Conway area.
- Subgrade soils in low-lying areas would be expected to have California Bearing Ratio (CBR) values on the order of 3 to 5, with design resilient modulus (M_r) values of 2500 to 4000 lbs per sq inch typical.
- In areas of higher terrain, subgrade CBR values of 10 to 40 and design resilient modulus (M_r) values of 5000 lbs per sq inch or more would be anticipated.
- Rock will be relatively shallow at ridges. Shallow cuts in weathered rock can probably be advanced by ripping with conventional heavy-duty equipment. However, rock excavation methods, including blasting, will be warranted in the more resistant shale and sandstone units.
- Cut slopes in competent fresh bedrock can probably be made at near-vertical configurations. However, rockfall will be an ongoing concern. Consequently, an adequate setback should be made for collection and maintenance of rockfall. Horizontal benches will be warranted for rock cuts in excess of about 20-foot height.
- Cuts in weathered bedrock and overburden soils will vary with specific conditions. However, configurations on the order of 1-horizontal to 1-vertical to 3-horizontal to 1-vertical would be anticipated.

- The stability of embankments could be impacted by weak foundation soils in flat and/or low-lying areas. This could warrant undercutting of the foundations.
- Embankments in areas of higher terrain are expected to have good foundations.
- The on-site soils in areas of higher terrain are expected to be generally suitable for embankment fill. In low-lying areas, the upper soils are typically moisture sensitive and weak, making poor embankment materials.
- The weathered shale and sandstone will be locally available for high-quality fill.
- Moderate to heavy foundation loads will probably warrant the use of piling or drilled shafts founded in the shale or sandstone bedrock. These strata are relatively strong and moderate to high allowable bearing capacities are typical. Allowable capacities of 40 to 60 tons for H piles tipped in shale or sandstone and allowable bearing pressures of 25 to 70 kips per sq ft for drilled shafts would be typical.
- Where structures are built in areas of higher elevations, relatively strong overburden soils and shallow bedrock may make the use of shallow footings feasible.
- Shallow groundwater is not expected to be a problem but there can be localized shallow perched water, particularly in the low-lying areas of the south. Where seepage is a problem, the use of stone backfill will be warranted.
- Some seasonal springs and/or seeps could be present in rock cuts where rock is shallow and where roadways traverse the base of hills. These will make the incorporation of edge drains and blanket drains beneficial.

Under the No-Action Alternative, no impacts are expected to geology, soils and topography.

4.4 SURFACE AND GROUNDWATER QUALITY

4.4.1 Surface Water Quality

A general review of water resources was conducted along each potential route. Typically with any road construction, minor surface water quality impacts occur. These include the risk of temporary sediment loads during construction and increased run-off to local waterways following construction. Stream peak flows may increase during storms due to increased impervious surface area in watersheds.

Most of the study area is underlain with sedimentary bedrock predominately composed of sandstone and shale. The large amount of shale material within these basins contributes clay particles to the overlying streams, often resulting in a slightly cloudy or milky appearance. Soil erosion is also common within the basins and is exacerbated by inadequate erosion and sedimentation control measures associated with land use practices. Turbidity, as a result of the combination of these two factors, is an ongoing water quality concern in the region.

Typically with any road construction, minor surface water quality impacts occur. Clearing and grubbing of existing vegetation and earthwork will be required during construction. During this process, exposed soil will result in the potential increase for soil erosion and sedimentation to nearby streams. Detailed erosion control plans will be developed and reviewed by ADEQ as part of the design phase to mitigate adverse affects caused by erosion. The temporary sediment loads during construction could exceed the Arkansas Water Quality Standards in localized areas. Short term construction related activities that

cause a violation of the Arkansas Water Quality Standards will be authorized by ADEQ through a short term activity authorization.

To minimize impacts, construction will comply with all requirements of the Clean Water Act including Section 404 dredge and fill permits, Section 401 water quality certification, and Section 402 National Pollutant Discharge Elimination System (NPDES) permits. The NPDES permit program is administered by ADEQ for the state of Arkansas. Conditions in the permit require the creation of a SWPPP, designed to control and reduce pollutants in storm water from this site. The document will indicate how erosion and sediment will be controlled through best management practices (BMPs). The SWPPP, including the appropriate BMPs, will be determined during later design phases.

Field investigations and surveys conducted during the design phase will allow hydraulic structures to be placed in locations that minimize impacts to water quality. Bridges and drainage structures will be sized sufficiently to minimize water quality impacts at the stream crossings. Bridge structures are proposed at the Preferred Alternative crossings of Gold Creek (two locations), Tucker Creek and Cypress Creek. The remaining smaller stream crossings will utilize box or pipe culverts.

Secondary impacts may include degradation of water quality and habitat as the result of storm runoff carrying sediment and roadway pollutants into nearby streams and wetlands. During highway operation, storm runoff can contain pollutants such as solids, heavy metals, nutrients, oil and grease, bacteria and other pollutants. These pollutants are usually a result of highway use and/or maintenance which accumulate within the roadway right-of-way and are then transported to surface waters by storm runoff. However, secondary impacts following construction are not expected to increase substantially from those currently generated by traffic on roads in the project area.

Pollutants such as oils, other automotive fluids and material from accidental spills depend on the volume of traffic among other factors. The effect of such pollutants on waterways depends primarily on the frequency, duration and volume of rainfall events. Stream impacts may be acute, related to short term loads, or chronic as the result of long term accumulation and exposure. The proposed project will be designed to minimize potential impacts to local surface water resources from runoff by curb elimination in rural sections and reducing direct discharges to receiving waters wherever practicable. The use of grassed channels, overland flow through vegetation and detention areas will be considered and implemented at warranted locations during the design phase

Road maintenance may also impact nearby streams and wetlands. Potential polluting materials applied onto and near roads include sand, deicing materials and herbicides. Application of materials and the problems they may cause are site specific and weather dependant. Pollutants created by roadway maintenance are best mitigated through proper application management.

Under the No-Action Alternative, no impacts are expected to surface water quality. No indirect impacts to the regional surface water quality are expected to result from the No-Action Alternative.

4.4.2 Groundwater

The Preferred Alignment will have a minimal impact on groundwater resources. The availability of public water supplies derived from surface water sources reduces the

dependence on groundwater resources. The most vulnerable aquifer would be the alluvial aquifer associated with the Arkansas River. Vulnerability is greater in this area due to the nearly flat topography and sandy soils that allow more rapid infiltration of surface water. However, residents within the river valley rely upon public water supplies for domestic purposes and the aquifer is used mainly for agricultural irrigation.

Road construction and additional pavement along the Preferred Alternative is not expected to affect groundwater. The Preferred Alternative overlays the Arkansas River Alluvial Aquifer; however, this aquifer is mainly bedrock, sandstone and shale. This formation extends thousands of feet below Conway and throughout the study area and is generally impermeable. It provides groundwater storage only at creases and fractures. Because of its limited recharge, impacts to groundwater should be minimal.

Under the No-Action Alternative, no impacts are expected to ground water quality. No indirect impacts to the regional ground water quality are expected to result from the No-Action Alternative.

4.5 FLOODPLAINS

Digital Flood Insurance Rate Maps were examined for the study area in Faulkner and adjacent counties. Due to a new levee constructed along the Arkansas River west of Conway, the active Arkansas River floodplain has been substantially reduced in the project area. Consequently, all alternative routes are outside of the active Arkansas River floodplain.

There are active floodplains along many of the tributaries of the Arkansas River. These tributary streams are found throughout the project area and total avoidance of floodplains is not possible. The Preferred Alternative will encroach on a total of 50 acres (20.2 hectares) of flood plain area.

The Preferred Alternative will encroach on the following flood plains:

- The Cypress Creek crossing is relatively narrow
- The Gold Creek flood plain will be crossed twice
- The Tupelo Bayou crossing is at a point when it is greatly incised and has abandoned its floodplain. There are no impacts to the Tupelo Bayou floodplain.
- Two additional small tributaries that have limited floodplains.

At most floodplain crossings impacts will be limited to bridge placement. Design criteria will result in no change to the flood regime following construction of the bridge. However, the approximate 2,000-foot linear segment in the Gold Creek floodplain along the Preferred Alternative has the potential to result in placement of fill to elevate the road surface above the floodplain. This may alter upstream flood regimes.

Detailed hydraulic studies will be conducted during project design to determine any changes in flood elevations that would result from road construction. Review of these studies will confirm their adequacy to ensure that floodplain encroachment does not increase the risk of flooding on adjacent properties. Upon completion of final design, hydraulic data and construction plans will be submitted to local communities for review, approval, and permitting as specified in local floodplain ordinances.

Areas sensitive to local flooding will be identified during project design. If areas of severe flooding are identified, design criteria may be more restrictive than those specified in local floodplain ordinances.

No secondary floodplain impacts are anticipated from implementation of any of the Preferred Alternative. No development should occur along floodplain areas as a result of construction of the road. Development along roads typically occurs at points of access. No interchanges are planned for floodplain areas, so there will be no access to the road in these areas.

Under the No-Action Alternative, no impacts are expected to the floodplain.

4.6 NOISE

The noise analysis was prepared in accordance with 23 CFR 772 that established a requirement for a noise study for any proposed federal or federal-aid project. It presents a description of the methods used for analysis, applicable noise standards and criteria, an assessment of the existing noise environment, the predicted impact assessment of future noise levels, and a discussion of mitigation measures. Effective construction measures for mitigation of noise are also discussed in the document.

Noise Impacts

The results of the analysis have been included in **Table 4-2** below.

Preferred Alternative

Thirteen representative receivers, all of which are Category B sensitive receptors, were located along the proposed alignment for the Preferred Alternative. None of the on-site measurements indicated levels above the AHTD 66 dBA threshold. The predicted noise level for one of the thirteen receptors exceeded the 66 dBA threshold for the future (2030) modeled scenario. Two of the thirteen representative receptors are impacted because the predicted future noise levels indicate substantial increases over the measured existing scenario could occur.

**TABLE 4-2
PREFERRED ALTERNATIVE IMPACTS**

Receptor	Noise Abatement Criteria (dBA)	Measured Existing Noise Level (dBA)	Modeled Future (2030) Noise Level (dBA)	Noise Level Increase (Substantial=10 dBA or more)*
A1	67	55	61	6
A2	67	55	58	3
A3	67	64	66	2
A4	67	62	66	4
A5	67	59	56	-3
A6	67	57	62	5
A7	67	38	62	24
A8	67	42	68	26
A9	67	41	44	3
A10	67	45	48	3
A11	67	51	46	-5
A12	67	56	62	6
A13	67	59	51	-8

* Negative values indicate the predicted future noise level is less than the measured existing noise level. The modeled future scenarios only predict traffic noise and do not include noise contributions from the ambient environment (insects, birds, dogs, aircraft overflights, etc.).

A summary of impacts for the future (year 2030) modeled Preferred Alternative has been included in **Table 4.3**.

**TABLE 4-3
SUMMARY OF FUTURE (2030) IMPACTS**

Receptor	Preferred Alternative
A1	No Impact
A2	No Impact
A3	Impact
A4	Impact
A5	No Impact
A6	No Impact
A7	Impact
A8	Impact
A9	No Impact
A10	No Impact
A11	No Impact
A12	No Impact
A13	No Impact

Mitigation

Noise barriers and earth berms serve as effective mitigation for developed areas. Because earth berms require a significant amount of space, noise barriers are typically the most cost effective mitigation alternative.

As part of the reasonability and feasibility determination, the AHTD has established a number of minimum pre-screening criteria that determine if mitigation will be provided. The minimum criteria include the following:

1. The ability to achieve noise reduction is not limited by topography, access requirements for driveways or ramps, the presence of local streets and other noise sources.
2. The reasonableness scale for cost established by AHTD is met. It is unlikely that barriers exceeding \$36,000 per benefited receiver will be constructed.
3. "Most" impacted residents that are benefited want noise mitigation.
4. The housing development predates the initial highway construction.
5. The housing and/or sensitive development has been in place for at least 10 years.
6. The future noise levels would approach or exceed the dBA Leq(h) established by FHWA's Noise Abatement Criteria .
7. The future build noise levels are at least 10 dBA Leq(h) greater than the existing noise levels.
8. The future build noise levels are at least 7 dBA Leq (h) greater than the future no-build noise levels.
9. At least one receiver experiences a 10 dBA reduction in sound levels and others receive at least a 5 dBA reduction.

To avoid and minimize impacts to undeveloped land, minimum setback distances should be used when planning future development. A detailed noise analysis should be conducted prior to the development of undeveloped land adjacent to the proposed Alternatives. Future development should be restricted to development outside the 66 dBA contour line for Category B land uses and outside the 71 dBA contour for Category C land uses.

The areas surrounding the Preferred Alternative are sparsely populated with residential and other Category B sensitive land uses adjacent to each of the routes. A preliminary noise analysis was conducted to determine the reasonability of mitigation at sensitive areas adjacent to the route. All areas evaluated for mitigation are based on preliminary design for the Preferred Alternative and parcel data obtained from the City of Conway. An average cost of \$15 per square foot was used to determine reasonability.

Identified parcels were chosen because they include noise sensitive receptors. All noise receptors represent Category B land uses.

Location: Between Tyler Street and Desolvo Drive on the east side of the proposed alignment

Parcels: Approximately 6 on the east side of the proposed alignment.

Mitigation: A noise wall, 12-feet tall and 1,637-feet in length was evaluated. The total cost was estimated at \$294,719 with an estimated cost per residence of \$49,119. On the basis of the estimated cost, this barrier is not reasonable. Additionally, a barrier in this area likely would not be feasible because breaks

in the barrier would be required because of cross streets and in order to allow access to the structures along the east side of the proposed alignment.

Location: Between Prince Street and College Avenue on the east side of the proposed alignment

Parcels: Approximately 12 on the east side of the proposed alignment.

Mitigation: A noise wall, 12-feet tall and 919-feet in length was evaluated. The total cost was estimated at \$165,445 with an estimated cost per residence of \$13,787. On the basis of the estimated cost, this barrier may be reasonable. However, a barrier in this area likely would not be feasible because breaks in the barrier would be required because of cross streets and in order to allow access to the structures along the east side of the proposed alignment.

Location: Between Donnell Ridge Road and Deerbrook Drive on the west side of the proposed alignment

Parcels: Approximately 5 on the west side of the proposed alignment.

Mitigation: A noise wall, 12-feet tall and 2,888-feet in length was evaluated. The total cost was estimated at \$519,884 with an estimated cost per residence of \$103,977. On the basis of the estimated cost, this barrier is not reasonable. Additionally, a barrier in this area likely would not be feasible because breaks in the barrier would be required in order to allow access to the residences along the west side of the proposed alignment.

Location: South of Nutter Chapel Road in the vicinity of Ridgedale Circle.

Parcels: Approximately 16 parcels on the west side of the proposed alignment and 12 parcels on the east side.

Mitigation: A noise wall, 12-feet tall and 4,072-feet in length was evaluated on the west side of the proposed alignment. The total cost was estimated at \$732,982 with an estimated cost per residence of \$45,811. On the basis of the estimated cost, this barrier is not reasonable.

A noise wall, 12-feet tall and 3,659-feet in length was evaluated on the east side of the proposed alignment. The total cost was estimated at \$620,885 with an estimated cost per residence of \$51,740. On the basis of the estimated cost, this barrier is not reasonable.

Given the criteria established by the FHWA and AHTD, the following locations are recommended for further evaluation to determine their feasibility and effectiveness during the project design phase:

Location	Parcel (approx.)	Cost /residence
Between Prince Street and College Avenue on the east side of the proposed alignment	Approximately 12 on the east side of the proposed alignment	\$13,787

Residents along the Preferred Alternative, particularly in the Sunderlin Park subdivision, have expressed serious concerns about future noise levels and mitigation measures to be proposed for the project. These concerns were expressed in written comments addressed to the mayor and city council (July 23, 2004) and in a small group meeting (May 10, 2006). The concerns are justified and will be addressed in detail during the project design phase. Citizens will be provided an opportunity for input, review and comment relating to project noise mitigation measures during design public hearings to be held prior to completion of preliminary plans, specifications and estimates.

Construction Noise

Noise generated by construction equipment would vary greatly depending upon the equipment type, mode and duration of operation, and specific type of work in progress. Variations in building setback distances and zoned land uses, as well as the intensity and limited duration of specific construction activities, would result in varying levels of exposure to construction noise. Construction noise is anticipated to be localized and temporary.

Under the No-Action Alternative, no noise impacts are anticipated.

4.7 PUBLIC WATER SUPPLY

No sole source aquifers have been declared within the state of Arkansas. Currently, no wellhead protection areas are located within the study area and no future plans to establish any are anticipated. The municipal water supply for Conway is Brewer Lake, located 13.5 miles northwest of Conway. No part of the Preferred Alternative is located within the watershed contributing to Brewer Lake. No impacts to public water supplies are expected.

Under the No-Action Alternative, no impacts to the public water supply are anticipated.

4.8 TERRESTRIAL AND AQUATIC COMMUNITIES

Impacts to terrestrial and aquatic communities would primarily result from the conversion of existing land to highway right-of-way. The Preferred Alternative passes through a portion of multiple habitat types ranging from forests and grasslands to wetlands and aquatic systems. Most potential impacts to communities will result from conversion of existing forested land to road and road right-of-way. Most existing non-forested land that would be included within the road right-of-way is in active pasture. These habitats have limited ecological value to natural flora and fauna and as a result, conversion of land to highway right-of-way will not constitute a significant adverse impact. **Table 4-4** identifies the amount of forest, pasture, and cropland land that would be converted under implementation of the Preferred Alternative.

**TABLE 4-4
LAND CONVERSION**

Alternative	Forest (acres)	Pasture (acres)	Cropland (acres)
No-Action	0.0	0.0	0.0
Preferred	122.4	48.9	0.0

It is unlikely that any populations of terrestrial species would be eliminated due to the construction of the Preferred Alignment. Construction of the project would convert existing habitat communities to early successional grassy or shrubby vegetation commonly associated with highway right-of-way. Potential wildlife impacts would likely follow those

observed on similar existing highways. Construction and operation of highways generally do not adversely affect the distribution and abundance of bird and mammal species unless critical habitat is disturbed. The available habitat communities affected by highway construction are relatively common in the surrounding areas. A discussion of the potential impacts of the project on critical habitats is contained below.

There are limited locations where aquatic communities may be impacted by the proposed project. In areas where the alignment crosses floodplains, temporary impacts to aquatic communities may result from construction activities. Also, Preferred Alternative crosses several small drainages that lack defined floodplains. Aquatic communities in these drainages also may be impacted temporarily by construction activities.

Aquatic communities along the alternatives will be protected from adverse impacts through federal and state permitting required for construction in these areas. Conditions imposed as requirements of these permits relating to erosion control and control of construction stormwater runoff will prevent adverse impacts to aquatic species and communities. Following construction of the road, there will be no change to flow patterns and no barriers to movement of aquatic life forms. Streambed contours will be returned to as near pre-construction conditions as practicable and there will be no substantial change in aquatic habitats.

The most direct visible effect of roads on wildlife is animal mortality resulting from collisions with motor vehicles. For most wildlife species, the death of a few individuals does not directly impact the overall survival of the species throughout its range. However, for some species whose overall population numbers are extremely low, highway mortality has been identified as a serious threat to the continued existence of the entire species population. No wildlife species identified as occurring or potentially occurring within the preferred corridor would be impacted in this manner. Several highway related wildlife mortality studies have concluded that roads appeared to act in a density-dependent manner. Species killed in greatest numbers were those with high population densities attracted to right-of-way habitat, such as edge-associated birds and small/medium sized mammals.

Habitat alteration associated with road construction may increase predation of smaller mammals (voles, mice and rat species) and reptile species within the generally maintained highway right-of-way. Predators preying on smaller mammals may increase frequency of visits to the highway right-of-way due to increased vulnerability of smaller mammals and reptiles adapting to increased edge habitat, particularly in forested areas. Predators include, but are not limited to coyotes, raccoons, domestic dogs and cats, and avian species such as hawks and owls. Smaller mammals likely affected by road construction include those with limited or decreased mobility compared to those with higher mobility. The effect of road construction as a barrier to small mammal movement, while increasing forest fragmentation, may decrease small mammal movement between fragmented areas. Generally, highways serve as effective wildlife barriers and may increase smaller mammal abundance on either side of the highway, which can increase competition between closely related species requiring the same or similar habitat. The amount of increased population, over time, will adjust accordingly to the carrying capacity of the given adjacent highway forested areas.

Forested habitat loss as a result of conversion to highway right-of-way will impact 122.4 acres. It is anticipated that individual mortality of certain occupying wildlife species will occur accordingly. Diversity of plant structure and diversity resulting from converting pasture land habitats to highway right-of-way should be minimal due to the pre-construction of natural

state of the surrounding area. Several fauna species will be able to utilize the converted right-of-way regardless of the generally maintained right-of-way.

Invasive flora and fauna typically results from habitat alteration and fragmentation. Invasive floral species could be kept to a minimum in part by following AHTD's Wildflower Program and right-of-way management program, which will assist in maintaining native species while providing wildlife habitat. Seeding of the highway right-of-way should include only native species endemic to Arkansas. Any clearing and grubbing activities should include tree felling in a manner to prevent damage to off-site or preserved vegetation.

Secondary impacts to aquatic species may result from runoff of chemicals from road surface during precipitation events or following treatment of the road surface for snow and ice removal. Impacts from the operation of the Preferred Alternative would be similar to those seen on typical roadways in the project vicinity. No substantial secondary impacts to aquatic life forms are expected from implementation of the Preferred Alternative. Additional future development may occur as a result of increased highway access to rural areas. These secondary impacts could include alteration of natural terrestrial or aquatic habitats not affected by this highway.

Under the No-Action Alternative, no impacts to terrestrial or aquatic resources are anticipated.

4.9 THREATENED AND ENDANGERED SPECIES

In 2000 CH2M Hill conducted the original investigations and field survey to identify the presence and potentially suitable habitat for one federally-endangered bird species (interior least tern) and four species of state conservation concern (open ground whitlow-grass, Alabama snow wreath, purple fringeless orchid and white cinquefoil). The species are known to exist near the study area in Conway Arkansas. In addition to the CH2M Hill investigations, the Arkansas Natural Heritage Commission, in response to the DEIS, identified the potential presence of another species of state conservation concern. The Arkansas twistflower (*Streptanthus maculatus* ssp. *obtusifolius*) was believed to be present within the study area, particularly in the vicinity of the Preferred Alternative corridor. In response to DEIS review comments received from The Arkansas Natural Heritage Commission, The City of Conway contracted with Brent Baker to investigate the possible presence, within the corridor of the Preferred Alternative, of the twistflower species. As a result of that investigation, Mr. Baker identified and documented the location of one population of the twistflower. He also identified and documented one population of an additional species of state conservation concern, Wolf's spikerush (*Eleocharis wolfii*). These finds have been documented in a report prepared for the City of Conway Street and Engineering Department dated July 2005 Appendix H.

The locations of Arkansas twistflower and Wolf's spikerush identified by Mr. Baker's investigations were within the limits of the DEIS Alternative A; therefore, the alignment of Alternative A was modified to avoid direct impacts with the known populations of these species of state conservation concern.

Potentially suitable habitat for the interior least tern was not observed along any of the Preferred Alternative, nor was the species observed along any route during May 2001 site investigations. Implementation of the Preferred Alternative is not anticipated to impact the interior least tern.

Potentially suitable habitat for open ground whitlow-grass was not observed along the Preferred Alternative, nor was the species observed along any route during May 2001 site investigations. Implementation of the Preferred Alternative is not anticipated to impact the open ground whitlow-grass.

Potentially suitable habitat for the Alabama snow wreath was not observed along the Preferred Alternative, nor was the species observed along any route during May 2001 site investigations. Implementation of the Preferred Alternative is not anticipated to impact the Alabama snow wreath.

Potentially suitable habitat for the purple fringeless orchid was not identified within the limits of the Preferred Alternative. Implementation of the Preferred Alternative is not expected to impact purple fringeless orchid.

Potentially suitable habitat nor individuals of tall cinquefoil were observed along the Preferred Alternative. Implementation of the Preferred Alternative is not expected to impact tall cinquefoil.

One population of Arkansas twistflower (*Streptanthus maculatus* ssp. *obtusifolius*) and one population of Wolf's spikerush (*Eleocharis wolfii*) were located along the Preferred Alternative. Appendix P shows that direct impacts to the specific populations have been avoided by making changes in the alignment of the Preferred Alternative. Suitable habitat along the Preferred Alternative, for both the Arkansas twistflower and Wolf's spikerush, will be converted to highway uses. Indirect impacts can be reduced by proper attention to design elements such as storm runoff facilities. Secondary impacts to both present species and existing habitat will occur due to development in the area. Development adjacent to the route will be discouraged since access will be limited to specific intersections.

No other protected species nor potentially suitable habitat for any of the species occurs along the Preferred Alternative. As the species do not occur and are not expected to occur along this route in the future, no secondary impacts to protected species are expected from implementation of the project.

Under the No-Action Alternative, no impacts to threatened and endangered species are anticipated as no construction would occur.

4.10 WETLANDS

4.10.1 DEIS Potential Impacts of Action

Potential wetland impacts were assessed for the DEIS alternatives using results of filed investigations and aerial photography to determine the extent of wetland encroachment for each alignment, and to determine the relative extent of wetland impacts in the project area. Impacts are based on the area within the alignment construction limits. Due to the relative number and spatial distribution patterns of wetland communities, as well as a thorough consideration of other environmental concerns including existing topography, residential communities, and important natural and cultural resources, a practicable alignment that avoids all wetlands is not possible within the study area. However, throughout the development of all alignments, wetland impacts will be minimized to the greatest extent possible and no significant long-term adverse impacts to the areas wetlands or wetland ecosystems are anticipated from any of the proposed alternatives.

4.10.2 Post DEIS Wetland Delineations

Formal wetland boundary delineation in accordance with the U.S. Army Corps of Engineers Wetlands Delineation Manual (USACE 1987) was conducted in conjunction with the refinement of Alternative A to finalize the Preferred Alternative alignment. The resulting finding was that a total of 0.249 acres of direct wetland impacts are expected. This area of impact will not require mitigation and should be permitted under the nationwide 404 permit.

Secondary impacts to wetlands may be the immediate result of road construction, the result of the road's long-term operation or the result of development-associated with interchange locations. Secondary impacts to wetlands from road construction primarily result from altered hydrology that may result in changes in vegetation composition and eventual shift in wetland type. Road construction may result in impoundment of streams, increasing water depth and hydroperiod, or may act to drain existing wetland areas thereby reducing or eliminating the hydrology that had sustained the wetland. Additional secondary impacts to wetlands may result from increased sedimentation from erosion associated with construction and accumulation of potentially toxic substances from road runoff after operation of the road begins.

Changes in hydrologic regime will not occur if construction is done in compliance with all general and specific conditions of the Section 404 permit that must be obtained prior to construction. The construction contractor will be required to have an approved construction stormwater pollution prevention plan prior to initiating construction. Adherence to this plan will prevent increased sedimentation associated with construction activities.

Additional secondary impacts to wetlands may result from the relocation of utilities (electric, gas, water and sewage transmission lines). While impacts resulting from these activities would be less than installation of new utility lines because original placement of existing lines resulted in disturbance of natural habitats that has been perpetuated with maintenance of the right-of-ways, these issues were considered during the alignment development process. The proposed route was selected to reduce involvement with major utilities through placing substantial portions of the proposed alignments in agricultural areas and undeveloped land.

Under the No-Action Alternative, no impacts wetlands are anticipated as no construction would occur.

4.11 LAND USE AND ZONING

4.11.1 Relationship of Proposed Project to Land Use Plans, Policies, and Guidelines

The City of Conway has adopted a land use plan that indicates neighborhood commercial nodes along Hogan Lane and additional residential development in the western and southern portions of Conway. The proposed project would support this development and is shown on the city of Conway Comprehensive Plan with additional commercial nodes along the southern portion of the Preferred Alternative. Additionally, the proposed project would require the conversion of several existing land uses to a transportation land use. Coordination has taken place with local officials in Conway and Mayflower regarding each of the proposed alternatives and preliminary location maps have been provided to them for planning purposes.

- **General Impacts**

The northern portions of the project will be located, for the most part, along existing streets and within existing public rights-of-way where available. The southern portions will require construction of a new roadway. The project may require some relocation of existing residential and/or commercial land uses and easements would be required. Access points to the proposed road are anticipated to be located at intersections of the proposed road and existing streets.

Direct impacts caused by the proposed road would include changes in land use, accessibility, property values, relocation, and right-of-way acquisition. The project would facilitate the projected new development in the study area which could take the form of commercial development at interchanges; and industrial development in existing industrial areas due to increased access. Projected residential development may also be facilitated due to improved access to nearby job markets. The project will bisect some farms resulting in the loss of productive use or acreage of cropland or pastureland. Final assessment of impacts to farming areas and other property access issues will be handled during the final design of the Preferred Alternative.

Development that occurs at interchanges could indirectly affect the residents living in the area. Land use densities at the interchanges could change to higher intensity commercial use, resulting in a change in rural character. However, these changes may provide nearby residents more convenience and accessibility.

During construction it will be necessary to relocate public utilities. Although there may be temporary interruption between disconnection of the existing utilities and the reconnection of the relocated utilities, no prolonged loss of service is anticipated during this phase. The proposed construction may create some unavoidable inconvenience to motorists; however, construction activities would be conducted in a manner that would maintain access and minimize conflict with traffic. The safety and convenience of the general public and residents of the area would be provided for at all times. Roadways that would be crossed would remain open to traffic at all times with the possible exception of very short infrequent stoppages to move machinery across the road.

Indirect impacts associated with construction, such as noise, dust, and traffic disruptions would be minor and of short duration. Indirect impacts associated with construction of the roadway could have an adverse impact on commercial land uses within the study area. Construction-related impacts could immediately affect adjacent land uses during the construction period.

Mitigation activities would include coordination with adjacent property owners, the City of Conway and Faulkner County in order to reduce the interference with the future land use potential of the properties. Construction related impacts on adjacent land uses can be mitigated by following fugitive dust control and noise abatement procedures, by restricting hours of construction-related activities, and by developing traffic control plans including measures to allow site access.

- **Alternative-Specific Impacts**

The Preferred Alternative is located within the suburbanized western portion of Conway and consists of a combination of suburban land use along Hogan Lane, rural residential south of Prince Street, commercial land use near Dave Ward Drive and agricultural and undeveloped land uses south of Donnell Ridge. Because this alternative is the most developed, relocation

and right-of way costs would be the greatest along this route. Indirect impacts associated with the construction of the proposed project, especially traffic disruption, could have a temporary impact on commercial land uses along Hogan Lane, Dave Ward Drive and the Gold Creek area. In general, road construction would temporarily restrict traffic from turning into and out of businesses and could decrease traffic along the construction route. Development of this alternative may result in land use impacts to commercial areas located along Hogan Lane and Dave Ward Drive. These impacts may include temporary construction impacts and relocation of some businesses and residences depending on the final alignment of this alternative. The interchange proposed north of Cadron Ridge is located closer to the urbanized area of Conway and would experience varying amounts of development that may extend into the more established business districts of Conway. Because of the rural nature of the Gold Creek area and the distance to more urbanized areas, the proposed interchange at Gold Creek could experience light commercial development, however, it would not be anticipated to extend far beyond the interchange area. This development could result in a modest increase in the number of businesses and therefore result in a positive economic impact. The Preferred Alternative may bisect some farms resulting in the loss of productive use or acreage of cropland or pastureland. While Preferred Alternative would result in localized land use changes and possible relocation of some businesses and houses, these impacts are not considered significant.

- **Right-of-Way and Relocation Impacts**

The acquisition and relocation process will be conducted in accordance with the Uniform Relocation Assistance and Real Property Policies Act of 1970. Relocation assistance will be made available to all residential and business relocatees without discrimination. AHTD will assure that decent, safe and sanitary housing is provided for all relocatees. The AHTD Right-of-Way acquisition program involves property evaluation, negotiation with the property owner and a contract to sell. The state will take possession of the property once the deed is signed and the check is received by the property owner. When negotiation efforts are unsuccessful, AHTD will file condemnation proceedings. The appraisal amount is deposited in the court and the landowner may withdraw the funds placed on deposit without affecting their right to claim additional compensation.

The relocation assistance program will help to offset expenses incurred by those who are displaced by this project. The relocation assistance program provides advisory assistance and payments to help offset moving expenses. Relocation assistance program stipulations include advanced written notice of 90 days and comparable replacement housing before construction begins. Additionally, individuals and business owners relocated will be fairly compensated financially and will be provided physical assistance in moving. Appeals for additional relocation assistance would be reviewed by an AHTD Appeals Officer.

Within a reasonable period of time prior to displacement, a comparable replacement dwelling will be made available, or provided, for displaced individuals and families who are initial occupants, or adequate replacement dwellings will be made available or provided for subsequent occupants.

- **Community Impacts**

The Preferred Alternative will result in changes to neighborhoods, property values, travel patterns and local traffic. These changes will most likely occur in close proximity to the proposed project. Communities outside the proposed project area may experience this type of development to a lesser degree.

- **Neighborhoods**

The Preferred Alternative will travel along the ridge line to the southeast of the Gold Creek community to minimize impacts to the Gold Creek neighborhood. Due to the rural nature of the Gold Creek area and the distance to more urbanized areas, the proposed interchange at Gold Creek could experience light commercial development. However, it is not anticipated to expand far beyond the interchange area. This development will result in a modest increase in the number of businesses and therefore result in a positive economic impact.

No adverse community impacts are expected from the Preferred Alternative. However, some disruption may occur in residential areas due to displacements. These displacements will not occur in any subdivision or neighborhood, but may involve relocation of some houses and businesses along the route. The proposed project will improve access to the area's educational facilities, recreational facilities, hospitals, commercial and community services, and will improve access by emergency vehicles.

- **Property Values**

In general, property values are anticipated to increase near the highway interchange depending on its proximity to the more urban areas. Interchanges located closer to urban areas tend to have higher property values. Houses located too close to the proposed highway, but not close to the proposed interchange, could decrease in value because some potential buyers may perceive this as an undesirable residential location. In some cases, houses located close to the proposed highway interchange may increase in value.

- **Travel Patterns**

As a part of this project, the City of Conway will set up an access management plan for the proposed arterial in an effort to protect the capacity of the roadway and increase the safety for drivers and pedestrians that use this facility. As a part of this plan, the proposed Interstate 40 interchanges at log mile 122 and 132 will be fully controlled access. The non-urban areas will be median-divided with partially controlled access as defined in the access management plan. No access from adjacent properties will be allowed in this area. The urban area divided sections will limit access to right in-right out and intersecting streets. These sections will be divided with median breaks and curb cuts determined by the access management plan. The urban non-divided section will have no access restrictions.

In some situations, multiple driveways may be combined and routed to consolidated access points. As a result, current travel patterns for certain trips within a community may change and the time required to make these trips may increase. In comparison, a trip from one side of the community to the other may be more easily made by utilizing the proposed roadway, thereby reducing trip duration. Intercommunity travel patterns would also be altered because residents will have a choice to utilize the proposed roadway or take existing routes. By taking the proposed roadway, residents may have a shorter travel time, but may be traveling a greater distance.

The No-Action Alternative will not result in any development beyond what the current development trends are showing. Hogan Lane is developing in a suburban commercial fashion with residential housing located in the areas near Padgett Road and Prince Street. Commercial and industrial development is occurring near the intersection of Dave Ward Drive and Hogan Lane. Suburban growth along the western and southern portions of Conway will likely continue. In the absence of the project, traffic congestion will increase

and travel times will be extended. The resulting increase in traffic congestion may lead to property devaluations along certain roadways most affected.

4.12 FARMLANDS

The Farmlands Protection Policy Act (FPPA) of 1984 requires a farmland evaluation for applicable, federally funded projects. Coordination with the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) is required through completion of a Farmland Conversion Impact Rating Form (Form AD-1006) for each county impacted. This form is used to evaluate the impact soils the NRCS has designated as either prime, unique, statewide, or locally important.

The location of soils determined to be prime, unique, statewide, or locally important were provided by NRCS. Form AD-1006 has been completed for Faulkner County and shown in Appendix I. No unique or locally important soils were identified by any of the NRCS offices.

The No-Action alternative would result in no farmland impacts.

Limited secondary impacts to farmland soils would be anticipated from construction or continued use of the proposed highway. Development-associated with interchange locations would likely occur along existing roadways and in previously developed areas.

4.13 SOCIAL AND ECONOMIC ENVIRONMENT

This section examines the potential impacts of the Preferred Alternative on population, employment, income, housing and the economy. Furthermore, it discusses the neighborhoods that could be potentially impacted in terms of their demographic, racial, and income characteristics. Social and economic data were compiled from the U.S. Census statistics for the City of Conway, Faulkner County and area in the immediate vicinity of the proposed project.

The project area contains both urban and rural areas. The presence of the proposed highway through these areas will result in community changes

4.13.1 Population

The Preferred Alternative is being proposed in order to respond to recent increases in population in Conway and Faulkner County. The proposed roadway will not be, in and of itself, a growth inducer although localized changes in land use along the proposed alignment may occur. As a result, the project will not directly change the population of Conway or the adjacent areas of Faulkner County. No additional impacts to population are anticipated from this project.

The No-Action Alternative will not address recent increases in population in Conway and Faulkner County. Individuals living in the western and southern portions of Conway would continue to experience congested roads and time delays under the No-Action Alternative.

4.13.2 Employment and Income

The primary impacts on local employment and income of the build alternative for the proposed project are due to changes in local expenditures. In addition to construction related expenditures, the Preferred Alternative could lead to secondary economic impacts

(increasing or decreasing expenditures) on local businesses by either improving or reducing access, and by attracting new businesses and residences to relocate within the community.

Other economic impacts of the project include reduced vehicle travel times and increased travel safety. The vehicle travel time savings would come from preventing additional congestion within the study area relative to the No-Action alternative. It is especially noted that emergency vehicles would have improved access to regional medical facilities in Conway. In addition, by reducing congestion, improving access control, and limiting crossings and conflicts with rail traffic, the number of transportation related accidents that occur within the study area would be reduced. These project economic benefits are addressed in Section 1 under Purpose and Need. They are economic benefits in that they save economic resources (e.g., people's time, medical expenditures, foregone wages).

The changes in expenditures are primarily from construction, operation and maintenance of the roadway, right-of-way acquisitions, and, relocations of utilities, businesses, residences and other structures. All but the annual operation and maintenance expenditures are temporary impacts and would last for the duration of the construction project. To the extent that funding for these activities is provided by a source outside the region (e.g., federal and/or state), these expenditures represent new spending and would provide an economic boost to the community. Potential changes in expenditures on local businesses due to changes in access are discussed separately.

Economic effects of the proposed project were estimated using data on construction costs contained in Section 3, and input-output modeling. Effects of the arterial loop construction action are caused by changes in demand for goods and services in the local economy.

Input-output (I-O) analysis estimates are totals of impacts on economic output, income, and employment for a given region (in this case, Little Rock-North Little Rock, Arkansas MSA) based on a change in final demands. Final demands are direct changes in expenditures caused by some external action, in this case, construction and operation and maintenance of the proposed project, and the changes in property taxes that result from the proposed project construction. External actions represent, new dollars brought into the region. Simply redirecting local tax revenues from other expenditures to the proposed project would represent a transfer of funds and not an external action. Therefore, any of the following economic impact estimates must be adjusted by the share of externally provided funding, once the source of funds is determined.

Indirect economic impacts result from the direct change in final demand because of trade and production linkages in the economy. An increase in final demand requires an increase in expenditures for intermediate goods needed to meet that demand. These expenditures, in turn, create demands on other local industries. For example, an influx of construction workers to the project area would result in an increased demand for services, ranging from gasoline to groceries. Material and equipment suppliers both within and outside the project area would benefit from increased demand for their products. Indirect effects are captured using the appropriate multipliers.

Finally, leakages are payments made to nonresidents for imported goods, materials, and labor. Payments to nonresidents are not returned to the local economy once they leave and as a result, they have no local impact. It is expected that the construction project would include some leakages. Some workers who will construct the project may be local residents, but many would likely relocate to the project area.

The I-O analysis in this study is based on the RIMS II multipliers (1997 regional data/1992 benchmark data) for Little Rock-North Little Rock, AR Metropolitan Statistical Area (MSA) as obtained from the Bureau of Economic Analysis.

- **Construction Impacts**

The estimates for construction, design, and rights-of-way expenditures are reported in **Table 2-6**. These figures are reported in year 2009 dollars. The temporary boost to the local economy would be spread over the estimated five years that it would take to construct the proposed project. During this period, the project would create about \$50 million in earnings, or approximately \$10 million each year for five years. This corresponds to about 2,019 to 2,913 in full-time equivalent jobs, assuming an average wage rate of \$25,050 for the construction industry. Converting these full-time equivalents to annual employment gives an increase of approximately 440 jobs. This would represent an increase in Faulkner County jobs of about 1 percent. The percentage would be smaller for the Little Rock-North Little Rock, MSA. These figures are well within normal employment commuting patterns among the nearby counties. The increase in the number of jobs could be accommodated by the regional labor force (U.S. Department of Commerce, Bureau of the Census).

Cumulative total output over the period would be increased by \$170 million. On an annual basis this would represent \$34 million. Depending upon the source of funds and the amount of leakages, it is likely that not all of these dollars would represent a boost to the local economy.

Annual operation and maintenance expenditures for the additional highway miles associated with The Preferred Alternative were estimated at \$90,000. Assuming about 25 percent of the expenditures would be for labor, this would generate an increase in earnings of \$22,500. At an average wage of \$25,050 for construction employment, this would result in approximately one full-time equivalent worker per year in direct effects. These figures increase slightly when indirect effects are also considered. The maintenance and repair direct-effect earnings multiplier for the region is 1.9665, which raises the earnings estimate to \$44,246. The corresponding jobs multiplier is 2.137, increasing the annual number of jobs from one to two. Finally, applying the output multiplier of 2.0504 to the increase in final demand for operation and maintenance raises that total from \$90,000 to \$184,536. Each of these changes represents less than 0.1 percent of local earnings, employment and output, and are not significant.

Under the No-Action Alternative, no major expenditure of government funds would occur at the local, state, or federal levels. The operation and maintenance costs (O & M) of existing roadways in the study area would increase, but the region would not incur additional O&M costs for the proposed project.

4.13.3 Housing

Over the last ten years, new housing construction in the form of single family and multi-family housing has resulted in approximately 783 units annually, exclusive of manufactured housing. These current trends are anticipated to continue over the next few decades resulting in average of approximately 426 single-family permits and 321 multi-family permits. Housing along the alternative alignments consists primarily of single-family homes ranging in size and age, as well as some mobile homes and apartment complexes. A limited number of houses will be taken (or moved) as part of this project; however, Arkansas relocating policies require this replacement, most likely within the study area. As the proposed project

would not result in a direct increase in population, no additional demand for housing would occur. Therefore, the project is not anticipated to have significant impacts on housing in the area.

The no-action alternative would not address recent increases in housing. Individuals living in these new homes would continue to experience congested roads and time delays under the no-action alternative.

4.13.4 Local Government Revenues and Expenditures

The Preferred Alternative will lead to changes in tax revenues from converting existing land uses, which are currently a part of the tax base, to untaxed highway right-of-way. The proposed project will remove some residential and agricultural land from the town tax rolls, used to finance local government services.

In the short term, it is expected that economic impacts caused by loss of tax base would be offset by relocating displaced residences and businesses within the same community. In the long term, it is expected that the economic impacts caused by the loss of tax base would be offset by increased land value due to improved transportation access and service. As a result, no short-term or long-term impacts to local revenues are anticipated.

The No Action Alternative would not create the changes in tax revenues due to land acquisitions.

4.13.5 Environmental Justice

Although not reflected in the overall block group or census tract data as disproportionate, the Gold Creek community does appear to contain a higher concentration of low-income minority population in comparison the rest of the study area. Therefore, the Gold Creek Community has been identified as a potential area of concern for environmental justice issues.

The Preferred Alternative will travel along the ridge line to the southeast of the Gold Creek community, minimizing impacts to the Gold Creek neighborhood. In addition, the proposed project would increase access to the expanding employment areas in the west Conway area, resulting in increased job opportunities for residents of the community. As such, the action alternatives are not considered to have significant adverse impacts associated with environmental justice.

Because of the rural nature of the Gold Creek area and the distance to more urbanized areas, the proposed interchange at Gold Creek could in time convert to light commercial development; however, it will not be anticipated to expand far beyond the interchange area. This development will result in a modest increase in the number of businesses and therefore likely result in a positive economic impact to the area.

The No Action alternative would not impact existing minority and impoverished communities as no project would be constructed.

4.14 VISUAL RESOURCES ANALYSIS

The proposed project would alter the rural and urban portions of the Faulkner County. Rural areas consist of large tracts of land being used for cropland or grazing areas with a limited number of residences. The urban areas consist of recently constructed residential subdivisions and commercial development; as well as older homes located in areas such as Gold Creek. Visual impacts from the proposed project are analyzed based on views of the proposed highway from various points within the preferred corridor and views from the proposed highway of the surrounding landscape. Overall, the quality of the visual environment in the project area would be temporarily degraded during construction. This temporary visual degradation would be from the construction equipment and materials along the alternative. Additional visual impacts for each of the landscape units are described below.

Visual Unit 1: Forested/Undeveloped/Rural Residential Interstate 40/Cadron Ridge Landscape Unit

The most prominent visual feature in this landscape unit is Cadron Ridge. The Preferred Alternative will require expansion of the existing cut through Cadron Ridge to accommodate a four lane highway. This cut will result in additional visual impacts to this area. The surrounding area is a combination of undeveloped and rural residential lands which consists of low-lying forested and pastureland. The vegetation pattern of forested underbrush, landscaped lawns and roadway right-of-way provides little screening ability for the Preferred Alternative. Man-made structures in this visual unit include ranch-style homes located along Boone Loop. The view of Cadron Ridge from the residences along Boone Loop will be altered as a result of the expanded cut in the ridge. Additionally, the expanded ridge cut will be visible from a wide geographic area to the south and will be momentarily visible to motorists traveling along Interstate 40. Groups with a view from the road in this visual unit will include local and commuter traffic. The visual quality of this landscape unit is poor and the potential VAC of this landscape unit is considered high due to the existing ridge cut. Therefore, given the high potential VAC, the introduction of the Preferred Alternative will not be considered a significant visual impact.

Visual Unit 3: Suburban Residential/Commercial Hogan Lane Landscape Unit

Visual unit 3 is primarily suburban residential/commercial in nature and consists of a combination of undeveloped, low density residential subdivisions, multi-family housing, and small commercial areas. There are no distinct visual features in this area. The majority of buildings in this unit have been recently constructed and include single family residential homes, two story apartment buildings, free-standing commercial structures and strip development. Other visual features include an overhead powerline which runs along the eastern boundary of the street and cluttered signage advertising a variety of commercial services available in this area. The landscape is cleared of most vegetation with the exception of the grass right-of-way. Groups with a view of the road in this visual unit will include groups associated with residential, commercial and educational land uses along the alternatives. Local and commuter traffic will view a suburban/commercial transitional area from the road. Because the general visual quality of this unit is considered poor and its potential VAC is considered high, no significant visual impacts are anticipated as a result of the introduction of the Preferred Alternative in this area.

Dave Ward Drive/Donnell Ridge Transitional Landscape Unit

This visual unit includes a transitional area between Prince Street and Dave Ward Drive, a commercial area at the intersection of Dave Ward Drive and Hogan Lane, and a second transitional area between Dave Ward Drive and Donnell Ridge. Donnell Ridge is the most prominent visual feature of this landscape unit. The surrounding land use is a combination of residential, commercial, industrial, rural residential, and undeveloped. The Preferred Alternative will require the expansion of the existing Hogan Lane and McNutt Road to four lanes. Areas which are not currently developed will require removal of shrub/scrub vegetation along the road right-of-way. Built structures include commercial and industrial buildings near Dave Ward Drive and trailers and multi-family housing along McNutt Drive.

Viewer groups in the area will view the expansion of Hogan Lane to four lanes from existing residential and commercial structures. Residents living in the trailer park and multi-family housing units will have a view of the road as well as the cut through Donnell Ridge. The cut in Donnell Ridge will be visible from a wide geographic range to the south and north of the ridge. The general visual quality of this unit is considered poor and its potential VAC is considered high. However, the Preferred Alternative will require a cut through Donnell Ridge which will result in moderate visual impacts.

Visual Unit 6: Rural Residential**Belk Corner/Hartje Cemetery Landscape Unit**

This visual unit includes the area south of Donnell Ridge Road to a small community cemetery. The Preferred Alternative will roughly parallel the existing roadway along the west side of Old Military Road to a point southwest of the existing Hartje Cemetery and adjacent churches. The existing road has a flat to gently sloping terrain and is lined with shrub/scrub vegetation and powerline poles. A series of single-family residential homes as well as a new subdivision and trailers are located along Old Military Road. The road will be visible from these homes. Vegetation in this area is limited, providing very little buffer between the residences and the road alternative. Groups with a view from the road will include local and commuter traffic. The general visual quality of this unit is considered fair and its potential VAC is considered medium. The introduction of the Preferred Alternative will not result in a significant visual impact.

**Visual Unit 8: Undeveloped/Agricultural
Round Mountain**

The most prominent visual feature in this landscape unit is Round Mountain. The Preferred Alternative will traverse across rolling terrain located north of Round Mountain. The surrounding land use is undeveloped and rural residential with a few houses located along the route. The terrain is primarily rolling hills with open pasture bordered by a forested tree line in the distance. The route may be visible from a housing development located on top of Round Mountain. However, Round Mountain is heavily forested and the homesites appear to be heavily vegetated, therefore views of the road may be partially obscured by trees and vegetation located on the mountain. Portions of the Preferred Alternative would be viewed in the distance from houses located along Old Mill Pond Road and along the path of the Preferred Alternative. Viewer groups traveling on the road will view a rural setting with rolling agricultural terrain. The general visual quality of this unit is considered fair and its potential VAC is considered medium. Therefore, the introduction of the Preferred Alternative would result in no significant visual impact.

Visual Unit 9: Rural Community**Gold Creek Community Landscape Unit**

The Gold Creek Community Landscape Unit does not contain any distinct visual features. The Preferred Alternative will parallel an existing roadway (Sturgis Road) and pass a series of residential houses, the Gold Creek Baptist Church, and several commercial structures to connect with an interchange at Interstate 40 south of the current Interstate 40 overpass. Portions of this area are heavily vegetated with mixed hardwoods which will serve as a vegetation buffer. However, in other areas the alternatives will pass very close to existing trailers and cement- block ranch-style homes located along Sturgis Road. Because of the flat terrain in the area, much of the roadway will be visible from the existing homes. Groups with a view of the road will include residents of the Gold Creek community located adjacent to the alignment and patrons of the commercial establishments in the area. Overall, the general visual quality of this unit is considered poor and its potential VAC is considered high. The introduction of the proposed project will not result in significant visual impacts in this area.

Gold Creek Southeastern Landscape Unit

The Gold Creek Community Landscape Unit does not contain any distinct visual features. The Gold Creek southeastern alternatives would require a new roadway at the base of Round Mountain and which would turn near the Gold Creek Baptist Church and end with an interchange at Interstate 40. The surrounding land use is a combination of forested undeveloped, rural residential and rural highway associated with the current Interstate 40 overpass. These alternatives will include a cut at the base of Round Mountain which will be visible from surrounding residences. However, the heavy vegetation along the base of Round Mountain may provide some buffer between viewers and the roadway. Other groups who may have views of the road include members of the Gold Creek Baptist Church and the residential houses located in Gold Creek. Overall, visual impacts from the construction of the Interstate 40 interchange are anticipated to be minimal because of the existing interstate. The general visual quality of this unit is considered fair and its potential VAC is considered medium. However, the Preferred Alternative will require additional highway ramps and infrastructure which would result in additional visual impacts in this area.

Under the No-Action Alternative, no visual impacts are anticipated.

4.15 CULTURAL RESOURCES**Action Alternatives**

Mr. Gerald P. Smith provided a record search to identify the location of recorded cultural resources (historical and pre-historical) known to exist within the study area. Mr. Smith has initiated coordination with SHPO and a record of that coordination has been included in Appendix J along with a copy of the record search report.

Mr. Smith conducted a field review of the study corridors with reference to potential for cultural resources was conducted on June 20-21, 2001. The review included coverage of the routes by automobile and on foot. Much of each route was found to be of low to very low possibility for cultural resources due to modern development of terrain. Some areas were inaccessible due to posting and/or locked gates without indication of ownership; these were evaluated according to indicated and visible terrain, and local informants familiar with the areas in question.

It appears that most of the Round Mountain portions of all alternatives have a low to moderate possibility of cultural resources, with high possibility areas at the edge of the surrounding flood plain, and generally low possibilities across the creek flood plains until the opposite terrace margins are reached. Donnell Ridge is so steep, narrow, and disturbed/eroded along its crest that none of it appears to offer more than a very low possibility for cultural resources. In the case of the Preferred Alternative it appears that moderate residential, commercial, and industrial development has been so intensive north of Donnell Ridge that there appears to be very little chance that cultural resources have survived in this area.

Mr. Smith conducted a detailed survey along the Preferred Alternative alignment in October of 2004. He found no archeological artifacts along the route. Mr. Smith reported his findings to the Arkansas Cultural Heritage Commission in March of 2005.

At the request of ACHC, a historical structures survey along the preferred route was conducted in December 2005. All survey results were provided to the Department of Cultural Heritage on January 13, 2006. The Department of Cultural Heritage has concurred that there are no apparent cultural resources within the corridor of the Preferred Alternative that are eligible for inclusion in the National Register of Historic Places. All correspondence related to the Arkansas Historic Preservation Program is included in Appendix J.

If no actions are taken, no impacts to cultural resources would occur as a result of implementation of the No-Action Alternative. No sites currently listed on the National Register of Historic places would be impacted by the construction of the Preferred Alternative.

4.16 HAZARDOUS MATERIALS

A review of the preferred corridor to identify the locations of potential hazardous materials was conducted using information detailed in the hazardous waste database and site maps.

Seven potential hazardous materials sites will be impacted by the Preferred Alternative. Located near the proposed eastern terminus at Gold Creek are two potential hazardous waste sites, which include underground storage tanks (UST). Located along the corridor north of Donnell Ridge to the proposed northern interchange exist five additional potential hazardous waste sites, four of which are potential UST sites located west of the corridor near the intersections with Highway 60 and Prince Street. There is a potential to impact an above ground storage tank (AST) located near the intersection with Highway 64. No toxic release inventory system (TRIS) sites are impacted by the Preferred Alternative.

Under the No-Action Alternative, no impacts to hazardous materials are anticipated.

4.17 ENERGY CONSUMPTION

Construction related energy consumption is based on the construction cost of the alternative. The amount of energy required for the production and placement of materials (asphalt, structures, cut, fill, etc.) during construction will be a fixed cost. This cost will be offset over the life of the project by the energy efficiencies gained with the use of an improved transportation facility. In most situations, fuel efficiencies would be improved due to higher levels of service resulting from uniform speeds, less congestion, and free flow of

traffic in most situations. Improved levels of service would also reduce the travel times between destinations, thereby reducing overall fuel consumption.

4.18 CONSTRUCTION IMPACTS

Construction activities for the proposed highway would impact the environment mostly within the short term. The most common impacts associated with the construction of the proposed highway include the temporary degradation of air, noise and water quality; temporary disruption of traffic including maintenance, control, and safety concerns; the stockpiling and disposal of construction materials; the use of borrow areas; and the construction and use of haul roads.

In general, although the noise associated with construction activities cannot be eliminated, noise impacts can be reduced by the establishment of reasonable work hours. Sensitive noise areas, such as residential neighborhoods will be identified and work restricted to daylight hours in these areas. Dust associated with construction can be reasonably controlled with a watering program and erosion from construction sites will be controlled using standard erosion control measures (see Appendix K). Traffic disruption will be minimized by a detailed construction phasing and traffic control plan. Special attention will be given to minimizing impacts to residential and commercial areas.

Construction of the proposed highway will occur in close proximity to several single family residences, mobile homes, and businesses. Efforts to minimize construction impacts in these areas will be closely monitored. Compliance with all applicable local, state and national permitting and review processes will be required throughout the development of the Preferred Alternative.

4.19 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Construction of the proposed highway along the Preferred Alignment would involve a commitment of labor, land, materials, equipment, and funds. These resources would be permanently committed to the project and could not be expanded for other purposes. The conversion of land from present uses to highway use would not be available for other purposes, unless at some time in the future it is determined that the proposed highway is no longer needed. At present, there is no reason to consider that this would occur.

Other resources used would be irreversible such as labor, paving materials and the fossil fuels required to construct the proposed highway. The commitment of these resources would not adversely affect other uses for these materials, as they are not in short supply in the region. Federal and state funds for construction as well as continued future maintenance of the facility would be committed and not available for other uses.

4.20 SUMMARY OF IMPACTS

A summary of impacts for the original Alternatives, Preferred Alternative and the No-Action Alternative is presented in **Table 4-5**.

**TABLE 4-5
SUMMARY OF IMPACTS**

Impact Category	Alternative					
	A	B	C	D	Preferred	No-Action
Length (Miles)	11.2	12.7	16.6	12.5	11.9	0
Cost (\$1,000)	141,081	160,904	203,027	159,431	154,963	N/A
Cost with Gold Creek Crossing (\$1,000)	150,109	163,935	N/A	162,463	N/A	N/A
Air Quality (Exceeds NAAQS)	No	No	No	No	No	No
Floodplain (Acres)	41.5	63.3	78.4	54.8	50.0	0
Projected Noise (Receptors Exceeding Criteria)	2	8	9	4	2	0
Forest Conversion (Acres)	109.0	132.7	150.3	123.8	122.4	0
Pasture Conversion (Acres)	42.4	57.4	39.3	57.9	48.9	0
Cropland Conversion (Acres)	0	5.3	67.2	5.3	0	0
Threatened and Endangered Species	No	No	Possible	No	No	No
Wetland (Acres)	4.1	2.9	2.5	2.2	0.3	0
Significant Cultural Resource Impacts	Low/ Moderate	Low/ Moderate	Moderate /High	Low/ Moderate	None	None
Hazardous Material Sites	7	7	1	7	7	0