ADDENDUM

On October 27, 2011, Alison McCartney, Natural Resource Specialist, revisited the two parcels contained in EOI #486. The legal description for EOI #486 is: AR, Cleburne County, T9N, R10W, Sec. 36, N2SE, and Sec. 25, NWSE (120 acres). It was verified that no additional surface disturbance has occurred on these parcels since the Environmental Assessment was originally written and approved in June 2007. A public notice regarding this action will be published on 3/21/12 in the Fairfield Bay News.

Bruce Davis 3/15/2012

BUREAU OF LAND MANAGEMENT
Jackson FIELD OFFICE
411 Briarwood Drive, Suite 404
Jackson, Mississippi 39206

ENVIRONMENTAL ASSESSMENT (EA) FORM

ES-020-2007-106

PROJECT NAME: Consolidation of Arkansas leasing EAs

TECHNICAL REVIEW:

X	Program	Reviewer	Signature	Date
X	Air Quality	M. Neugebauer		6-4-07
	ACEC			
X	Botanical including T&E Spp.	F. Winters		6-4-07
	Communications (Dispatch)			
X	Cultural/Paleontology	J. Pace		6/5/07
X	Energy Policy	M. Neugebauer		6-4-07
X	Environmental Justice	M. Neugebauer		6-4-07
	Farmlands (Prime & Unique)			
	Fire Management			
X	Floodplain	M. Neugebauer		6-4-07
X	Hazardous Material	B. Kennedy	Acting AFM	6/5/07
X	Invasive & Non-Native Spp.	F. Winters		6-4-07
	Lands/Realty			
	Land Law Examiner			
	Law Enforcement			
X	Minerals	K. Adams		6/5/07
X	Native American Religious Concerns	J. Pace	Acting AFM	6/5/07
	Operations			
	Range Management			
	Recreation			
X	Soils	M. Neugebauer		6-4-07
	Surface Protection			
	Visual Resources			
	Water Rights			
X	Water Quality (Surface & Ground)	M. Neugebauer		6-4-07
X	Wetlands/Riparian Zones	F. Winters		6-4-07
	Wild & Scenic Rivers			
	Wilderness			
	Wild Horse & Burro			
X	Wildlife including T&E Spp.	F. Winters		6-4-07

Prepared by: _____ Date: 6-4-07
Marty Neugbauer
Natural Resource Specialist

Reviewed by: _____ Date: 6/4/07
Gary Taylor
NEPA Coordinator

Reviewed by: _____ Date: 6/5/07
Duane Winters
Resource Supervisor

FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD

FINDING OF NO SIGNIFICANT IMPACT

Based on the analysis of potential environmental impacts contained in the attached environmental assessment (EA), I have determined that the proposed action with the mitigation measures contained in the EA will not have any significant impacts on the human environment and an environmental impact statement (EIS) is not required.

Bruce Winters (Acting) 6-5-2007

Bruce Dawson
Field Manager

Date

DECISION RECORD

It is my decision to authorize the offer to lease for Oil and Gas of the proposed tracts located in ten counties in the state of Arkansas. Mitigation measures identified for the proposed action in the environmental impact section of the attached EA have been formulated into lease stipulations and notices. This decision incorporates by reference the attached stipulations and notices.

Rationale for Decision

The decision to allow the proposed action does not result in any undue or unnecessary environmental degradation and is consistent with the laws and regulations of the Federal, State, or local government. The proposed action was subject to a 30-day public review.

DSD, Natural Resources

Date

Environmental Assessment

EA-020-2007-106

Consolidation of Arkansas leasing EAs

Prepared by: Marty Neugebauer
Natural Resource Specialist

Date: 5/25/07

Table of Contents

I. PURPOSE AND NEED

Introduction

This environmental assessment (EA) is prepared to address proposed federal oil and gas lease nominations in the state of Arkansas pursuant to the Minerals Leasing Act of 1920, as amended. A federal oil and gas lease is a legal contract that grants exclusive rights to the lessee to develop oil and gas resources that may exist on split estate property.

Need for Proposed Action

The development of oil and natural gas is essential to meeting the nation's future needs for energy. Private exploration and development of federal oil and gas reserves are integral to the BLM's oil and gas leasing programs under the authority of the Mineral Leasing Act 1920, as amended, the Mineral Leasing Act for Acquired Lands of 1947, as amended, the Federal Land Policy and Management Act of 1976 and the Energy Policy Act of 2005. The oil and gas leasing program managed by BLM encourages the development of domestic oil and gas reserves and reduction of the U.S. dependence on foreign sources of energy. The tracts that are considered for lease in this analysis are nominated by an expression of interest (EOI) from private industry.

Due to the number of EOIs that have been received, The Bureau of Land Management (BLM), Jackson Field Office decided to construct a statewide Environmental Assessment to cover the present and any future EOIs for the state of Arkansas. This environmental assessment will (1) examine the environmental impacts from leasing any proposed tracts for oil and gas, and (2) serve as the basis for making a decision in the public interest on whether to offer the tracts for competitive lease.

Conformance with Land Use Plan

The proposed action does not conflict with any known State or local planning, ordinance or zoning.

This area is not covered by a BLM Resource Management Plan. According to the regulations at 43 CFR 1610.8(b)(1), however, this environmental assessment can be used as a basis for making a decision on the proposal.

Related EISs, EAs, and Other Relevant Documents

1998. Groundwater Atlas of the United States. Hydrologic Investigations Atlas 730-F. United States Department of the Interior, United States Geological Survey.

American Burying Beetle Recovery Plan. 1991. U.S. Fish and Wildlife Service.

Arkansas Comprehensive Wildlife Conservation Strategy. 2005. http://www.wildlifearkansas.com/strategy.html

Arkansas Natural Heritage. 2006. http://www.naturalheritage.com/program/rare-species/federally-listed/plant-profiles/

Endangered and Threatened Species of the Southeastern United States (The Red Book) FWS Region 4 -- As of 2/92

Florida Panther, Species Accounts. United States Fish and Wildlife Service. 2006. http://www.fws.gov/endangered/i/a/saa05.html

Lowe, Kelsey, 2007a. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 202 Johnson County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007b. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 281 Van Buren County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007c. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 326 Johnson County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007d. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 327 Conway County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007e. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 336 Faulkner, Conway and Van Buren Counties, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007f. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 346 Yell County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007g. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 364 Crawford County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007h. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 414 Johnson County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007i. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 464 White County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007j. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 453 Logan County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007k. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 486 Cleburne County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Lowe, Kelsey, 2007l. Cultural Resources of a Proposed Federal Oil and gas Lease Expression of Interest (EOI) No. 530 Yell County, Arkansas. Environmental Careers Organization Associate, for DOI, Bureau of Land Management, Jackson Field Office, Jackson, Mississippi.

Soil Conservation Service. 1977. Soil Survey of Johnson County, Arkansas. USDA.

Soil Conservation Service. 1979. Soil Survey of Crawford County, Arkansas. USDA.

Soil Conservation Service. 1979. Soil Survey of Faulkner County, Arkansas. USDA.

Soil Conservation Service. 1979. Soil Survey of Lafayette, Little River, and Miller Counties, Arkansas. USDA.

Soil Conservation Service. 1980. Soil Survey of Conway County, Arkansas. USDA.

Soil Conservation Service. 1980. Soil Survey of Logan County, Arkansas. USDA.

Soil Conservation Service. 1980. Soil Survey of White County, Arkansas. USDA.

Soil Conservation Service. 1986. Soil Survey of Cleburne and Van Buren Counties, Arkansas. USDA.

Soil Conservation Service. 1988. Soil Survey of Yell County, Arkansas. USDA.

Applicable Regulatory Requirements and Required Coordination

This section documents the public input into the proposed action. It lists the people and groups that were contacted by the BLM. It is also a record of the people who prepared input into this document and the people who reviewed it.

Issues Studied in Detail

Due to the high volume of EOIs backlogged, the Jackson Field Office decided to combine all of the pending EOIs that arrived in the office previous to October 1, 2006 into one Environmental Assessment.

NOTE: Even though all the Arkansas EOIs were combined in one EA, each tract has all the supporting data covered within it's section of the document. This data includes:

General setting
Critical resources not affected
Description and affected resources of the project area
Anticipated impacts of the proposed action
No action alternative
Cumulative impacts

Decisions That Must Be Made

There are two decisions under consideration from the Bureau of Land Management (BLM) for the proposed action. The first is to offer the federal oil and gas mineral estate for competitive leasing. The other decision would be to deny the action so that no development and surface disturbance would take place. BLM's policy is to promote oil and gas development as long as it meets the guidelines and regulations set forth by the National Environmental Policy Act of 1969 as other subsequent laws and policies passed by the U.S. Congress.

II. ALTERNATIVES

Introduction

To facilitate discussion, the tracts covered in this EA have been given numbers. Each tract is given an Expression of Interest (EOI) number. The maps in Appendix A show the general locations of each parcel. The legal descriptions for each tract are also listed in numerical order.

Location

This Environmental Assessment is to cover approximately 1,743.56 surface acres which most are also considered split estate lands (private surface with Federal subsurface minerals). The counties in Arkansas that are covered in this EA are as follows: Johnson, Van Buren, Conway, White, Logan, Lafayette, Yell, Cleburne, Crawford, and Faulkner Counties.

Proposed Action Alternative

The Bureau of Land Management (BLM), Jackson Field Office has received nominations to lease 1,743.56 acres of federal mineral estate for oil and gas development in ten counties in Arkansas: Cleburne, Conway, Crawford, Faulkner, Johnson, Lafayette, Logan, Van Buren, White, and Yell County. One tract, totaling 80 acres, is owned by the U.S. Army Corps of Engineers; the remainder of the tracts are privately owned and managed. The leases provide exclusive rights to develop the federal oil and gas resources, but do not obligate the company to drill a well on the federal mineral estate. The lease can be used to consolidate acreage for well spacing requirements, and/or the mineral estate may be acquired for speculative value. There are no oil or gas wells currently active on these federal mineral tracts. Ten of these lease nominations, or expressions of interest (EOI), most likely will explore for gas in the Fayetteville Shale formation, two additional leases are located in Yell County and one in Lafayette County.

The proposed leases, if approved, would be offered for competitive sale with stipulations generated through the National Environmental Policy Act and other consultations. Once awarded, the successful bidder is required to submit an Application for Permit to Drill (APD) to the BLM before any ground disturbance is authorized. In the APD, the company identifies a proposed drill site and provides the BLM with specific details on how and when they propose to drill a well within the constraints of the lease document. Upon receipt of an APD, BLM conducts an onsite inspection with the company, and when possible the private land owner or surface managing agency. An environmental assessment is prepared on the

APD and in those cases where there is the potential to affect critical resources. The lessee is required, as per lease stipulation, to comply with the recommendations of these consultations.

After approval of an APD, the drilling of an oil/gas well in Fayetteville Shale is typically conducted as follows:

Spacing for Fayetteville Shale wells is a maximum of 25 wells per 640 acres. Typically Fayetteville Shale well sites are expected to require 1.5 acres which would be cleared and graded level for the construction of the well site. Steeper terrain, requiring cut and fill slopes, can create additional areas of disturbance. A reserve pit is dug and generally lined with bentonite clay to retain drilling fluids, circulated mud, and cuttings. Because of the cost of the drilling rig, drilling usually continues around the clock. Wells in this area are usually drilled in 30 days. Once drilling is completed, excess fluids are pumped out of the pit and disposed of in a state authorized disposal site and the cuttings are buried. Wells would be drilled by rotary drilling using mud as the circulating medium. Mud pumps would be used to force mud down the drillpipe, thereby forcing the rock cuttings out the wellbore. This water would normally be from a well drilled on the site, however, water could be pumped to the site from a local pond, stream or lake through a pipe laid on the surface. Approximately 1500 barrels of drilling mud would be typically kept on the location. For a completion attempt, approximately 30,000 barrels of water are needed to fracture the shale. If a tract is adjacent to a producing field and water production will be expected during the life of the field, separation, dehydration and other production processing may be necessary. Construction of facilities off the Federal lease may be needed to handle this processing. Some processing or temporary storage may be necessary on site.

Access roads generally require a 30 foot right of way. The actual length is dependent on well site location. Many of the tracts have existing logging or access roads that could be used as is or improved to provide access for the drilling rig. Flowlines are generally placed in the road right of way, when possible. Access road and flowline construction may require an additional 2.5 acres of disturbance. Therefore, the total disturbed area for drilling a well is expected to total 4 acres per well. All pipeline designs, construction, operation and maintenance shall comply with Federal Safety Standard for Oil/Gas Lines, Code of Federal Regulations, Part 192, Title 49, unless more stringent requirements are required by the State of Arkansas or BLM Stipulations.

During well pad construction the topsoil is stockpiled to be used during restoration activities. If the well is successful, the drill pad would be reduced to about 100' x 100' with the remaining surface area, including the reserve pit, re-graded and restored as per the BLM and surface owner requirements. A Lease Notice in these proposed leases encourages the use of non-invasive cover plants during all restoration and stabilization activities. Final seed mixtures and plantings are determined with recommendations from BLM with approval of the land owner. The remaining 100' x 100' pad is maintained for the life of the well. The life of a productive well may be 30 years. Following

abandonment, the pad is subject to the same restoration parameters.

The Yell County tracts (EOI 346 and EOI 530) will follow the same specifications, except for changes in well spacing which in the southern Arkoma Basin and Ouachita Thrust Belt wells is generally one well per 640 acres.

Discussion of expected oil and gas development is contained in the Reasonably Foreseeable Development Scenario (RFDS). The proposed action, if approved, would be subject to applicable statues, regulations, standard lease terms, and the BLM management practices. Standard lease terms provide the Authorized Officer the authority to require the lessee to take reasonable measures deemed necessary to minimize adverse impacts to the land, air, water, cultural, biological, visual, and other resources, and to other land uses or users. Such measures include, but are not limited to, modification of siting or design of facilities, timing of operations, specification of interim and final reclamation measures, and requiring inventories or special studies to determine the extent of impacts to other resources. The BLM will require applicants to use best management practices (BMPs) developed in coordination with the Fish and Wildlife Service for the protection of federally listed species, aquatic and karst habitats, and other high resource value habitats. These BMPs are available upon request. There are also standard lease stipulations and notices included in Appendix A of every Oil and Gas Environmental Assessment. These stipulations cover such issues as; (1) Cultural and Native American Resources, (2) Threatened and Endangered Species, (3) Water Quality concerns, (4) open vent stack equipment, and (5) the spread of invasive, non-native plants.

No Action Alternative

The request to offer the proposed tract for oil and gas leasing would be denied. The environmental impacts associated with the proposed action would not occur, and the potential economic benefits of production from this lease would be jeopardized.

II. DESCRIPTION OF THE AFFECTED ENVIRONMENT

Introduction

To facilitate discussion, the tracts included in the proposed action have been divided into EOI numbers. Some are grouped with adjacent or overlapping tracts with similar ecological values. Information presented for each individual or group EOI includes general topography, notable disturbance, common wildlife, vegetation, and special status species.

Description and Affected Resources of Project Areas

The following critical elements were analyzed and were considered the same for all 13 tracts:

Air Quality:

There are no major industrial areas or communities near the lease tract. Therefore, there are no major source(s) of air pollutants. The tract is not known to be located in a non-attainment area for the six criteria air pollutants designated by the Environmental Protection Agency: sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, particulate matter, lead, and volatile organic compounds

Arkansas is only one of a handful of states in the country that currently and consistently meets all federal air quality standards for criteria pollutants such as sulfur dioxide, particulates, nitrogen oxides, hydrocarbons and lead.

Wastes, Hazardous or Solid:

During the on site inspections on all twelve of the proposed lease tracts, no hazardous or solid waste disposal site was found.

Water Quality, Surface/Ground:

The twelve northern Arkansas tracts are considered part of the Western Interior Plains Confining System. It is considered a minor aquifer and a part of a widespread, thick, geologically complex, poorly permeable, sedimentary sequence that extends eastward from the Rocky Mountains to western Missouri and northern Arkansas. In Arkansas, the Western Interior Plains confining system underlies a wide area that extends southward between 60 and 80 miles from its northern margin at the Boston Mountains escarpment to the Ouachita Mountains.

The quality of ground water in the Western Interior Plains confining system is highly variable but meets most secondary drinking-water standards and is considered to be suitable for domestic and livestock uses. The quality of the water generally is not considered to be adequate for municipal supply. Principal constituents in the water are sodium and bicarbonate ions. Saline water is reported to be at depths that range from 500 to 2,000 feet below land surface.

The tract in Lafayette County of southwest Arkansas is considered part of the Trinity Aquifer. It consists of Coastal Plain rocks of Early Cretaceous age that yield mostly freshwater where they crop out in southwestern Arkansas. The Trinity aquifer is part of the larger Edwards-Trinity aquifer system, which extends westward into Oklahoma and southwestward across Texas where it functions as an important source of potable water.

Environmental Justice:

Title IV of the Civil Rights Act of 1964 and related statutes ensure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal assistance on the basis of race, color, national origin, age, sex, or disability. Executive Order 12898 on Environmental Justice directs that programs, policies, and activities not have a disproportionately high and adverse human health and environmental effect on minority and low-income populations.

Based on the onsite inspections and analysis of the twelve tracts, the proposed action will not cause disproportionate effects on minority populations and low income populations.

Federally Listed Species

According to the United States Fish and Wildlife website (accessed 02/26/07), there are 31 listed species in the state of Arkansas; 25 animals and six plants. There are five candidate animal species.

Federally Listed Species Summarized Profiles

Figure 1

The American burying beetle (*Nicrophorus americanus*) (ABB) (**Figure 1.**) is federally listed as endangered. The ABB occupies a broad range of habitats from oak-hickory forests, to grasslands and riparian areas, and pasturelands. Soils in occupied habitat typically are well-drained and include sandy loam and silt loams, with a clay component noted at most sites. Level topography and a well-formed detritus layer at the surface are common.

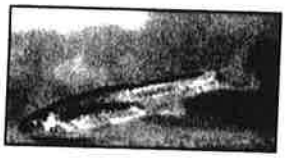


Figure 2

The Arkansas River shiner (*Notropis girardi*) (**Figure 2.**) is federally listed as threatened. The ARS historically inhabited the main channels of wide, shallow, sandy-bottomed rivers and larger streams of the Arkansas River basin. It is typically found in turbid waters of broad, shallow, unshaded channels of creeks and small to large rivers, over mostly silt and shifting sand bottom. It requires at least 80 consecutive miles of river to complete its life cycle. Records from Arkansas are scarce. The ARS is presumed to have been extirpated from (become extinct in) Arkansas.

Figure 3

The Bald Eagle (*Haliaeetus leucocephalus*) (**Figure 3.**) is federally listed as threatened. They nest in large trees, often near water. In Arkansas, breeding habitat most commonly includes areas close to (within 4km) coastal areas, bays, rivers, lakes, or other bodies of water that reflect the general availability of primary food sources including fish, waterfowl, and seabirds.

Figure 4

The Florida panther (*Felis concolor coryi*) (**Figure 4.**) is federally listed as endangered. It typically occurs in heavily forested areas in lowlands and

swamps, also upland forests in some parts of range; in areas with adequate deer or wild hog populations. Habitats include tropical hammocks, pine flatwoods, cabbage palm forests, mixed swamp, cypress swamp, live oak hammocks, sawgrass marshes, and Brazilian pepper thickets; it depends on large contiguous blocks of wooded habitat. Even though numerous sighting reports continue to surface annually throughout its historic range, it is unlikely that viable populations of the Florida panther presently occur outside Florida. According to McBride et al. (1993), the Florida panther has been extirpated from Arkansas.

Figure 5

The gray bat (*Myotis grisescens*) (**Figure 5.**) is federally listed as endangered. It is a small bat which uses caves that are normally located within one mile of a river or reservoir. They often roost in caves in close proximity to large bodies of water due to improved foraging conditions. In Arkansas, the gray bat is known from occurrences in 16 counties across the Salem and Springfield plateaus of the Ozark Mountains. An estimated 250,000 gray bats are known to inhabit approximately 20 Arkansas maternity and bachelor caves during summer and an estimated 333,600 hibernate in five Arkansas caves during winter. Several additional caves serve as transient caves for gray bats.

Figure 6

Harperella (*Ptilimnium nodosum*) (**Figure 6.**) is federally listed as endangered. It typically occurs in rocky or gravel shoals and margins of clear, swift-flowing stream sections, and the edges of intermittent pineland ponds in the coastal plain. Harperella requires a narrow range of hydrologic conditions, neither too deep nor too dry. Plants are generally found in microsites (rocky shoals) sheltered from the erosive effects of rapidly moving water. In Arkansas, harperella occurs along seasonally flooded rocky streams of the Ouachita Mountains.

Figure 7

The Indiana bat (*Myotis sodalis*)(**Figure 7.**) hibernates in caves; maternity sites generally are behind loose bark of dead or dying trees or in tree cavities. Foraging habitats include riparian areas, upland forests, ponds, and fields, but forested landscapes are the most important habitat in agricultural landscapes. In summer, habitat consists of wooded or semi-wooded areas, often along streams. Solitary females or small maternity colonies bear their offspring in hollow trees or under loose bark of living or dead trees. Males forage over floodplain ridges and hillside forests and usually roost in caves. Known roost tree species include elm, oak, beech, hickory, maple, ash, sassafras, birch, sycamore, locust, aspen, cottonwood, pine, and hemlock, especially trees with exfoliating bark. Monitoring of hibernacula is vital and entry to hibernacula should be restricted using signs, gates, or fences.

Figure 8

The Interior Least Tern (*Sterna antillarum athalassos*) (**Figure 8.**) is federally listed as endangered. In Arkansas, this bird species builds nests mainly on riverine sandbars exposed during periods of low water but will seek higher grounds in periods of high water during nesting season.

Because of vegetational succession and/or erosion, preferred nesting habitat typically is ephemeral. Typical habitat is major riverine sand bar habitat. Interior Least Tern habitat is primarily in the Arkansas and Mississippi Rivers on sand and/or gravel islands.

Figure 9

The Magazine Mountain shagreen land snail (*Mesodon magazinensis*) (**Figure 9.**) is federally listed as threatened. This snail prefers a cool, moist climate, and during warm, dry weather will move deeper into rock crevasses. It is endemic to 540 acres on Magazine Mountain in Logan County and is unknown elsewhere. The U.S. Forest Service has designated the north slope of the mountain from the bluff line to the 1600 foot contour interval as a Special Interest Area. Suitable habitat occurs on about 540 acres in two locally separated areas of the mountain; (1) on the north facing slopes of the summit and; (2) on north facing slopes of Bear Hollow. Habitat is characterized as steep, talus sites in rich mesic hardwood forest. The snail's restricted range makes it extremely vulnerable to any land use change or habitat destruction.

Figure 10

The pink mucket pearlymussel (*Lampsilis abrupta*) (**Figure 10.**) is federally listed as endangered. It is a large river species, found in waters with strong currents, rocky substrates, with depths up to about 1 meter and is also found in deeper waters with slower currents and sand and gravel substrates. Pink muckets occur over a wide geographic area, including the Mississippi, Tennessee and Cumberland River systems. The largest Arkansas populations are in the Spring and White rivers, with smaller numbers in the Ouachita and Little river systems.

Figure 11

The red-cockaded woodpecker *(Picoides borealis)* (**Figure 11.**) makes its home in mature pine forests. Longleaf pines (*Pinus palustris*) are most commonly preferred, but other species of southern pine are also acceptable. The red-cockaded woodpecker is the only woodpecker which excavates cavities exclusively in living pine trees. The older pines favored by the red-cockaded woodpecker often suffer from a fungus called red heart disease which attacks the center of the trunk, causing the inner wood, the heartwood, to become soft. Cavities generally take from 1 to 3 years to excavate. The aggregate of cavity trees is called a cluster and may include 1 to 20 or more cavity trees on 3 to 60 acres. The typical territory for a group ranges from about 125 to 200 acres. The size of a particular territory is related to both habitat suitability and population density. Arkansas's largest contiguous population of Red-cockaded Woodpeckers can be found in the 65,000-acre Felsenthal National Wildlife Refuge.

Figure 12

The scaleshell mussel (*Leptodea leptodon*) (**Figure 12.**) is federally listed as endangered. This species' occurrence ranges from creeks to large rivers in riffles with moderate to high gradients. The scaleshell mussel is a freshwater mussel typically associated with riffles, relatively strong currents, and substrate of mud, sand, or assemblages of gravel, cobble, and boulder. It is restricted to rivers that have relatively good water quality and is found in stretches with stable channels. Scaleshells currently exist in Arkansas (St. Francis, Spring, South Fork Spring, South Fourche LaFave, and White rivers, and Frog Bayou) and in Oklahoma (Kiamichi River, Little River, and Mountain Fork). Of 14 populations, 13 are thought to be declining.

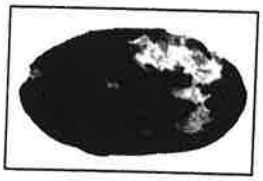


Figure 13

The speckled pocketbook (*Lampsilis streckeri*) (**Figure 13.**) is a freshwater mussel that is federally listed as endangered. This mussel occurs in areas with muddy sand in water depths up to 1.3ft. (0.4 m) with a constant flow of water or in pools with crevices between large rocks and boulders which have some accumulation of sand/gravel. Only five stream populations are known from historic literature and the species is endemic to the Little Red River watershed in Arkansas. The main stem Little Red River population has been permanently lost due to inundation and cold water releases in the tailwaters of Greers Ferry Resevoir Dam. Populations have persisted in the headwaters of the four forks of the Little Red River. Big Creek, a tributary to the Little Red River downstream of the Greers Ferry reservoir, is a newly discovered population. The current known range is restricted to the MFLRR from the influence of Greers Ferry Reservoir upstream to the confluence of the Little Red Creek, the South Fork Little Red River extending upstream of Arkansas Highway 95 to near the western boundary of Gulf Mountain Wildlife Management Area and the Ozark National Forest, the Archey Fork from approximately one mile upstream of Arkansas Highway 65 to the confluence of Castleberry Creek, the lower Turkey Fork, Beech Fork, and Big Creek. All populations remaining are stable.

Figure 14

The yellowcheek darter (*Etheostoma moorei*) (**Figure 14.**) is a candidate species. It inhabits high gradient headwater tributaries with clear water, permanent flow, and moderate to strong riffles, and gravel, rubble, and boulder substrates. It is known historically from four headwaters tributaries of the upper Little Red River in Cleburne, Searcy, Stone, and Van Buren Counties, Arkansas.

The following table (**Table 2.**) shows the county distribution of these federally listed species:

Table 2. Federally Listed Species by County.

County	Federally Listed Species/Candidate Species
Cleburne	Speckled Pocketbook (*Lampsilis streckeri)* - federally listed as Endangered American Burying Beetle *(Nicrophorus americanus)* - federally listed as Endangered Bald Eagle (*Haliaeetus leucocephalus)*-federally listed as Threatened Yellowcheek darter (*Etheostoma moorei*) - Candidate species
Conway	Interior Least Tern (*Sterna antillarum athalassos*) – federally listed as Endangered Florida panther (*Felis concolor coryi*) - federally listed as Endangered
Crawford	Scaleshell mussel (*Leptodea leptodon*)- federally listed as Endangered Interior Least Tern (*Sterna antillarum athalassos*)- federally listed as Endangered American burying beetle (*Nicrophorus americanus*)– federally listed as Endangered
Faulkner	Interior Least Tern (*Sterna antillarum athalassos*)– federally listed as Endangered
Johnson	American burying beetle (*Nicrophorus americanus*)– federally listed as Endangered Interior Least Tern (*Sterna antillarum athalassos*)-federally listed as Endangered Florida panther (*Felis concolor coryi*)-federally listed as Endangered
Lafayette	Red-cockaded Woodpecker (*Picoides borealis*)– federally listed as Endangered Interior Least Tern (*Sterna antillarum athalassos*)-federally listed as Endangered Bald Eagle (*Haliaeetus leucocephalus*) -federally listed as Threatened
Logan	American burying beetle (*Nicrophorus americanus*)– federally listed as Endangered Interior Least Tern (*Sterna antillarum athalassos*)-federally listed as Endangered Bald Eagle (*Haliaeetus leucocephalus*) -federally listed as Threatened Magazine Mountain shagreen (*Mesodon magazinensis*)- federally listed as Threatened Arkansas River shiner (*Notropis girardi*)-federally listed as Threatened
VanBuren	Speckled pocketbook (*Lampsilis streckeri*) - federally listed as Endangered Gray bat (*Myotis grisescens*) - federally listed as Endangered Bald Eagle (*Haliaeetus leucocephalus*) -federally listed as Threatened Yellowcheek darter (*Etheostoma moorei*) - Candidate species
White	Pink Mucket pearlymussel (*Lampsilis abrupta*)- federally listed as Endangered
Yell	American burying beetle (*Nicrophorus americanus*)– federally listed as Endangered Florida panther (*Felis concolor coryi*)- federally listed as Endangered Harperella (*Ptilimnium nodosum*)-federally listed as Endangered Interior Least Tern (*Sterna antillarum athalassos*) – federally listed as Endangered

State Listed Species

Within the eleven Expressions of Interest, thirteen state listed Candidate, Threatened, or Endangered plant species were evaluated regarding potential impacts based upon habitat requirements.

There are additional 99 species that are state listed as S1 or S2. S1 ranked species are considered extremely rare with typically 5 or fewer estimated occurrences in the state, or only a few remaining individuals, therefore they may be especially vulnerable to extirpation. S2 ranked species are considered very rare with typically between 5 and 20 estimated occurrences or with many individuals in fewer occurrences, so they are often susceptible to becoming extirpated. BLM best management practices include evaluating sites for potential habitats within and near tracts.

State Listed Species Summarized Profiles

Figure15

Alabama snow wreath (*Neviusia alabamensis*) (**Figure 15.**) is state listed as threatened. It is found on forested bluffs, talus slopes, and streambanks on a variety of geologic substrates, soil types, and aspects, and under open- to completely closed-canopy conditions. Most typical habitat may be within forested areas on thin soil over limestone that is moist for part of the year (seasonal streambeds, margins of sinkholes, river bluffs).

Figure 16

Appalachian filmy fern (*synonym* Appalachian bristle fern) (*Trichomanes boschianum*) (**Figure 16.**) is state listed as threatened. It is found in damp limestone grottoes or sandstone overhangs in deep canyons of the Boston Mountains of Arkansas. It is threatened by its limited distribution. Arkansas watersheds that the fern has been located in include: Beaver Reservoir, Little Red, Frog-Mulberry, and the Dardanelle Reservoir. It has been found in Cleburne, Johnson, and Madison Counties.

Figure 8

Dwarf bristle fern (*Trichomanes petersii*) (**Figure 17.**) is state listed as threatened. It is found on acidic boulders, ledges and overhangs, and moist rocks in humid gorges.

Figure 9

Maple leaved oak (*Quercus acerifolia*) (**Figure 18.**) is state listed as threatened. It is found in open woods, ledges and cliff edges, and the rocky edges of plateaus. It is a rare species that is only known to grow in the wild in a few upland forest areas in the Ouachita Mountains of west central Arkansas.

Figure 10

Opaque prairie sedge (*Carex opaca*) (**Figure 19.**) is state listed as endangered. Habitat is wet or mesic prairie. Habitat conversion and alteration of hydrologic regime are primary threats to this species.

Figure 20

Open-ground whitlow-grass (*Draba aprica*) (**Figure 20.**) is state listed as threatened. D. aprica occurs in a fairly narrow range, however, and requires a very specific habitat type. It is found on thin sandy soils with some organic content overlying siliceous rocks and inhabits somewhat open, rocky woodlands over substrates of granite, sandstone, limestone, dolomite, shale, or chert, in topographic positions ranging from streamsides to slopes, ridges, and hilltops. They range from being xeric to dry-mesic sites, in full sun, partial shade, or even dense shade. Most areas where it occurs, the soil is thin and does not support large trees.

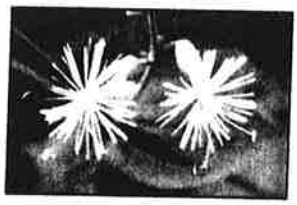


Figure 21

Ovate-leaved catchfly (*Silene ovata*) (**Figure 21.**) is state listed as threatened. Typical habitat is rich woods. Highly threatened by forest management practices and to a lesser extent by land-use conversion, and habitat fragmentation. Any soil disturbance is likely to have a negative effect on this species due to the resultant erosion.

Figure 22

Purple fringeless-orchid (*Platanthera peramoena*) (**Figure 22.**) is state listed as threatened. It is found in low moist woods, bogs, wet meadows, low woods, wet fields, near streams.

Figure 23

Small-headed pipewort (*Eriocaulon kornickianum*) (**Figure 23.**) is state listed as endangered. It is found in or near permanently moist to wet seepage areas (particularly upland sandstone glade seeps), bogs, and prairie streambanks. It is intolerant of shade and may be an early successional species.

Figure 11

Southern tubercled-orchid (synonym Southern rein-orchid) (*Platanthera flava var. flava*) (**Figure 24.**) is state listed as threatened. Any practice that serves to alter the hydrology of a site is a potential threat to this species. Throughout its range, the taxon occurs in sandy silt alluvium, mud and on rotting logs in floodplain swampland, and wet thickets, and prairie meadows and swales.

Figure 25

Spinulose wood fern (*Dryopteris carthusiana*) (**Figure 25.**) is state listed as threatened. It inhabits mixed woods; wet woods, moist wooded slopes, stream banks, and swamps.

Figure 26

Tall cinquefoil (*Potentilla arguta*) (**Figure 26.**) is state listed as threatened. It grows in rich, deep loams of moist meadows, along irrigation ditches and open hillsides.

Figure 27

Waterfall's sedge (*Carex latebracteata*) (**Figure 27.**) is state listed as threatened. It grows on mesic slopes with shale parent material. Soils typically are sandy loams with a layer of leaf litter. Mature oak-pine forests with a sparse understory are the usual habitat for this species.

Figure 28

The prairie evening primrose (*Oenothera speciosa*) (**Figure 28**) habitat is dry open areas, roadsides, idle land, and disturbed ground and is often found in large roadside colonies. It is found statewide and blooms April through July.

The following table (**Table 3**.) shows the county distribution of these state listed species:

Table 3. State Listed Species by County.

County (EOI #)	State Listed Species/Candidate Species
Cleburne (486)	Open-ground whitlow-grass -state listed as Threatened Appalachian filmy fern -state listed as Threatened Ovate-leaved catchfly -state listed as Threatened
Conway (327, 336)	Small-headed pipewort - state listed as Endangered Alabama snow wreath - state listed as Threatened Southern tubercled-orchid - state listed as Threatened Dwarf bristle fern - state listed as Threatened
Crawford (364)	None
Faulkner (336)	Opaque prairie sedge - state listed as Endangered Open-ground whitlow-grass - state listed as Threatened Alabama snow wreath - state listed as Threatened Purple fringeless-orchid - state listed as Threatened Tall cinquefoil - state listed as Threatened
Johnson (202,326,414)	Small headed pipewort - state listed as Endangered Appalachian filmy fern -state listed as Threatened
Lafayette (250/378)	Prairie evening primrose-state listed as Threatened
Logan (453)	Small-headed pipewort - state listed as Endangered Spinulose wood fern - state listed as Threatened Maple leaved oak - state listed as Threatened
VanBuren (281, 336)	Small-headed pipewort - state listed as Endangered Ovate-leaved catchfly - state listed as Threatened
White (464)	Purple fringeless-orchid - state listed as Threatened
Yell (346, 530)	Waterfall's sedge - state listed as Threatened Spinulose wood fern - state listed as Threatened

Site Descriptions

Based upon habitats observed during 2006-2007 field surveys, the following federally listed species have the potential to occur onsite. None of the species were observed during the field visit (**Table 4**.).

Table 4. Federally Listed/Candidate species potentially occurring on proposed mineral lease land in Arkansas based upon habitat.

Federally Listed Species Potentially Occurring on Proposed Lease Lands													
Species	Expression of Interest Number												
	202	205	281	326	327	336	346	364	414	453	464	486	530
American Burying Beetle	X			X			X	X	X	X			X
Arkansas River Shiner*													
Bald Eagle			X							X			
Florida Panther*													
Gray Bat			X										
Harperella													
Interior Least Tern	X			X						X			
Magazine Mountain Shagreen Land Snail													
Pink Mucket Pearlymussel											X		
Prairie Evening Primrose													
Scaleshell Mussel													
Speckled Pocketbook			X										
Yellowcheek Darter			X										

*The Arkansas River shiner and the Florida panther are both presumed extirpated from the state.

Based upon habitats observed during 2006-2007 field surveys, the following state listed species have the potential to occur onsite. None of the species were observed during the field visit (**Table 5.**).

Table 5. State Listed species potentially occurring on proposed mineral lease land in Arkansas based upon habitat.

State Listed Species Potentially Occurring on Proposed Lease Lands													
Species	Expression of Interest Number												
	202	250	281	326	327	336	346	364	414	453	464	486	530
Alabama snow wreath													
Appalachian filmy fern													
Dwarf bristle fern													
Maple leaved oak													
Opaque prairie sedge													
Open-ground whitlow-grass												X	
Ovate-leaved catchfly													
Prairie evening primrose												X	
Purple fringeless-orchid													
Southern tubercled-orchid													
Spinulose wood fern													
Tall cinquefoil										X			
Waterfall's sedge													

The following is a list of each individual tract covered in this Environmental Assessment:

1. EOI 202

General Setting:

Johnson County is located in western Arkansas. The Arkansas River flows eastward and forms the southern boundary of the county. These tracts are located on a total of approximately 160 acres in the eastern-central region of Johnson County in the Lower Boston Mountains eco-region, one of the Ozark Plateaus.

The economy and land use of Johnson County is based on raising livestock or crops such as soybeans, corn, and cotton (SCS 1977). Population density is low; recreation, logging and livestock farming are the primary land uses. Other lands are used for cities, transportation facilities, or federally owned land within the Ozark National Forest (SCS 1977).

The climate of Johnson County is characterized by warm summers and mild winters. The average daily temperature for the year is 61.2° F, and the average annual precipitation is about 46 inches (SCS 1977).

Vegetation/Wildlife:

Oil and gas development is expected to temporarily displace deer, small carnivores, reptiles and amphibians, and nesting resident and neo-tropical migratory birds. Because of the types of habitats found on the tracts, the associated species tend to occupy broader niches. The short-term impacts related to drilling and disturbances related to maintenance of this proposed well are not expected to alter the overall plant or wildlife species diversity despite impacts to individuals. The cumulative effects of the surface disturbance will be lessened in areas that have been previously disturbed and/or have higher amounts of human-centered activity (pastures/residential areas). Higher effects will be seen in those areas with intact forests.

Waste, Hazardous or Solid:

During the onsite inspection, no hazardous (biological, chemical, or solid) waste was found on the lease area. In the past, the lease area has been used for agricultural and timber purposes with little, if any, environmental conditions caused by hazardous substances. The proposed leasing action would not introduce any hazardous substance into the environment of the lease.

Possible future oil and gas production could impact the lease area with low to moderate hazardous substances (solid and liquid) during construction and drilling phases of oil and gas development. All hazardous substances and commercial preparations will be handled in an appropriate manner to minimize the potential for leaks or spills into the environment. Any spills or releases will be cleaned up and disposed of in accordance with State and Federal regulations.

Water Quality:

Project operations such as timber production and oil and gas development would result in increased potential for sedimentation and equipment pollutants to contact stormwater and be conveyed to receiving waters. Any water-well development would result in discharges of groundwater to receiving water. Project operations would also increase the potential for long-term increases in stormwater runoff.

Wetlands/Riparian Areas/Floodplains:

There is an unnamed intermittent stream that runs through the tract. No impact to this creek is expected by oil and gas mineral development.

12. EOI 486

General Setting:

Cleburne County is located in north-central Arkansas. The economy and land-use of the county is based mainly on farming and timber production (SCS 1986). The tracts located in this county total approximately 120 acres.

The forty acre portion of Section 25 is located approximately 3 miles southeast from the town of Hopewell, approximately 3.5 miles north from the city of Rosebud, and 7.4 miles south from the city of Heber Springs. Big Creek Natural Area is located approximately 12 miles northeast and Cherokee WMA is approximately 2 miles southeast of the tract.

The eighty acre portion of Section 36 is located approximately 3.5 miles southeast from the town of Hopewell, approximately 2.9 miles north from the city of Rosebud, and 8.5miles south from the city of Heber Springs. Big Creek Natural Area is located approximately 12 miles northeast, and the Cherokee WMA is approximately 1 mile southeast of the tract.

The climate of Cleburne County is characterized by mild winters and warm summers. Average wind speed is 10 miles per hour from the southwest. In the summer, the average temperature is 78° F, and in the winter, average temperature is 38° F, average precipitation is 51 inches, and the average snowfall is 4 inches (SCS 1986).

Important land uses within the Arkansas Valley Hills eco-region include poultry operations, livestock farming, and logging (Arkansas Comprehensive Wildlife Conservation Strategy 2005).

Critical Resources Not Affected

The following critical resources have been evaluated and are either not present or are not affected by the proposed action:

Areas of Critical Environmental Concern
Farmlands, Prime/Unique
Wild and Scenic Rivers
Wilderness

Description and Affected Resources of the Proposed Action

Cultural Resources:

There are no known properties listed on the National Register of Historic Places (NRHP) on these tracts. Although the tracts have been visited by an archeologist (Lowe 2007k), they have not been intensively surveyed for cultural resources. Important cultural sites may be present.

Native American Religious Concerns and Consultation:

Federally recognized Native American tribes have been contacted. There are no known properties used for religious activities on these tracts. However, the tracts have not been surveyed for cultural resources. Important cultural sites may be present.

Invasive, Nonnative Species:

Common mullein (*Verbascum thapsus*), Japanese honeysuckle (*Lonicera japonica*) and Chinese privet (*Ligustrum sinense*), Mimosa tree (*Albizzia julibrissin*), Johnson grass (*Sorghum halepense*), Sericia lespedeza (*Lespedeza cuneata*) and kudzu (*Pueraria montana*) are ubiquitous throughout the southeast in disturbed areas. Any non-native species found on the tract are not expected to detract or alter the current uses of this private land.

Vegetation and Wildlife:

The T.9N R. 10W, Sec.25 tract consists of approximately 40 acres of oak-pine woodland. There are no residences but multiple deerstands. There are multiple dirt roads and trails. The tract has been used in the past for timber sales and currently is used for hunting.

Photo 22

The T.9N R. 10W, Sec.36, N2SE tract consists of approximately 80 acres of oak-pine woodland (see photo).There are no residences. There are multiple dirt roads and trails.

The pine-oak forest was dominated by shortleaf pine and Northern red oak. Additional species present included white oak, Eastern redcedar, and sweetgum. Shrubs common in this community type include: winged sumac, smooth sumac, *Vaccinium* spp., blackberry (*Rubus* spp.), sassafras, and common persimmon. Ground cover found within the oak-pine community commonly consists of sedges (*Carex* spp.), panic grasses (*Panicum spp.*), poison ivy, muscadine, Virginia creeper, and greenbriar (*Smilax* spp.). The canopy was approximately 40 feet. The shortleaf pine dbh averaged 9.7" and the red oak dbh averaged 17.2".

These tracts are located in the Sexton Creek/Baig Creek Water Basin. There was one pond (.3 acres) present on the Sec.36, N2SE portion of the tract and there is a stock pond in the southeast corner. Two unnamed intermittent streams, approximately .3miles in length, flow north/south thru the center and on the east side of the tract. Brush Creek is located approximately .3 miles north of the portion of Section 25, and is located approximately 2 miles north of the portion of Section 36. Big Creek is located approximately .6 miles northeast of the portion of Section 25, and is located approximately 1.3 miles north of Section 36.Greers Ferry Lake is located approximately 7.9 miles north of the portion of Section 25, and is located approximately 8.8 miles north of the portion of Section 36.

Special Status Species:

There are no rivers or streams on this tract that would provide suitable foraging areas for Bald Eagle, and habitat for speckled pocketbook or yellowcheek darter.

Cleburne County has historical records of the American Burying Beetle from 1969. However, it is not considered a county with current potential ABB habitat.

The ovate-leaved catchfly is found in rich woods so there is suitable habitat onsite. There may be suitable habitat for open-ground whitlow-grass as it can exist in a variety of habitats even though it occurs in a narrow range. Appalachian filmy fern is only found in the Boston Mountains so it is not expected to occur onsite.

Soils:

The soil associations or general map units for this project were the Enders-Steprock-Association, which makes up about 35% of the county. This association consists of deep to moderately deep, well-drained, moderately sloping to steep, gravelly and loamy soils that formed in residual and colluvial material derived from shale or interbedded sandstone, siltstone, and shale. These soils are on the sides and tops of hills, mountains, and ridges. The Linker Series gravelly fine sandy loam 3-8% slopes soils are comprised of moderately deep well drained sediments that form on loamy residuum and sandstone. These soils are found on mountains, hilltops, broad plateaus, and benches. Texturally they are a brown (10YR5/3) fine sandy loam transitioning to a yellowish red (5YR4/8) loam. Slope ranges between 1-15%. Runoff is rapid and permeability is moderate. The solum thickness and depth to bedrock range from 20-40 inches (51-100 cm). These friable soils are located on the broad ridgetops (about 22 acres) in the northwest and western portions of the 80-acre-tract.

The Steprock-Mountainburg complex 3-8% slopes, 8-20% slopes is the dominant soil in the 40-acre tract (about 32 acres) and is found along the terraces and ridgetops within this project area. These soils encompass about 22 acres in the 80-acre-tract and border the eastern terrace of a small intermittent creek in the northeastern corner of the tract. The Steprock-Mountainburg Series are a combination of Steprock and Mountainburg Series soils. These soils are shallow, well-drained soils located on ridgetops, plateaus, and mountainsides (NRCS 1983). Slopes range from 1-60% and runoff is slow to rapid. Permeability and drainage are also rapid. The thickness of the solum and depth to bedrock ranges from 12-20 inches (30-51 cm). Soils of this type form in residuum of hard, massive, horizontally bedded sandstone and are a dark grayish brown (10YR4/2) texturally cobbly fine sandy loam in nature (NRCS 2003).

The upper northeastern corner (about 8 acres) contained the Steprock-Nella-Mountainburg complex, 20-40% slopes. These soils, which are a combination of Steprock, Nella, and Mountainburg Series soils are moderately deep, well-drained soils that form in residuum from interbedded sandstone, siltstone, and shale bedrock. Slopes range from 3-60%. The soils range from a dark grayish brown (10YR4/2) cobbly fine sandy loam to a strong brown

(7.5YR5/6) cobbly loam in texture. These soils are located on hillsides and upland ridges of the 40-acre-tract. Runoff is rapid and the permeability is moderate. Depth to bedrock and solum thickness ranges from 20-60 inches (50-152 cm).

The Steprock-Linker complex, 3-8% slopes are comprised of moderately deep well drained soils that form on loamy residuum, sandstone, and siltstone. These soils are found on mountains, hillsides, hilltops, and upland ridges. Texturally they are a brown (10YR5/3) fine sandy loam transitioning to a yellowish red (5YR4/8) loam with depth. Slope ranges between 3-15%. Runoff is rapid and permeability is moderate. These soils were located on the broad ridgetops of the 80-acre tract.

Wetlands/Riparian Areas/Flood Plains:

These tracts are located in the Sexton Creek/Baig Creek Water Basin. There was one pond (.3 acres) present on the Sec.36, N2SE portion of the tract and there is a stock pond in the southeast corner. Two unnamed intermittent streams, approximately .3miles in length, flow north/south thru the center and on the east side of the tract. Brush Creek is located approximately .3 miles north of the portion of Section 25, and is located approximately 2 miles north of the portion of Section 36. Big Creek is located approximately .6 miles northeast of the portion of Section 25, and is located approximately 1.3 miles north of Section 36.Greers Ferry Lake is located approximately 7.9 miles north of the portion of Section 25, and is located approximately 8.8 miles north of the portion of Section 36.

Anticipated Impacts of the Proposed Action

Air Quality

If the lease is developed for oil and gas production, impacts to air quality associated with construction, drilling, production and abandonment could come from the following sources: (1.) Fugitive dust generated from vehicle traffic along dirt or gravel roads during transportation of employees and equipment; (2.) Exhaust from heavy machinery, vehicles, compressors, drilling rig prime movers, generators, and other internal combustion engines used during site construction, drilling, flowline installation, production, and abandonment and other production equipment such as pumps, serparators, heater treaters, boilers; and (3.) Fugitive volatile organic compounds (VOC) escaping from leaky pipe valves, flanges, and storage tanks during loading of crude on to tank trucks, and accidental releases/spills of hydrocarbons.

Fugitive dust created during road, drill pad, flowline construction, and abandonment would increase suspended particulates in the air. Also, the regulated air pollutants nitrogen oxides (NOx), sulfur oxides (SOx), VOC, and particulates (Pm) will be emitted from the above referenced sources. These conditions could temporarily impact the ambient air quality in the immediate vicinity of the leased area. The generation of suspended particulates, a regulated

pollutant, could cause a temporary and localized disturbance to people who work in the area. However, the impacts from the combined frequency and volume of fugitive dust and regulated air pollutants are expected to be minimal, very localized, and of short duration.

Cultural Resources:

If no cultural resource surveys are conducted, direct and indirect impacts may occur when ground disturbing activities begin. Direct impacts are those such as completely destroying a site by bulldozing the area and workers picking up artifacts. Indirect impacts are those such as erosion or compaction of the soil on the site. However, if sites are located and recorded before ground disturbance begins, these impacts can be avoided or mitigated.

Native American Religious Concerns and Consultation

If no cultural resource surveys are conducted, direct and indirect impacts may occur to a potentially sacred site when ground disturbing activities begin. Direct impacts are those such as completely destroying a site by bulldozing the area and workers picking up artifacts. Indirect impacts are those such as erosion or compaction of the soil on the site. However, if sites are located and recorded before ground disturbance begins, these impacts can be avoided or mitigated.

Invasive, Nonnative Species

Surface disturbing activities have the potential to introduce or promote the spread of invasive, nonnative plant species. Impacts are dependent on the species planted during restoration activities and the management of the site during and following restoration. Most restoration activities include non-native grasses, such as annual rye (during the winter months) and bahia or Burmuda grass (during the summer months) to provide a dependable quick cover for disturbed soils. This is particularly important on slopes and in areas with erosive soils or near drainages. Including native species in the mix provides additional diversity and assists in returning a more natural structure. If these areas are mowed following abandonment, these non-native grasses are expected to persist and dominate the site. If however, the sites are replanted in pine, or left unmowed the areas can be expected to progress through old field type growth which is dominated by opportunistic native and non-native species alike. Ultimately, both bahia and Burmuda grass are expected to become shaded out as a tree or heavy shrub layer becomes established. Japanese honeysuckle and Chinese privet can both be expected to persist in shaded situations.

Vegetation/Wildlife:

It is anticipated that a maximum of 4 wells would be constructed on this lease and approximately 16 acres will be disturbed as result of oil and gas development. The impacts to wildlife and plant communities are dependent on the location of the wells, associated roads and facilities, and the timing of the disturbance.

During production, there is evidence that cavity nesting birds can become trapped in open vent stacks. Capping open vents according to protocol would prevent birds and bats from entering the vents.

Wastes, Hazardous or Solid

The operations would typically generate the following wastes; (a) discharge of drilling fluids and cuttings into the reserve pits, (b) wastes generated from used lubrication oils, hydraulic fluids, and other fluids used during production of oil and gas, some of which may be characteristic or listed hazardous waste, and (c) service company wastes from exploration and production activities as well as containment of some general trash. Certain wastes unique to the exploration, development, and production of crude oil and natural gas have been exempted from Federal Regulations as hazardous waste under Subtitle C of the Resource Conservation and Recovery Act (RCRA) of 1976. The exempt waste must be intrinsic to exploration, development or production activities and is not generated as part of a transportation or manufacturing operation. The drilling fluids, drill cuttings, and produced waters are classified as a RCRA exempt waste, and the proposed action would not introduce hazardous substances into the environment if they are managed and disposed of properly under Federal, State, and local waste management regulations and guidelines.

Special Status Species:

No impacts to federally listed species are expected.

There may be suitable habitat for open-ground whitlow-grass, however, because of its narrow range, it has a low probability to occur. The ovate-leaved catchfly is found in rich woods so there is suitable habitat onsite

Soils:

Well site and access road construction would have direct impacts to soils. These impacts would be limited to those areas where vegetation is removed and construction occurs. The direct impacts would be of two types: (1) physical removal, leveling and mixing of surface soils and (2) soil compaction. The first impact would be caused by site preparation for construction of the well pad, related structures, road construction, flowline construction and wind and water erosion after vegetation is removed. This would cause a mixing of soil horizons and cause a short term loss of soil productivity. The second impact, soil compaction, would be caused by vehicle and machinery travel. Compaction decreases air and water infiltration into the soil profile thus reducing soil productivity. The indirect impact would be that of erosion and siltation of drainages and streams. Prompt cultivation and re-vegetation of impacted soil areas should reduce the possibility of soil erosion thus preventing an increase of siltation into drainages or streams from run-off. Site specific conditions of approval would be developed prior to approval of an Application for Permit to Drill (APD) to address soil erosion.

Water Quality, Surface/Ground:

Construction would cause some minor erosion and re-deposition of soil a short distance away from the construction area. Site specific conditions of approval would be developed prior to approval of an Application for Permit to Drill (APD) to protect surface water quality. This may include but is not limited to construction of ditches, berms, terraces or other similar structures. Areas not needed for production would be reclaimed and stabilized to control erosion.

Improper casing and/or cementation can result in contamination of ground water aquifers. The BLM requires that the operator must isolate freshwater-bearing formations and other usable water containing 10,000 ppm or less of total dissolved solids (TDS) and other mineral-bearing formations and protect them from contamination by using proper casings. In addition, the BLM requires lining the reserve and water pit with a suitable liner on a case-by-case basis.

Wetlands/Riparian Areas/Floodplains:

Under the current BMPs no oil and gas activity would be permitted within 250 feet of Little Piney Creek, as well as other perennial or intermittent drainages. However, because most of this EOI is within the Little Piney Creek floodplain, additional setbacks or the use of a closed system may be required to avoid contamination or increased sedimentation during periods of high water.

No Action Alternative

Under this alternative, the parcels included within the proposed action would remain unleased at this point in time. It could be offered for leasing in the future, but may be subject to additional environmental analysis at that point in time. No leasing would have no direct impacts to this land. As compared to the proposed action, there would be less disturbance resulting from oil and gas related actions.

Air Quality:

Under the No Action Alternative, there would be some impacts to air quality. Air pollution impacts are negligible, since local sources are non-existent. Lack of additional roads would reduce vehicle-produced dust. Lack of traffic would also reduce any emissions from vehicles.

Cultural Resources:

If the area is not leased and no cultural resource surveys are conducted, direct and indirect impacts may occur. Direct impacts are those such as completely destroying a site by "relic hunters" or by people picking up artifacts. Indirect impacts are those such as timber thinning

or clear-cutting mixing the soil and destruction of the surface. Other impacts to the surface may be caused by hunting activities such as the deposition of spent ammunition shells and other items. However, the use of the property is the in the purview of the land owner, and any cultural resource site and its artifacts are the property of the land owner.

Invasive, Nonnative Species:

Invasive species present on the tract will continue to persist. None of the non-native species found on the tract are expected to detract or alter the future uses of this land.

Native American Religious Concerns:

Under this alternative, places of Native American Religious Practice could be impacted by activities of the landowner, unless there was a formal agreement between the landowner and the Native American tribe. Direct impacts could be the destruction of a site, and an indirect impact could be the landowner placing a fee on the use of the area.

Vegetation/Wildlife:

This site is likely to continue to be used as an oak-pine woodland used for hunting. It would likely be left intact. This action is not expected to reduce the species diversity of both plants and wildlife utilizing the tracts.

Special Status Species:

The continued use of the tract for recreational use is not expected to impact federally or state listed species.

Soils:

Under the No Action Alternative, soils resources will continue to be impacted by actions such as erosion and re-deposition of soil due to weather and any further timber production on the property.

Waste, Hazardous or Solid:

Under the No Action Alternative, it is expected there would little, if any, waste produced. Introduction of wastes including refuse, fuels, antifreeze could occur as a result of surreptitious or inadvertent actions in connection with agricultural use.

Water Quality, Surface/Ground:

Under the No Action Alternative, the only impacts to any water bodies would result from non-point source pollution from runoff.

Wetlands/Riparian Areas/Floodplains:

No impacts to any intermittent streams are expected based on current and projected land use patterns.

Cumulative Impacts

While it is not expected that there will be significant cumulative impacts from the proposed action, continued oil and gas development and other surface disturbing activities in the area may have negative cumulative impacts on the environment. See attached RFDS for potential cumulative impacts resulting from oil and gas developments.

Air Quality:

Oil and Gas Development, along with any future logging activities, would emit sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, particulate matter, lead and volatile organic compounds, which could temporarily impact the ambient air quality in the immediate vicinity of the leased area. Although expected to be of short duration and minimal, the impacts from the amount of dust and air pollutants would cause a minor disturbance to workers in the area.

Cultural Resources:

Under the proposed actions, cumulative impacts to cultural resources are not anticipated, if a cultural resource survey is conducted and any impacts to sites are mitigated. Under the No Action Alternative, cumulative impacts to cultural resources are not anticipated. The existing environment and use of the tracts seem to have little to no impact to unknown sites which may be eligible for listing on the National Register of Historic Places (NRHP). However, if thinning or clear cutting the existing pine plantation occurs, an unknown site which would be potentially eligible for listing on the NRHP would be at least partially destroyed, and the information in the site would be forever gone. If any known Traditional Cultural Properties are present on the surface, continued degradation would occur with the current use as well as oil and gas development.

Invasive, Nonnative Species:

Surface disturbing activities have the potential to introduce or promote the spread of invasive, nonnative plant species. Surface disturbance in native vegetation dominated by shrubs and trees would be converted to herbaceous vegetation. Increased presence of noxious weeds could be expected on unreclaimed bare ground. There would be some increase in edge as a result of the pad construction which would favor exotics, but this effect is likely to be negligible based upon the size of tract.

Impacts are dependent on the species planted during restoration activities and the

management of the site during and following restoration. Many restoration activities include non-native grasses, such as annual rye (during the winter months) and bahia or Bermuda grass (during the summer months) to provide a dependable quick cover for disturbed soils. This is particularly important on slopes, drainages, and in areas with erosive soils. Sowing the sites will decrease seed germination of invasive plants present in the soil such as common mullein, and decrease the chance of successful emergence of seedlings. Including native species in the mix provides additional diversity and assists in returning a more natural structure. If these areas are mowed following abandonment, these non-native grasses are expected to persist and dominate the site. If however, the sites are replanted in pine, or left unmowed, the areas can be expected to progress through old field type growth which is dominated by opportunistic native and non-native species alike.

Invasives such as common mullein, mimosa silk tree, sericea lespedeza, bahia and Bermuda grass are expected to become shaded out as a tree or heavy shrub layer becomes established. Silk tree can, however, become a serious problem along riparian areas, where it becomes established along bare soils and where its seeds are easily transported in water. Replanting near water areas will reduce this risk. Japanese honeysuckle and Chinese privet can both be expected to persist in shaded situations. Dense growths of honeysuckle covering vegetation can gradually kill plants by blocking sunlight from reaching their leaves. Mowing and herbicide application has been used successfully on honeysuckle. If tall fescue is present, discontinuing nitrogen and burning will set the fescue back, additionally, decreased grazing on a site would lower the nitrogen available to the fescue. Kudzu grows well under a wide range of conditions and in most soil types however, its preferred habitat has abundant sunlight. If kudzu is onsite, it can be expected to persist unless the extensive root system is destroyed.

Surface disturbance resulting in tree thinning may actually decrease the amount of red oak borer onsite. Many infestations occur in stands where trees have been planted off-site or are crowded and their vigor is low. If pine stands are weakened, they become more susceptible to attack by the beetle. Once heavy populations develop in weakened trees, the beetles may spread to healthy trees that normally would resist attack. If the red oak borer is onsite, silvicultural control of the red oak borer has been achieved by removing infested trees from timber stands.

Forests that are in a vigorous, healthy condition generally will not suffer from Southern pine beetle outbreaks. On sites where flooding is present, improvement of surface drainage may improve tree growth and survival thereby reducing risk of infestation.
Thinning or other partial cuttings should be separated by intervals long enough to permit the stands to recover. Logging equipment should be operated carefully to minimize scarring the trunks of residual trees, compacting the soil, or crushing tree roots. Trees severely damaged by heavy equipment should be salvaged. Roads and trails should be carefully constructed to avoid erosion problems, flooding, or changes in the water table.

With diligent use of non-invasive or native species during restoration activities and control of any new infestations occurring during oil and gas development activities, oil and gas

development is not expected to increase the spread of invasive species.

Native American Religious Concerns:

Under the proposed action, cumulative impacts to Native American Religious Concerns should not occur. If a cultural resource survey is conducted, any impacts to sites should be avoided. Under the No Action Alternative, places of Native American Religious Practice could be impacted by activities of the landowner, unless there was a formal agreement between the landowner and the Native American tribe. If such an agreement is in place, cumulative impacts to Native American Religious Concerns should not occur.

Soils:

Oil and gas development would require dirt-work involved in constructing well pads and access roads. Constant vehicle traffic would cause some compaction leading to minor erosion and low soil productivity near the well pad areas. There is also the potential for future logging in the area, so further impacts to soils via the use of logging machinery is a possibility.

Special Status Species:

The ovate-leaved catchfly is found in rich woods so there is suitable habitat onsite. There may be suitable habitat for open-ground whitlow-grass as it can exist in a variety of habitats even though it occurs in a narrow range. There should be no impact to federally or state listed species with the best management practices and additional stipulations in place.

Vegetation/Wildlife:

Oil and gas development is expected to temporarily displace deer, small carnivores, reptiles and amphibians, and nesting resident and neo-tropical migratory birds. Because of the types of habitats found on the tracts, the associated species tend to occupy broader niches. The short-term impacts related to drilling and disturbances related to maintenance of this proposed well are not expected to alter the overall plant or wildlife species diversity despite impacts to individuals. The cumulative effects of the surface disturbance will be lessened in areas that have been previously disturbed and/or have higher amounts of human-centered activity (pastures/residential areas). Higher effects will be seen in those areas with intact forests.

Waste, Hazardous or Solid:

During the onsite inspection, no hazardous (biological, chemical, or solid) waste was found on the lease area. In the past, the lease area has been used for agricultural and timber purposes with little, if any, environmental conditions caused by hazardous substances. The proposed leasing action would not introduce any hazardous substance into the environment of the lease.

Possible future oil and gas production could impact the lease area with low to moderate hazardous substances (solid and liquid) during construction and drilling phases of oil and gas development. All hazardous substances and commercial preparations will be handled in an appropriate manner to minimize the potential for leaks or spills into the environment. Any spills or releases will be cleaned up and disposed of in accordance with State and Federal regulations.

Water Quality:

Project operations such as timber production and oil and gas development would result in increased potential for sedimentation and equipment pollutants to contact stormwater and be conveyed to receiving waters. Any water-well development would result in discharges of groundwater to receiving water. Project operations would also increase the potential for long-term increases in stormwater runoff.

Wetlands/Riparian Areas/Floodplains:

There was one pond present on the tract and a stock pond in the southeast corner. Two unnamed intermittent streams, are also present. No impact to this creek is expected by oil and gas mineral development.

13. EOI 530

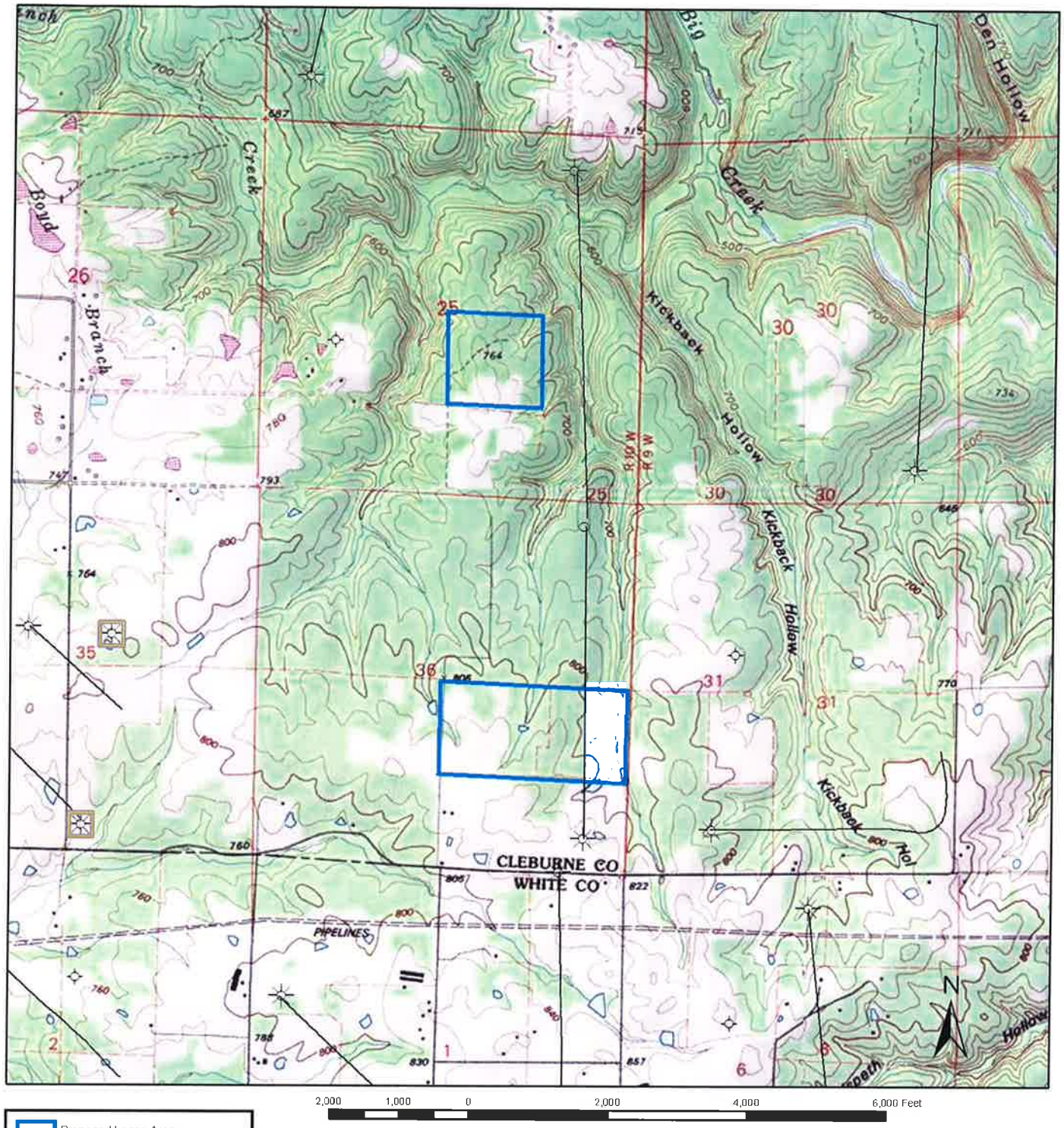
General Setting:

Yell County is located in west central Arkansas in the Ouachita Mountains physiographic province. The Arkansas River flows eastward and forms part of the eastern boundary of Yell County (Soil Conservation Service (SCS) 1988).This proposed lease area is located on approximately 50 acres in the northern region of Yell County. It is a private in-holding within the boundary of the Ozark National Forest. Ouachita National Forest is approximately 6.2 miles south of the SESE tract, and approximately 6.7 miles south of the N2N2NESE tract. The city of Bellville is approximately 5.9 miles southwest from the SESE tract and approximately 6.2 miles southwest from the N2N2NESE tract. The city of Danville is approximately 6.1 miles south from the SESE tract and approximately 6.6 miles south from the N2N2NESE tract. The economy and land use of the county mainly consists of livestock and poultry production, row crops, and commercial timber (SCS 1988). Other lands are used for cities, transportation facilities, or state or federally owned land (SCS 1988).

Section 20, N2N2NESE
This portion of Section 20 is composed of approximately 10 acres and is currently used as grazing pasture.

Section 20, SESE

Proposed Federal Oil and Gas Lease
EOI 1496



Proposed Lease Area
Oil and Gas Wells
Dry Hole, Temporarily Abandoned
Gas Well
Pilot
Inactive Wells
Well Bore Path

Proposed Lease Area:
Cleburne County, Arkansas, 5th Principal Meridian
T. 9N., R. 10W., Sec.25, NWSE
T. 9N., R. 10W., Sec.36, N1/2SE
Approximately 120 acres.

U.S. Department of the Interior
Bureau of Land Management
Eastern States
Southeastern States Field Office
Jackson, Mississippi

This map contains portions of the following USGS 1:24,000 Topographic Quadrangles: Heber Springs, Rose Bud, West Pangburn, Sidon

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