

Proposed Resource Management Plan Amendment
and Environmental Assessment/
Finding of No Significant Impact
for
Federal Coal Leases in
Haskell and LeFlore Counties, Oklahoma
DOI-BLM-NM-040-2013-038



Prepared for
U.S. Department of the Interior
Oklahoma Field Office



November 2013

BUREAU OF LAND MANAGEMENT

The Bureau of Land Management is responsible for the balanced management of the public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield, a combination of uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources. These resources include recreation, range, timber, minerals, watershed, fish and wildlife, wilderness, and natural, scenic, scientific, and cultural values.

[DOI-BLM-NM-040-2013-038]



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Oklahoma Field Office
7906 East 33rd St., Ste. 101
Tulsa, OK 74145

In Reply refer to:
1610 (9100)

December 2, 2013

Dear Reader:

Enclosed is the Proposed Resource Management Plan Amendment (RMPA)/Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Federal Coal Leases in Haskell and LeFlore Counties, Oklahoma. The Proposed RMPA/EA was prepared by the Bureau of Land Management (BLM) in consultation with various government agencies and organizations, taking into account public comments received during this planning effort. The purpose of the Proposed RMPA is to amend the 1996 Oklahoma RMP to provide the management framework for additional Federal coal reserves in Haskell and LeFlore Counties, Oklahoma. The need for action is in response to respond to two competitive coal lease applications and two non-competitive lease modifications. The Proposed RMPA would make up to an additional 4,000 acres of Federal coal reserves available for leasing and development under certain terms, conditions, or stipulations in Haskell and LeFlore Counties, Oklahoma.

Pursuant to BLM's planning regulations at 43 CFR 1610.5-2, any person who participated in the planning process for this Proposed RMPA and has an interest which is or may be adversely affected by the planning decisions may protest approval of the planning decisions contained therein. The Proposed RMPA/EA and FONSI are open for a 30-day protest period beginning December 2, 2013.

For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (labeled as Attachment 1). The regulations specify the required elements of your protest. Take care to document all relevant facts. As much as possible, reference or cite the planning documents or available planning records (e.g. meeting minutes or summaries, correspondence, etc.).

Emailed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular mail or overnight delivery postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct emailed protests to: Brenda_Hudgens-Williams@blm.gov.

All protests must be in writing and mailed to one of the following addresses:

Regular Mail:

Director (210)
Attn: Brenda Hudgens-Williams
P.O. Box 71383
Washington, D.C. 20024-1383

Overnight Delivery:

Director (210)
Attn: Brenda Hudgens-Williams
20 M Street SE, Room 2134LM
Washington, D.C. 20003

All protests must be postmarked on or before January 2, 2014.

Before including your address, phone number, email address, or other personal identifying information in your protest, be advised that your entire protest – including your personal identifying information – may be made publicly available at any time. While you can ask us in your protest to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

The BLM Director will make every attempt to promptly render a decision on each protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior on each protest. Responses to protest issues will be compiled and formalized in a Director's Protest Resolution Report made available following issuance of the decisions.

Upon resolution of all land use plan protests, the BLM will issue a Decision Record (DR). The DR will be available to all parties at <http://www.blm.gov/nm/oklahoma>.

Unlike land use planning decisions, implementation decisions included in this Proposed RMPA/EA are not subject to protest under the BLM planning regulations, but are subject to an administrative review process, through appeals to the Office of Hearings and Appeals (OHA), Interior Board of Land Appeals (IBLA) pursuant to 43 CFR, Part 4 Subpart E. Implementation decisions generally constitute the BLM's final approval allowing on-the-ground actions to proceed. Where implementation decisions are made as part of the land use planning process, they are still subject to the appeals process or other administrative review as prescribed by specific resource program regulations once the BLM resolves the protests to land use planning decisions and issues a DR.

Sincerely,

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

Jesse Juen
State Director

Enclosure

Protest Regulations

[CITE: 43CFR1610.5-2]

TITLE 43--PUBLIC LANDS: INTERIOR
 CHAPTER II--BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR
 PART 1600--PLANNING, PROGRAMMING, BUDGETING--Table of Contents
 Subpart 1610--Resource Management Planning
 Sec. 1610.5-2 Protest procedures.

- (a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.
- (1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.
- (2) The protest shall contain:
- (i) The name, mailing address, telephone number and interest of the person filing the protest;
 - (ii) A statement of the issue or issues being protested;
 - (iii) A statement of the part or parts of the plan or amendment being protested;
 - (iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and
 - (v) A concise statement explaining why the State Director's decision is believed to be wrong.
- (3) The Director shall promptly render a decision on the protest.
- (b) The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested. The decision of the Director shall be the final decision of the Department of the Interior.

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U.S. Department of the Interior Bureau of Land Management

Proposed Resource Management Plan Amendment and Environmental Assessment for Federal Coal Leases in Haskell and LeFlore Counties, Oklahoma

DOI-BLM-NM-040-2013-038

**U.S. Department of the Interior
BLM Oklahoma Field Office**
7906 East 33rd Street, Suite 101
Tulsa, Oklahoma 74145-1352

Cooperating Agencies
U.S. Fish and Wildlife Service
Office of Surface Mining
U.S. Army Corps of Engineers
Oklahoma Department of Mines
Oklahoma Department of Environmental Quality
Oklahoma Department of Wildlife Conservation
Oklahoma Corporation Commission

November 2013

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**PROPOSED RESOURCE MANAGEMENT PLAN AMENDMENT AND
ENVIRONMENTAL ASSESSMENT/FINDING OF NO SIGNIFICANT IMPACT
FOR FOUR COAL LEASE APPLICATIONS IN
HASKELL AND LE FLORE COUNTIES, OKLAHOMA**

	Proposed (X)	Approved ()
LEAD AGENCY:	U.S. Department of the Interior, Bureau of Land Management	
COOPERATING AGENCIES:	U.S. Fish and Wildlife Service Office of Surface Mining U.S. Army Corps of Engineers Oklahoma Department of Mines Oklahoma Department of Environmental Quality Oklahoma Department of Wildlife Conservation Oklahoma Corporation Commission	
TYPE OF ACTION:	Administrative	
JURISDICTION:	Haskell and LeFlore Counties, Oklahoma	

ABSTRACT

The Bureau of Land Management (BLM), Oklahoma Field Office, is preparing an amendment to its 1994 Resource Management Plan, has completed an Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI) on the amendment to incorporate federal minerals that would allow consideration of two lease modifications and two competitive coal leases in Haskell and LeFlore Counties in southeastern Oklahoma. This RMP Amendment (RMPA) and EA/FONSI address alternative plans and the potential impacts of those plans on the existing condition of the human, natural, and cultural environment in the four coal lease planning areas. The four planning areas include Liberty Area (1,620 acres), McCurtain Area (1,300.62 acres), Milton (290 acres) and Spiro (790 acres). The surface lands of the total 4,000.62 acres are privately owned and the underlying Federal minerals are administered by the BLM. The RMPA and EA/FONSI is being produced to determine (1) areas acceptable for further coal-leasing consideration with standard stipulations, (2) areas acceptable for consideration with special stipulations, and (3) areas unacceptable for coal-leasing consideration.

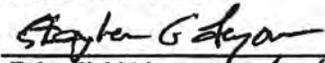
Three alternatives have been considered. Alternative A (No Action): no leasing and, therefore, no subsequent development would take place in the four planning areas. Alternative B (Maximum Coal Development): leases within the four planning areas would allow development with the exception of those determined to be unsuitable (in accordance with the coal screen process unsuitability criteria). Alternative C (Balanced Coal Development and Other Resource Protection): leases in the four planning areas would allow development with the exception of those lands determined to be unsuitable (1) in accordance with the coal screen unsuitability criteria and (2) considering the results of the coal screen multiple use criterion, which in this case includes wetland, stream, and riparian areas and cultural resources. The BLM's preferred alternative is Alternative C.

Protests on the Proposed RMPA may be submitted to the BLM State Director and must be postmarked no later than January 2, 2014.

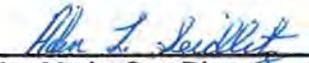
For further information on this document, contact:

Larry Levesque or Rick Wymer, Co-Team Leaders
Bureau of Land Management
Oklahoma Field Office
7906 East 33rd Street, Suite 101
Tulsa, Oklahoma 74145-1352

Recommended by:


Tulsa Field Manager 12/02/2013

Approved by:


New Mexico State Director, Acting

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**FINDING OF NO SIGNIFICANT IMPACT
FOR THE
PROPOSED RESOURCE MANAGEMENT PLAN AMENDMENT/
ENVIRONMENTAL ASSESSMENT
FOR FOUR COAL LEASE APPLICATIONS IN
HASKELL AND LE FLORE COUNTIES,
OKLAHOMA
DOI-BLM-NM-040-2013-038**

Introduction

The Bureau of Land Management (BLM), Oklahoma Field Office has prepared an amendment to its 1994 Resource Management Plan and completed an Environmental Assessment (EA) on the amendment to incorporate Federal minerals that would allow consideration of two lease modifications and two competitive coal leases in Haskell and LeFlore Counties in southeastern Oklahoma. This RMP Amendment (RMPA) and EA address alternative plans and the potential impacts of those plans on the existing condition of the human, natural, and cultural environment in the four coal lease planning areas. The four planning areas include Liberty Area (1,620 acres), McCurtain Area (1,300.62 acres), Milton (290 acres) and Spiro (790 acres) as detailed in the following table.

LOCATIONS OF THE PLANNING AREAS

Planning Areas	Acres	County	Cadastral Location
McCurtain Area	1,300.62	Haskell, LeFlore	Sections 11, 12, 14 T8N R22E Section 7, T8N, R23E
Milton Area	290.00	LeFlore	Sections 23-25 T8N R22E Sections 19, 30 T8N R23E
Spiro Area	790.00	LeFlore	Sections 21-23, 26-27 T9N R26E
Liberty Area	1,620.00	Haskell	Sections 28-29, 32-33 T10N R21E

The surface lands of the total 4,000.62 acres are privately owned and the underlying Federal coal resources are administered by the BLM.

Alternatives

Three alternatives have been considered. Alternative A (No Action): no leasing and, therefore, no subsequent development would take place in the four planning areas. Alternative B (Maximum Coal Development): leases within the four planning areas would allow development with the exception of those determined to be unsuitable (in accordance with the coal screen process unsuitability criteria detailed in the RMPA). Alternative C (Balanced Coal Development and Other Resource Protection): leases in the four planning areas would allow development with the exception of those lands determined to be unsuitable (1) in accordance with the coal screen unsuitability criteria and (2) considering the results of the coal screen multiple use criterion, which in this case includes wetland, stream, and riparian areas and cultural resources.

Alternative C was determined to be the BLM Preferred Alternative. Under Alternative C, the four areas would be made available for leasing, allowing for potential development of all lands within the leased areas with the exception of those lands considered to be unsuitable for development (in accordance with the unsuitability criteria of the coal screen multiple use criterion presented in the RMPA). The estimated total number of acres within the four areas considered at this time as unsuitable for development, after

stipulations, is approximately 323.4 acres, which is about 8.1 percent of the total 4,000.62 acres. The unsuitable areas are located in the Liberty (297.1 acres) and Milton (26.3 acres) areas.

Finding of No Significant Impact

On the basis of the information contained in the Proposed RMPA and EA for four coal lease applications in Haskell and LeFlore Counties, Oklahoma with implementation of the protective measures found in the RMPA, it has been determined that (1) the inclusion of lands for leasing proposed by the RMPA will not have significant environmental impacts, individually or cumulatively, on the human, natural or cultural environment; and (2) the proposed RMPA does not constitute a major federal action having a significant effect on the human, natural or cultural environment. Therefore, an environmental impact statement is not necessary and will not be prepared.

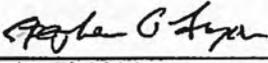
Rationale

This finding is based upon review of the Council on Environmental Quality (CEQ) criteria for significance (40 CFR 1508.27) with regard to the context and intensity of the impacts described in the EA, which is included herein by reference. In making this determination, the following factors were considered:

1. The activities described in the proposed action do not include any significant beneficial or adverse impacts (40 CFR 1508.27(b)(1)). The EA includes a description of the expected environmental consequences of the proposed RMPA.
2. The activities included in the proposed action would not significantly affect public health or safety (40 CFR 1508.27(b)(2)).
3. The proposed activities would not significantly affect any unique characteristics (40 CFR 1508.27(b)(3)) of the geographic area such as prime and unique farmlands, caves, wild and scenic rivers, designated wilderness areas, wilderness study areas, or areas of critical concern.
4. The activities described in the proposed action do not involve effects on the human environment that are likely to be highly controversial (40 CFR 1508.27(b)(4)).
5. The activities described in the proposed action do not involve effects that are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b)(5)).
6. The decision to implement these activities does not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration (40 CFR 1508.27(b)(6)).
7. The effects of the proposed action and associated protective measures would not be significant, individually or cumulatively, when considered with the effects of other actions (40 CFR 1508.27(b)(7)). The EA discloses that there are no other connected or cumulative actions that would cause significant cumulative impacts.
8. It has been determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)).
9. The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR

1508.27(b)(9)). The EA does not propose any changes to existing management for endangered or threatened species. Proposed projects will continue to comply with all Federal regulations for these species.

10. The proposed activities will not threaten any violation of federal, state, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)).

Recommended by: 
Tulsa Field Manager
12/62/2013

Approved by: 
New Mexico State Director, Acting

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LIST OF ACRONYMS

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
$\mu\text{S}/\text{cm}$	conductivity per centimeter
ACHP	Advisory Council on Historic Preservation
A.D.	<i>Anno domini</i>
AF	Acre feet
AFY	Acre feet per year
AIRFA	American Indian Religious Freedom Act
bgs	Below ground surface
BLM	Bureau of Land Management
B.P.	Before Present
BTU	British thermal units
CFR	Code of Federal Regulations
CLS	Coal lease stipulation
CWA	Clean Water Act of 1972
CO ₂	Carbon dioxide
CH ₄	Methane
dB	decibel
dB(A)	A-weighted sound level
EA	Environmental Assessment
ENBB	Environmental Notification Bulletin Board
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
EMC	Evans Mining Company
FCMC	Farrell-Cooper Mining Company
FLPMA	Federal Land Policy and Management Act
GCI	Georges Colliers, Inc.
GHG	Greenhouse gas
GLO	General Land Office
HFC	Hydrofluorocarbon
HUC	Hydrologic Unit Code
Hz	Hertz
IM	Instruction Memorandum
KOP	Key observation point
LAA	Lease Application Area
LBA	Lease by Application

L _{eq}	equivalent sound level
L _{DN}	day-night average equivalent sound level
LM	Lease Modification
MBTA	Migratory Bird Treaty Act
MRLC	Multi-Resolution Land Characteristics Consortium
MSC	Mining Systems Corporation
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NHT	National Historic Trail
NOI	Notice of Intent
N ₂ O	Nitrous Oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Units
NWI	National Wetland Inventory
OAC	Oklahoma Administrative Code
OAS	Oklahoma Archaeological Survey
OBS	Oklahoma Biological Survey
OCS	Oklahoma Climatological Survey
ODEQ	Oklahoma Department of Environmental Quality
ODM	Oklahoma Department of Mines
ODWC	Oklahoma Department of Wildlife Conservation
OGS	Oklahoma Geological Survey
OSM	Office of Surface Mining and Reclamation and Enforcement
OSU	Oklahoma State University
OWQS	Oklahoma Water Quality Standards
OWRB	Oklahoma Water Resources Board
PFC	Perfluorocarbon
PFO1A	Palustrine, Forested, Broad-Leaved Deciduous, Temporarily Flooded
ppm	parts per million
PRPA	Paleontological Resources Protection Act
PUBHx	Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
ROW	Right-of-way
RFFA	Reasonably Foreseeable Future Actions
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
SF ₆	Sulfur Hexafluoride
SHPO	State Historic Preservation Office
TMDL	Total maximum daily load
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior

USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management
WMA	Wildlife Management Area

1.0 PURPOSE AND NEED

The Bureau of Land Management (BLM), Oklahoma Field Office, is preparing an amendment to its 1994 Resource Management Plan (RMP) to incorporate federal minerals that would allow consideration of two coal lease modifications and two competitive coal lease applications in Haskell and LeFlore counties, Oklahoma. The applications were received by the BLM from Farrell-Cooper Mining Company (FCMC); Evans Mining Company (EMC), Georges Colliers, Inc. (GCI); and Mining Systems Corporation (MSC) during the period between June 2008 and October 27, 2011.

The BLM, under the Secretary of the Interior, is the federal agency responsible for leasing federally administered coal, and the Federal Coal Leasing Amendments Act of 1976 requires that coal leases be issued in conformance with a comprehensive land use plan. The 1994 Oklahoma RMP and subsequent amendments include management direction for federal mineral resources in Haskell and LeFlore counties; however, the applications are for resources located outside the areas designated as available for coal leasing in the BLM's 1994 Oklahoma RMP, as amended. Therefore, the BLM is proposing to amend the 1994 Oklahoma RMP, (previously amended in 1994, 1996, and 2004), to include two lease modifications and two competitive coal lease applications, referred to as Lease Application Areas (LAAs). This RMP Amendment (RMPA) would incorporate 4,000.62 acres of previously unleased coal, into the RMP.

1.1 PURPOSE AND NEED FOR THE ACTION

The need for the action is for BLM to respond to these two coal lease applications and two coal lease modifications in light of changing resource demands and improvements in mining technologies. Relevant guidance for this action is drawn from BLM's organic act, the Federal Land Policy and Management Act (FLPMA) of 1976, as amended, and its mission, which is multiple-use, sustained-yield management of the National System of Public Lands; and 43 Code of Federal Regulations (CFR) 3400, which provides the framework for BLM to conduct leasing of the rights to extract federal coal. The purpose of the action (i.e., amending the RMP) is to ensure public lands are managed according to the principles of multiple-use identified in FLPMA while maintaining the valid existing rights and other obligations already established. The need for the action is for BLM to respond to coal-leasing applications associated with changing resource demands and improvements in mining technologies as directed by FLPMA.

The BLM has the responsibility and authority to ensure that Federal rules and regulations are complied with and potential impacts disclosed on split-estate lands where BLM has a decision-making nexus for leasing and development. Also, amendment of the 1994 Oklahoma RMP, as amended, constitutes a major federal action. For these reasons, an environmental assessment (EA) is being prepared in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), as amended (United States Code [U.S.C.]: Title 42, Chapter 55, § 4321 et seq. [42 U.S.C. 4321 et seq.]), and the Council on Environmental Quality regulations for implementing NEPA (40 CFR Parts 1500 to 1508).

1.2 DECISION TO BE MADE

BLM must decide the following relating to the four coal leases:

- Areas acceptable for further coal-leasing consideration with standard stipulations;
- Areas acceptable for consideration with special stipulations; or
- Areas unacceptable for further coal-leasing consideration.

Lands already considered in the 1994 Oklahoma RMP and previous amendments are not addressed. Alternatives will address the availability of unleased lands associated with the planning areas for future coal leasing and any special stipulations to be considered in reviewing the applications for coal leasing.

Once BLM has determined whether standard stipulations are adequate or special protective stipulations will be required and the lands are incorporated into the Oklahoma RMP, BLM then may offer the tract for bid and issues the lease to the successful bidder. At this stage of the process, site-specific details of the proposed mining activities are not known.

At the time of the lease sale, a qualified surface owner, as defined in 43 CFR 3400.0-5, must provide written consent in order for a coal operator to enter and commence surface mining. Without surface-owner consent, the BLM could issue the lease underlying that particular parcel for underground mining only.

Once a lease is issued, responsibility of the lead agency shifts and the lessee must submit a mine permit application, including mine operation and reclamation plans, to the Oklahoma Department of Mines (ODM). ODM is the state agency given the authority for review and approval of mining and reclamation in Oklahoma through designation by the U.S. Department of the Interior (USDI) Office of Surface Mining Reclamation and Enforcement (OSM). Site-specific environmental evaluation and mitigation planning is required at the time the mine permit application is submitted.

1.3 LOCATION

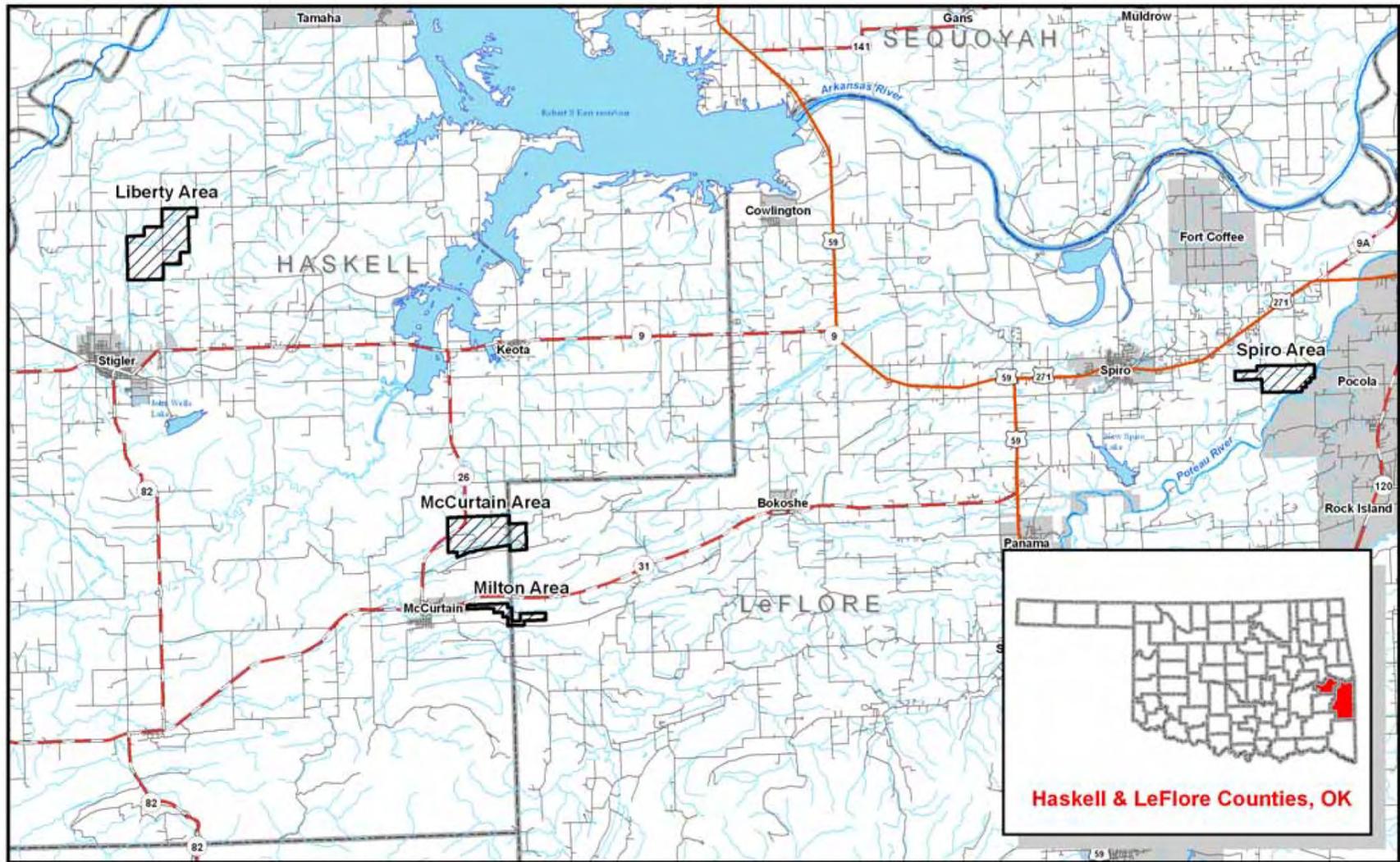
The total acres of federal mineral estate addressed by this RMPA and EA are administered by BLM, whereas the surface is privately owned. The sizes and locations of the four planning areas are shown in Table 1-1 and Map 1-1. A description of the planning areas, including potential mining operations proposed at each area, is presented in Section 2.0, Proposed Action and Alternatives.

**TABLE 1-1
LOCATIONS OF THE PLANNING AREAS**

Planning Areas	Acres	County	Cadastral Location
McCurtain Area	1,300.62	Haskell, LeFlore	Sections 11, 12, 14 T8N R22E Section 7, T8N, R23E
Milton Area	290.00	LeFlore	Sections 23-25 T8N R22E Sections 19, 30 T8N R23E
Spiro Area	790.00	LeFlore	Sections 21-23, 26-27 T9N R26E
Liberty Area	1,620.00	Haskell	Sections 28-29, 32-33 T10N R21E

1.4 SCOPING, PUBLIC INVOLVEMENT, AND ISSUES

Issues were identified through the scoping process at the beginning of the project. Scoping is a process required in the early stages of preparing an RMPA and EA to encourage public participation and solicit public input on the scope and significance of the Proposed Action (40 CFR 1501.7). Scoping and the RMPA/EA process for the four planning areas began with the publication in the *Federal Register* of the Notice of Intent (NOI) to amend the RMP, prepare an EA, conduct public scoping meetings, and request any information that would be useful in meeting the requirements of the Federal Coal Management Program defined in 43 CFR 3420, including the application of coal planning screens.



Legend

 BLM Planning Area

Map 1-1: Planning Areas



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 1/9/12.



Source:
2011 BLM
University of Oklahoma
Center for Spatial Analysis

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The NOI was published on June 24, 2011. In addition to the NOI, BLM prepared a planning bulletin and scoping notice to send to approximately 250 entities on BLM’s mailing list in September 2011. Also, BLM prepared and issued a media release and established a web page to provide project information. The planning bulletin and scoping notice were posted on the website in September 2011.

BLM conducted two public scoping meetings in September 2011, at which 44 people attended (refer to Section 5.0, Consultation and Coordination). The 30-day scoping period ended on October 3, 2011. All of the comments and questions received were compiled, reviewed, and analyzed to identify the issues to be addressed in the RMPA/EA. The issues identified during scoping, and where they are addressed in this document, are summarized in Section 1.4.1, Planning Issues.

The scoping process, including scoping activities and summary of comments and issues, was documented in a Scoping Report in October 2011 sent to the interested parties on the mailing list. The Scoping Report is on file at the BLM Oklahoma Field Office.

1.4.1 Planning Issues

The comments received as part of scoping were analyzed and used to identify the issues to be analyzed in the EA. Table 1-2 presents a list of the issues raised during scoping and where each issue is addressed in the EA.

**TABLE 1-2
ISSUES DERIVED THROUGH COMMENTS RECEIVED DURING SCOPING**

Issues	Section(s) of Environmental Assessment Where Addressed
Air Quality	
How would fugitive dust generated by mining activities be controlled?	3.12, 4.2.1.6, 4.2.2.6, 4.2.3.6, 4.3.6
Cultural Resources	
What would be the effects of the proposed activities on archaeological and historic sites, specifically at the Liberty site?	3.18, 4.2.1.11, 4.2.2.11, 4.2.3.10, 4.3.9
Geology and Soils	
What would be the effects of surface disturbance on the stability and fertility of soils?	3.6, 3.8, 4.2.1.4, 4.2.2.4, 4.2.3.4, 4.3.4
What would be the timing and methods for reclamation of surface disturbance?	3.6, 3.8, 4.2.1.4, 4.2.2.4, 4.2.3.4, 4.3.4
Social and Economic Conditions	
What would be the effects of the proposed activities on property values?	3.22, 4.2.1.15, 4.2.2.15, 4.3.3.15, 4.3.13
What would be the economic impact associated with the proposed activities on surface landowners?	3.22, 4.2.1.15, 4.2.2.15, 4.3.3.15, 4.3.13
How would surface landowners be compensated?	3.22, 4.2.1.15, 4.2.2.15, 4.3.3.15, 4.3.13
Land Use	
Would the proposed activities conflict with current land uses, including private land use?	3.7, 4.2.1.1, 4.2.2.1, 4.2.3.1, 4.3.1
What would be the effects on planned future development?	3.7, 4.2.1.1, 4.2.2.1, 4.2.3.1, 4.3.1
What would be the effects on future coal leasing?	3.7, 4.2.1.1, 4.2.2.1, 4.2.3.1, 4.3.1

**TABLE 1-2
ISSUES DERIVED THROUGH COMMENTS RECEIVED DURING SCOPING**

Issues	Section(s) of Environmental Assessment Where Addressed
Water Resources	
What would be the effects on impacts on natural springs	3.9, 4.2.1.5, 4.2.2.5, 4.2.3.5, 4.3.5
What would be the effects on impacts on ponds and wetland areas	3.9, 4.2.1.5, 4.2.2.5, 4.2.3.5, 4.3.5
Wildlife and Vegetation	
What would be the effects on old-growth forests?	3.11, 4.2.1.7, 4.2.2.7, 4.2.3.7, 4.3.7
What would be the effects on game and non-game wildlife?	3.12, 4.2.1.8, 4.2.1.9, 4.2.1.10, 4.2.2.8, 4.2.2.9, 4.2.2.10, 4.2.3.8, 4.2.2.9, 4.2.3.9, 4.3.8
Noise	
What would be the potential impacts of noise, including blasting, from mining activities on surface owners?	3.17
Public Health and Safety	
Would the landscape features associated with mining operations pose any hazards?	2.2.1
What would be the effects on safety on local roads associated with trucks transporting coal from the mines?	2.2.1, 4.2.2.2, 4.3.2.2

1.5 CONFORMANCE WITH BLM POLICIES, PLANS, AND PROGRAMS

BLM is developing this RMPA in accordance with current laws, regulations, and policy (e.g., FLPMA, NEPA, BLM Land Use Planning Handbook [H-1601-1], and BLM NEPA Handbook [H-1790-1]) and to provide the public an opportunity to review the decision-making for the coal leases.

In 1994, the BLM Oklahoma Field Office completed an RMP, which provides a comprehensive framework for managing the federally owned minerals and BLM-administered public land in the State of Oklahoma. Among other resources, the RMP identified federal coal tracts considered, at that time, having potential for leasing and development. The Decision Records for the RMP and amendments are incorporated appropriately into this RMPA.

The RMP was subsequently amended in 1994, 1996, and 2004 to analyze additional coal acreage not included in the original 1994 RMP. The current planning areas are outside of areas designated as available for coal leasing in the RMP or its amendments. The majority of these proposed planning areas were not included in the 1994 RMP or subsequent amendments, primarily because the tracts represented lands that had previously been mined in the early 1900s or were considered not economically viable. However, improvements in mining technology and economic demand would now allow mining in these areas. A decision in the RMPA/EA to incorporate the coal lease modifications and the coal lease applications would place the lease process in conformance with BLM laws, regulations, and policy.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

Chapter 2.0 contains a description of three alternative management-plan amendments for the federal mineral estate in the planning areas for the four planning areas in Haskell and LeFlore counties, and summarizes the potential impacts on the environment from implementing each of the alternatives. The planning area is synonymous with the boundaries of each LAA, except for the planning area for the Liberty LAA, which is larger than the LAA boundaries. The Liberty planning area represents lands considered suitable for mining by the BLM but which are not currently the subject of a LAA. The decision area is the land within the planning areas for which the BLM has the authority to make land-use decisions during a planning effort. For this planning effort, the decision area is the federal subsurface minerals administered by BLM.

Section 2.2 describes the Proposed Action and potential mining operations by location.

Section 2.3 describes development of alternatives considered, including the results of conducting the four-part land use planning coal screen required by 43 CFR 3461. The coal screen considers and addresses the potential for coal development, areas where coal development may be unsuitable, compatibility with other land uses, and consultation with qualified landowners.

Section 2.4 is a description of the alternative management-plan amendments considered, a comparison of the alternatives, and description of the preferred alternative. A summary of the management guidance common to all alternatives also is provided. Regardless of the alternative selected as the approved plan amendment, the BLM would follow this management guidance, which consists of laws, regulations, and policies.

2.2 DESCRIPTION OF PROPOSED ACTION

BLM has received the following applications for areas of previously unleased coal:

- From FCMC, two areas totaling a combined 1,420 acres in Haskell County; 960 acres for the McCurtain Area on June 10, 2008 (Lease number Oklahoma-New Mexico [OKNM] 108097), and 460 acres for the Liberty Area on April 9, 2010 (OKNM 124610)
- From GCI, one area totaling 1,120 acres in LeFlore County on September 1, 2009 (OKNM 91190), but resubmitted on September 15, 2009, for 790 acres in LeFlore County due to an acreage limitation for lease modifications
- From MSC, one area totaling 220 acres in Haskell and LeFlore counties on September 1, 2009 (Lease number Oklahoma BLM [OKBLM] [017902]), but resubmitted on March 27, 2010 for 290 acres
- From EMC, one area totaling 1,300.62 acres in Haskell County, which overlaps FCMC's application (OKNM 108097) on October 27, 2011 (OKNM 127509)

BLM, under authority of the Secretary of the Interior, is the federal agency responsible for leasing federally owned coal, and the Federal Coal Leasing Amendments Act of 1976 requires coal leases be issued in conformance with a comprehensive land-use plan. In 1994, the BLM Oklahoma Field Office completed such a land-use plan—the RMP for Oklahoma—which included federal mineral resources in Haskell and LeFlore counties. The RMP subsequently was amended in 1994, 1996, and 2004 to analyze

additional coal acreage not included in the original 1994 RMP. The current planning areas are outside of areas designated as available for coal leasing in the RMP or its amendments. The majority of these proposed new coal leases were not included in the 1994 RMP or subsequent amendments, primarily because the tracts represented lands that had previously been mined early in the twentieth century or were considered not economical for mining. However, improvements in mining technology and economic demand would now allow mining in these areas. The BLM proposes to amend the 1994 Oklahoma RMP, to incorporate 4,000.62 acres of previously unleased coal into the RMP. These areas are split estate; that is, the coal is part of the federal mineral estate administered by the BLM, whereas the surface is privately owned.

Lands already considered in the 1994 Oklahoma RMP and 1994, 1996, and 2004 amendments need not be addressed.

2.2.1 Description of Typical Operations

The description that follows is a general description of the potential mining operations at each of the four planning areas if Alternative B or C is selected as the Proposed Action. Mining methods would be defined in more detail in the mine plan of operations during the mine permitting phase. The mining plan would also be used to address existing landscape features, potentially associated with abandoned mine lands (AML) or other past uses, to provide safer final restoration plan landscape features.

Coal mined from the four mining areas has metallurgical properties, and would be marketed to the steel industry as coking coal. The coking coal would be converted to coke, a hard, porous, almost pure carbon material, by exposing to high heat in a coke oven (to 1832-2012°Fahrenheit [1000-1100°Celsius]). During the coking process greenhouse gases including NO₂, CH₄, and CO₂ are produced (USEPA, 2011). The coke would then be used to convert iron ores into steel. Up to 70% of the coking coal mined from the mining areas could be sold to foreign off-shore steel mills. The exact destination(s) of the foreign coal are unknown but, based on market conditions and cost of transporting freight, likely could be Europe, Brazil, and/or Mexico (Farrell-Cooper, 2013).

2.2.1.1 Liberty Mine Area Expected Operations

FCMC is proposing an extension of the existing operations on the private coal lease adjacent to the federal coal lease in the area. The operation FCMC conducts is a side-cast surface mining operation. Permit No. 10/15-4280 issued by the ODM permits surface mining activities to be conducted. The Liberty Area is located northeast of Stigler, Oklahoma. The tract, a portion of which is contained within lease application OKNM 124610 submitted to BLM containing 460 acres, is located adjacent to existing permitted surface mining operations. Currently, FCMC is conducting surface mining activities adjacent to this tract under Permit No. 10/15-4280, southeast of the tract and Permit No. 09/14-4279, east of the tract.

Mining activities have been conducted in the general area of Stigler, Oklahoma, since the early 1900s. Underground mining occurred southeast of the tract beginning in the early 1920s through the late 1940s. Surface mining began in the early 1920s and continues through the present. Portions of the tract in sections 32 and 33 were leased and surface-mining operations were conducted from 1971 through 1980 under portions of leases BLM-C-030953 and BLM-C-031215. Surface mining is proposed on this tract; however, auger and high-wall mining could be conducted. The coal-processing facilities for this tract are on adjacent Permit No. 10/15-4280.

On approval of the submitted permit application, surface-mining activities would begin. Prior to disturbance within the mine permit, drainage control would be established by constructing a sedimentation pond using scrapers, excavators, and bulldozers. The area first would be grubbed to remove brush, trees, and any other obstructions. The topsoil then would be removed and placed in stockpiles

subsequently protected to prevent loss of topsoil. At this point, the sedimentation pond would be constructed.

Next, diversions would be constructed to carry run-off from the disturbed areas to a sedimentation structure, using the same equipment and procedure from construction of the sedimentation pond. Additional diversions could be constructed to direct off-permit and on-permit run-off (i.e., from outside of the disturbed area) away from the disturbed area to minimize contamination of the run-off.

The mining area would be prepared for operations in the same manner. The excavators, scrapers, and bulldozers would grub and remove the topsoil prior to any additional disturbance. The overburden drill then would be used to drills holes in the overburden to be removed. The holes then would be loaded with explosives to break the overburden (shot) prior to handling by the overburden removal equipment. Once the first cut (usually a box-cut) has been shot and the overburden removed, the subsequent adjacent pit would be shot using a blast-casting operation. The blast-casting operation would use the energy of the explosives to move a portion of the overburden into the previously excavated open pit. The holes in the overburden still would be drilled by the overburden drill and loaded with explosives. The method of initiation of the shot and the pattern drilled would produce the desired effect of casting part of the overburden into the previous cut.

At this point, the cast material would have a very rough surface configuration. Bulldozers then would be used to level up the cast material for the operation of the primary overburden removal unit. The bulldozers would grade the material level, filling the remainder of the previous cut unfilled from the blast-casting operation. The leveling would produce an operating surface for the primary overburden removal unit.

FCCM primarily would use a dragline as the overburden removal unit at the Liberty Mine to uncover the coal in the cut and place the overburden material in the previous cut, thus completing the movement of the overburden material from one cut to another. The surface of the uncovered coal then would be cleaned with front-end loaders and bulldozers. This cleaning would remove any overburden left by the primary overburden removal unit and any deleterious material on top of the coal. This material would be placed in the open cut where the coal has already been removed.

The coal then would be broken in preparation for loading. The front-end loader would use the bucket to break the coal to allow the coal to be loaded easily. Additionally, the bulldozer could be used to break the coal using the ripper attached to the bulldozer. The front-end loader then would load the coal on trucks for hauling to the processing facility. The trucks would travel along roads constructed for the purpose of haulage. These roads would be maintained using motor graders. Water trucks would spray the roads for dust control. The haul trucks would deliver the coal to the processing facility, which would be on the adjacent existing permit (Permit No. 10/15-4280).

The haul trucks would be weighed at the coal yard. The coal would be stockpiled by front-end loader prior to processing. The front-end loader would place the coal into the processing facility and the coal would be processed. The coal would be crushed and screened in preparation for shipment to customers. The coal would be stockpiled after processing and loaded by front-end loader from the stockpile into over-the-road trucks for delivery to customers.

Once the overburden has been placed in the previous cut, the uneven terrain would be leveled using bulldozers. Drainage patterns would be reestablished and the area would be graded into the adjacent undisturbed area. The topsoil removed prior to the beginning of drilling operations then would be placed on the graded spoil area with the bulldozers, scrapers, or trucks. The replaced topsoil then would be prepared for planting using tractors and associated farm equipment. The area would be planted with suitable cover material, the planted area would be mulched to protect the topsoil and the newly planted

cover material, and the reclaimed area would be maintained using common practices until the vegetation has been established and matches or exceeds the production prior to mining. Once production has been completed and the land reclaimed, the posted bond would be released and the area would be returned to the prior use.

2.2.1.2 McCurtain Planning Area Expected Operations

No new facilities are proposed for the McCurtain planning area underground coal mining operation. McCurtain planning area is located northeast of McCurtain, Oklahoma.

The RMP was amended in 2004 to allow leasing of the adjacent lands to the west of this tract. The entire tract was under lease in the past in portions of BLM-C-028799, BLM-C-022012, and BLM-I-017564.

Mining activities have been conducted in the general area of McCurtain, Oklahoma since the early 1900s. Underground mining occurred to the west of the tract beginning in the early 1920s through the mid-1950s. Surface mining was conducted south of the tract beginning in the late 1940s through the early 1970s.

On approval of the mine permit, the underground mining process would establish drainage control within the mine permit area by constructing a sedimentation pond using scrapers, excavators, and bulldozers. The area first would be grubbed to remove brush, trees, and any other obstructions. Topsoil then would be removed and placed in stockpiles subsequently protected to prevent loss of topsoil. At this point, the sedimentation pond would be constructed.

Next, diversions would be constructed to carry run-off from the disturbed areas to a sedimentation structure. The same equipment and procedure used for construction of the sedimentation pond would be used. Additional diversions could be constructed to direct off-permit and on-permit run-off (i.e., run-off not from the disturbed area) away from the disturbed area to minimize contamination of the run-off.

The mining area would be prepared for operations in the same manner. Only enough area would be disturbed to prepare the portal area and surface facilities. The excavators, scrapers, and bulldozers would grub and remove the topsoil. The overburden drill then would drill holes in the overburden to be removed. The holes then would be loaded with explosives to break the overburden (shot) prior to handling by the overburden removal equipment. The operator would use an excavator-truck operation as the primary overburden removal unit at the McCurtain Mine. The excavator-truck operation would excavate the portal area for the development of the underground mine. No additional surface operations are proposed. All surface facilities necessary for the operation of the underground mine would be constructed.

A continuous-miner operation is proposed for the underground mining operation. A ventilation and ground-control plan would be submitted and approval of the plan would be received from the Mine Safety and Health Administration. The continuous miner would cut the coal and load it into a shuttle car, which would haul the coal to a central haulage location. The coal would be offloaded from the shuttle car into a breaker to size the coal for haulage on the conveyor system. The coal would be conveyed out of the mine directly into the coal processing facility or stockpiled for processing at a later time.

Once the continuous miner has made a cut, the roof of the cut would be supported in the manner approved in the ground-control plan. It is anticipated that roof bolting would be the primary method of roof support in the mine. The roof bolter would enter the cut once the continuous miner has moved to the next cut location.

The coal from this tract would be prepared on an existing lease. Processing would consist of crushing, dry separation, and coal washing.

Once the mining operations are completed, the portal and facilities area would be backfilled with stockpiled overburden and reshaped using bulldozers. Drainage patterns would be reestablished and the area would be graded into the adjacent undisturbed area. Stockpiled topsoil would be placed on the graded backfill with the bulldozers, scrapers, or trucks. The replaced topsoil then would be prepared for planting using tractors and associated farm equipment. The area would be planted with suitable cover material and mulched to protect the topsoil and the newly planted cover material. The reclaimed area then would be maintained using common practice until the vegetation has been established and matches or exceeds the production prior to mining. Once production has been completed and the land reclaimed, the bond posted would be released and the area would be returned to the prior use.

2.2.1.3 Milton Mine Area Expected Operations

MSC currently is mining, through the surface-mining method, the coal reserve in Section 20, Township 8 North, Range 23 East, adjacent and contiguous to the proposed modification area. The proposed modification area would provide MSC with an additional 466,200 tons of strippable coal reserves to expand the existing operation.

The Milton Mine is located east of McCurtain, Oklahoma. The tract, a lease amendment submitted to BLM, would add 290 acres to lease BLM-I-017902 (OKBLM 017902) and is adjacent to OKBLM 017902. MCS conducted surface-mine operations adjacent to this tract on Permit No. 08/13-4269F.

Mining activities have been conducted in the general area of McCurtain, Oklahoma, since the early 1900s. Underground mining occurred to the west, east, and within the tract. Surface mining was conducted through the tract. Surface mining is proposed on this tract, as well as coal processing facilities.

MSC is proposing an extension of the existing operations on the existing federal coal lease no. OKBLM 017902 located adjacent to the eastern boundary of the area to be added to the existing lease through lease modifications. MSC is proposing to conduct surface mining and reclamation operations on the proposed tract similar to the operation and reclamation conducted on their existing federal lease (Permit No. 4269F) issued by the ODM and the OSM. Blasting would be performed during the mining operation.

MSC would be submitting a Permit Application to the ODM and OSM on the tract to be leased to obtain approval prior to any mining activities. Prior to the disturbance within the mine permit area, drainage control would be established by constructing a sedimentation pond using scrapers, excavators, and bulldozers. The area first would be grubbed to remove brush, trees, and any other obstructions. The topsoil then would be removed by the equipment and placed in stockpiles subsequently protected to prevent loss of topsoil. At this point, the sedimentation pond would be constructed.

Next, diversions would be constructed to carry run-off from the disturbed areas to a sedimentation structure. The same equipment and procedure used for construction the sedimentation pond would be used. Additional diversions could be constructed to direct off-permit and on-permit run-off away from the disturbed area to minimize contamination of the run-off.

The mining area would be prepared for operations in the same manner. The excavators, scrapers, and bulldozers would grub and remove the topsoil prior to any additional disturbance. The overburden drill then would be used to drills holes in the overburden to be removed. The holes then would be loaded with explosives to break the overburden (shot) prior to handling by the overburden removal equipment. Once the first cut, usually a box-cut, has been shot and the overburden removed, the subsequent adjacent pit would be shot using a blast-casting operation. The blast-casting operation would use the energy of the explosives to move a portion of the overburden into the previously excavated open pit. The holes in the overburden still would be drilled by the overburden drill and loaded with explosives. The method of

initiation of the shot and the pattern drilled would produce the desired effect of casting part of the overburden into the previous cut.

At this point, the cast material would have very rough surface configuration. Bulldozers then would be used to level up the cast material for the operation of the primary overburden removal unit. The bulldozers would grade the material level, filling the remainder of the previous cut unfilled from the blast-casting operation. The leveling would produce an operating surface for the primary overburden removal unit.

MSC would use trucks, loaders, scrapers as the primary overburden removal unit at the Milton Mine. The overburden materials would be removed from the coal in the cut and placed in the previous cut, thus completing the movement of the overburden material from one cut to another. The surface of the uncovered coal then would be cleaned with front-end loader and bulldozers. This cleaning would remove any overburden left by the primary overburden removal unit and any deleterious material on top of the coal. This material would be placed in the open cut where the coal has already been removed.

The coal then would be broken in preparation for loading. The front-end loader would use the bucket to break the coal to allow the coal to be loaded easily. Additionally the bulldozer could be used to break the coal using the ripper attached to the bulldozer.

The front-end loader then would load the coal into trucks for haulage to the processing facility. The trucks would travel along roads constructed for the purpose of haulage. These roads would be maintained using motor graders. Water trucks would spray the roads for dust control. The haul trucks would either deliver the coal to the existing processing facility (located within Permit No. 4269F adjacent and east of the proposed tract) or would haul the coal to a new facility within the proposed tract.

The haul trucks would be weighed at the coal yard. The coal would then stockpiled by front-end loader prior to processing. The front-end loader would place the coal into the processing facility for processing. The coal only would be crushed and screened in preparation for shipment to customers. The coal would be stockpiled after processing and loaded by front-end loader from the stockpile into over-the-road trucks for delivery to customers.

Once the overburden has been placed in the previous cut, the uneven terrain would be leveled using bulldozers. Drainage patterns would be reestablished and the area would be graded into the adjacent undisturbed area. The topsoil would be removed prior to the beginning of drilling operations then would be placed on the graded spoil area with the bulldozers, scrapers, or trucks.

The replaced topsoil then would be prepared for planting using tractors and associated farm equipment. The area would be planted with suitable cover material, the planted area then would be mulched to protect the topsoil and the newly planted cover material, and the reclaimed area would be maintained using common practices until the vegetation has been established and matches or exceeds the production prior to mining. Once production has been completed and the land reclaimed, the posted bond would be released and the area would be returned to the planned uses.

2.2.1.4 Spiro Mine Area Operations

GCI currently is mining, through the underground mining method, the coal reserve in Township 9 North, Range 26 East, sections 28, 29, 30, 31, and 32 adjacent and contiguous to the proposed modification area. The Spiro Mine also has been known as the Pollyanna Mine. The proposed modification area would provide GCI with (1) an additional 4,456,000 tons of underground coal reserves to expand the existing operation and (2) access to the eastern portion of the federal lease OKNM 91190 presently held by the applicant.

The Spiro Mine Area is located east of Spiro, Oklahoma. The tract, a lease amendment submitted to BLM, would add 790 acres to OKNM 091190 and is adjacent to OKNM 091190. GCI conducts underground mining operations adjacent to this tract on Permit No. 10/15-4243F. The entire tract was under lease in the past within BLM-I-017683.

Mining activities have been conducted in the Spiro, Oklahoma, area since the early 1900s. Underground mining is currently active adjacent to the tract. Surface mining has occurred south of the tract in the past.

Underground mining is proposed on this tract and the coal-processing facilities would be located on the existing lease OKNM 091190. Permit No. 10/15-4243F lists the activities anticipated and the use and reclamation of the surface areas that would be required for the mining of this tract.

GCI is proposing an extension of the existing operations on the existing federal coal lease OKNM 91190 located adjacent to the southern boundary of the area to be added to the existing lease through lease modification. GCI is proposing to conduct an underground mining operation on the proposed tract similar to the operation conducted on their existing federal lease (Permit No. 4243F) issued by the ODM and OSM. Blasting would not be performed at this operation. GCI would access the area to be leased through their existing portal entries into the coal seam; therefore, there would be no surface disturbances within the proposed tract to be leased.

No permits would be required from the ODM or OSM on the tract to be leased. The existing portal and surface facilities within the existing lease would be used for conveying the coal from underground to the surface for processing. No new surface facilities associated with the underground mining operation are proposed for mining of the proposed tract.

A continuous-miner operation, within the existing leased area, would progress forward into the area to be leased. The same ventilation and ground-control plan approved by the Mine Safety and Health Administration would be used for the area to be leased. The continuous miner would cut the coal and load it into a shuttle car, which would haul the coal to a central haulage location. The coal would be offloaded from the shuttle car into a breaker to size the coal for haulage on the conveyor system. The coal would be conveyed out of the mine directly into the coal preparation facility or stockpiled for preparation at a later time.

Once the continuous miner has made a cut, the roof of the cut would be supported in the manner approved in the ground-control plan. GCI anticipates roof bolting would be the primary method of roof support in the mine. The roof bolter would enter the cut once the continuous miner has moved to the next cut location.

Processing would take place within the area presently permitted under Permit No. 4243F and would consist of crushing, dry separation, and coal washing.

Once the underground mining operation is completed, the surface facilities located within the existing lease would be reclaimed. There would be no disturbances or reclamation within the area proposed for leasing. Within the existing lease, drainage patterns are reestablished and the area is graded into the adjacent undisturbed area. Stockpiled topsoil would be placed on the graded backfill with the bulldozers, scrapers, or trucks. The replaced topsoil then would be prepared for planting using tractors and associated farm equipment. The area would be planted with suitable cover material, the planted area mulched to protect the topsoil and the newly planted cover material, and the reclaimed area maintained using common practices until the vegetation has been established and matches or exceeds the production prior to mining. Once production has been completed and the land reclaimed, the bond posted would be released and the area returned to its prior use.

2.3 ALTERNATIVES DEVELOPMENT

The development of alternatives addressing the Proposed Action is based on law, regulation, and policy; issues identified during scoping early in the NEPA process; BLM management concerns; unsuitability of coal mining; and the information base developed in the Analysis of Management Situation (Chapter 3). As mentioned previously, the alternatives address the availability of unleased land associated with the planning areas for future coal leasing and any special stipulations to be considered. Once the BLM has determined which lands in the planning areas are suitable for coal mining and whether standard stipulations are adequate or special protective stipulations will be required and the lands are incorporated into the Oklahoma RMP, the BLM then offers the tract for bid and issues the lease to the successful bidder. At this stage of the process, site-specific details of the proposed mining activities are not known.

At the time of the lease sale, a qualified surface owner, as defined in 43 CFR 3400.0-5, must provide written consent in order for a coal operator to enter and commence surface mining. Without surface-owner consent, the BLM could issue the lease underlying that particular parcel for underground mining only.

Once a lease is issued, responsibility of the lead agency shifts and the lessee must submit a mine permit application, including mine-operation and -reclamation plans, to the ODM in conjunction with ODM. Site-specific environmental evaluation and mitigation planning is required at the time the mine permit application is submitted.

The following sections describe the unsuitability criteria, multiple-use analysis, surface-owner consultation, stipulations for leasing, and coal-screening results.

2.3.1 Unsuitability Criteria

Whenever land-use planning is undertaken, BLM is required to analyze whether areas are unsuitable for coal mining based on 20 criteria used to evaluate cultural and environmental aspects that may be affected by mining (listed in 43 CFR 3461.5). After the criteria are applied, the lands may be classified three ways:

- Suitable for further consideration for coal leasing
- A deferred decision may be made if the data are inconclusive or subject to change
- The area may be classified unsuitable for further consideration for leasing

This section applies and documents the analysis of unsuitability criteria for the coal resource areas associated with the Liberty (OKNM 124610) Lease by Application (LBA), McCurtain (OKNM 127509) LBA, Milton (OKBLM 017902) Lease Modification, and Spiro (OKNM 91190) Lease Modification. The criteria were applied to baseline environmental data compiled for the four areas with the intent to determine the areas that cannot be protected properly or maintained if the areas were leased for coal mining.

A deferred decision allows lands to be considered for leasing until such time as a lease application is received or a coal tract is established and a more detailed and up-to-date study can be completed. This includes situations where making the decision today would be premature because changes can be expected to occur between the time the unsuitability criteria are first applied and a lease sale takes place. Mining effects also may be minimized by attaching stipulations to leases or by determining certain lands unsuitable to mining by surface methods. In addition, there may be exceptions to the findings of the unsuitability criteria screen. Exceptions, defined in 43 CFR 3461.5 for each of the criteria, may be made if the surface-managing agency determines a significant effect would not result.

Unsuitability decisions were based on these criteria and applied to federally owned coal estate within the four planning areas not currently covered under the 1994 Oklahoma RMP, as amended.

It should be noted that underground mining of coal deposits are exempt from the criteria, where there would be no surface-coal-mining operations as stated in 3461.1(a). However, in instances where underground mining would have surface operations or impacts on lands where the criterion applies, the lands are assessed as unsuitable unless an exception or exemption applies (43 CFR 3461.1(b)). Each criterion is subject to exception and/or exemptions as prescribed in the regulations. McCurtain LBA and the Spiro Lease Modification are both proposed underground mines, whereas Milton Lease Modification and Liberty LBA are proposed surface mines.

The resources and resource-uses described in Chapter 3.0, *Affected Environment*, were reviewed considering the unsuitability criteria. Using a geographic information system, the environmental database was reviewed, and the 20 criteria were applied to determine the locations and estimated extent (in acres) of the areas considered unsuitable for development. Of the 20 criteria, one criterion (Criterion Number 3 – Buffer Zones for Rights-of-Way, Communities, and Buildings) was found to be applicable to the planning areas. As a result of this analysis, there are 3,861 acres determined to be suitable and 139 acres determined to be unsuitable at the present time. Results of the analysis are presented in Table 2-1 (Section 2.3.5) and Table 2-2 (Section 2.3.5). The BLM's unsuitability analysis for the four federal coal tracts is provided in Appendix A.

It should be emphasized that the estimates are based on available data for the purpose of determining lands available for leasing. Once site-specific mine plans of operation have been completed and approved, further environmental investigation to comply with NEPA may alter the area allowed for development.

2.3.2 Results of Multiple-Use Analysis

The multiple-use screen is intended to identify lands that should be eliminated from further consideration for coal leasing if resources on those lands, other than those identified through the unsuitability criteria screen, are determined to be locally important or unique. Consideration of these other resources or uses at this stage of planning allow for accommodation of unique, site-specific resource values clearly superior to coal, but not included in the unsuitability criteria.

The multiple-use values and management considerations in the planning areas include wetland and riparian areas and cultural resources not listed on the National Register of Historic Places (NRHP).

1. Wetland (forested, emergent, or riverine wetlands) areas deemed important by the BLM and U.S. Fish and Wildlife Service (USFWS) have been identified during the Unsuitability Analysis (Appendix A). BLM would attach the coal lease stipulation (CLS) for wetlands, U.S. Geological Survey (USGS) mapped streams, and riparian zones (CLS-3) to new coal leases as stated in Section 2.3.4. Riparian zones have been incorporated as a 100-foot buffer applied to mapped wetlands and streams. Wetland, stream, and riparian buffer acres to be excluded based on the multiple-use screen are reflected in Table 2-1 (Section 2.3.5).
2. Cultural resources have been identified in consultation with the Oklahoma Archaeological Survey (OAS), American Indian tribes, the public, and BLM and presented in the Class I Cultural Resource Report (on file in the Oklahoma Field Office; Cultural Resources Report NM-040-2012-72). BLM would attach the standard archaeological stipulation to new coal leases as stated in Section 2.3.4.

2.3.3 Surface-Owner Consultation

The BLM will be consulting with qualified surface owners to determine whether they are for or against surface mining. A qualified surface owner is one who holds legal title to the surface of split-estate land, has their principal place of residence on the land, or personally conducts farming or ranching operations in an area to be affected by surface mining, or receives a significant portion of their income from the land and has met these conditions for at least 3 years. The results of the surface owner consultation are not considered in this environmental analysis but described herein for reference. Any surface owner who previously gave written consent to any party to conduct surface mining is considered to have expressed a preference for mining. If a qualified surface owner does not consent to surface mining, the area may be considered unsuitable for leasing as a surface mine, but may be considered leasable for underground mining.

Communication to inform landowners and exchange information about the potential mining in the planning areas has been taking place since early in the planning process (and before). Landowners were contacted individually by the applicant to discuss the landowners' opinions, concerns, and preferences and to invite them to attend and participate in the scoping meetings early in the planning process (September 2011). Also, BLM has responded to and will continue to respond to landowner questions and comments.

During scoping, individuals in multiple areas expressed objections to mining activities. Results of scoping can be reviewed in the Scoping Report for the project issued in December 2011. BLM will consult with qualified landowners by letter to determine preference for or against surface mining and to obtain written consent or rejection prior to offering the tracts for lease. These results will be incorporated into the planning process when they become available.

Mining within 300 feet of an occupied residence requires a written waiver from the occupant (Oklahoma Administrative Code 460:20-7-4(5)), without which the operator/lessee would not be allowed to mine closer than 300 feet. Blasting operations within 1,000 feet of an occupied dwelling requires a blast design approved by the ODM. Also, limits on adverse effects of blasting are set by Oklahoma Administrative Code (OAC) 460:25-13-19. Maximum acceptable airblast and ground-vibration limits are imposed for all blasting operations. These limits cannot be exceeded at occupied dwellings outside the permit area. The proper blast design ensures the operator does not exceed these limits. Monitoring also is conducted using seismographs that accurately measure ground-vibration and airblast levels at the protected structures.

The operator/lessee would not conduct surface-mining operations on any land where legal rights have not been granted by the owner of the property to enter and conduct surface-mining operations. This "right to enter" is granted through a lease agreement with the landowner.

2.3.4 Stipulations for Leasing

The coal-screen unsuitability criteria and multiple-use criteria have identified areas that may be included for leasing consideration with stipulations. The following CLSs have been proposed and have been developed from the 1994 RMP as well as BLM policy documents. Areas may be open to federal coal leasing under Standard Lease Terms and Conditions and any specific stipulations (management decisions) as defined in the 1994 RMP, as amended, or this RMPA. Federal coal estate can be considered acceptable for further consideration in the leasing process by application of stipulations. Stipulations are provisions that modify the standard lease rights and are attached and made a part of the lease. Existing stipulations from the 1994 RMP address Criterion 3 and the multiple-use conflict identified for wetland areas. The existing stipulations are:

- CLS-1 – ROW: If it is impractical to relocate the right-of-way (ROW), surface mining will be prohibited within the ROW and to within a 100-foot buffer zone from the outside of the ROW. Relocation approval of both the holder and issuing parties involved in the ROW would be required.
- CLS-2 – DWELLINGS: The coal lessee will consult with the owners of occupied dwellings and maintain or, with the owner’s written consent, adjust the designated 300-foot buffer zone.

CLS-3 – WETLAND PROTECTION: All or portions of the lands under this lease contain wetland and/or riparian areas. The lessee will not conduct surface disturbing activities on these areas without the specific waiver, in writing, of the Authorized Officer after consultation with ODM, OSM, and USACE. Impacts or disturbance to wetlands and riparian habitats that occur on the lease, must be avoided, minimized, or compensated. The mitigation goal will be no net loss of in-kind habitats. The mitigation shall be developed in cooperation with appropriate state and federal agencies. The wetland/riparian stipulation is mandated by Executive Order 11990 – Protection of Wetlands of May 24, 1977.

- CLS-4 – AMERICAN BURYING BEETLE PROTECTION: The lessee will not conduct surface-disturbing lease activities that will result in unacceptable impacts on the American burying beetle, a federally listed endangered species. The lessee may be required to arrange for a qualified biologist to conduct field surveys, which could result in beetle removal and transplant efforts. Such transplant efforts must be accomplished no more than one year before surface-disturbing activities are to begin. Survey requirements, transplant efforts, and Endangered Species Act of 1973 (ESA) coordination/consultation will be cooperatively accomplished with the USFWS. This stipulation would be attached to federal coal leases that occur in Bryan, Cherokee, Haskell, Latimer, LeFlore, Muskogee, Pittsburg, Sequoyah, and Tulsa counties.

In addition, BLM employs a standard overall stipulation for cultural resources that is not specifically stated in the 1994 RMP. The standard BLM stipulation for cultural resources states:

CLS-5 – CULTURAL RESOURCES: Before undertaking any activities that may disturb the surface of the leased lands, the lessee shall conduct a cultural resource intensive field inventory in a manner specified by the Authorized Officer of the BLM or of the surface-managing agency, if different, on portions of the mine-plan area and adjacent areas, or exploration area, that may be adversely affected by lease-related activities and that were not previously inventoried at such a level of intensity. The inventory shall be conducted by a qualified professional cultural resource specialist (i.e., archaeologist, historian, historical architect, as appropriate), approved by the Authorized Officer of the surface-managing agency (BLM, if the surface is privately owned), and a report of the inventory and recommendations for protecting any cultural resources identified shall be submitted to the Assistant Director of the Midcontinent Region of the OSM, the Authorized Officer of the BLM, if activities are associated with coal exploration outside an approved mining permit area (hereinafter called Authorized Officer), and the Authorized Officer of the surface-managing agency, if different. The lessee shall undertake measures, in accordance with instructions from the Assistant Director, or Authorized Officer, to protect cultural resources on the leased lands. The lessee shall not commence the surface-disturbing activities until permission to proceed is given by the Assistant Director or Authorized Officer. The lessee shall protect all cultural resource properties within the lease area from lease-related activities until the cultural resource mitigation measures can be implemented as part of the approved mining and reclamation or exploration plan. The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the lessee. If cultural resources are discovered during operations under this lease, the lessee shall immediately bring them to the attention of the

Assistant Director or Authorized Officer, or the Authorized Officer of the surface-managing agency, if the Assistant Director is not available. The lessee shall not disturb such resources except as may be subsequently authorized by the Assistant Director or Authorized Officer. Within two working days of notification, the Assistant Director or Authorized Officer will evaluate or have evaluated any cultural resources discovered and will determine if any action may be required to protect or preserve such discoveries. The cost of data recovery for cultural resources discovered during lease operations shall be borne by the surface-managing agency unless otherwise specified by the Authorized Officer of the BLM or of the surface-managing agency, if different. All cultural resources shall remain under the jurisdiction of the United States until ownership is determined under applicable law.

Finally, to meet the BLM's responsibilities to protect migratory bird habitat per the Migratory Bird Treaty Act of 1918, as amended, and Executive Order 13186 of January 19, 2001, the BLM has developed a stipulation to be applied to surface-disturbing activities in the Milton and Liberty planning areas:

- **CLS-6 – MIGRATORY BIRD HABITAT:** If surface disturbing activities occur during the period of March 1 and July 30, surveys for ground and tree nesting birds will be conducted by an entity approved by the Field Office. If active nests are encountered, surfacing disturbing activities will be delayed until the nesting activities are complete. Concurrence by the U.S. Fish and Wildlife Service's Oklahoma Ecological Services Office will be required for compliance.

2.3.5 Coal-Screening Results

The results of the four coal screens outlined in this section and relevant to the environmental analysis are summarized in Table 2-1 and Table 2-2.

**TABLE 2-1
POTENTIALLY DEVELOPABLE COAL (ACRES)**

Application Area	Acres with Development Potential		Acres Affected by Unsuitability Criteria After Stipulations	Acres Carried Forward With Unsuitability Stipulations	Acres Affected by Multiple-Use Conflicts after Stipulations	Acres Carried Forward with Multiple-Use Stipulations
	Surface	Under-ground				
Milton	290	0	1.4	288.6	26.3	263.7
Spiro	0	790	0	790	0	790.0
Liberty	1,620	0	137.6	1,482.4	297.1	1,322.9
McCurtain	0	1,300.62	0	1,300.62	0	1,300.62
Total	1,910	2,090.62	139	1,861.62	323.4	3,677.22

**TABLE 2-2
POTENTIALLY DEVELOPABLE COAL (TONS)**

Application Area	Development Potential (tons)		Tons Affected by Unsuitability Criteria after Stipulations	Tons Carried Forward with Unsuitability Stipulations	Tons Affected by Multiple-Use Conflicts after Stipulations	Tons Carried Forward with Multiple-Use Stipulations
	Surface	Under-ground				
Milton	567,000	0	2,737	564,262	51,421	515,579
Spiro	0	4,456,000	0	4,456,000	0	4,456,000
Liberty	1,394,000	0	118,404	1,275,596	255,653	1,138,347
McCurtain	0	3,610,000	0	3,610,000	0	3,610,000

Total	1,961,000	8,066,000	119,057	9,907,943	307,074	9,719,926
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2.4 DESCRIPTION OF ALTERNATIVES

Based on laws, regulations, and policies; issues identified during scoping; BLM’s management concerns; results of the four coal screens; and the information base developed in the Analysis of Management Situation (BLM 2012a), three management alternatives were formulated that represent a range of reasonable alternatives.

2.4.1 Management Alternatives Considered

2.4.1.1 No Action Alternative—Alternative A

Under Alternative A, the four areas addressed in this document would not be made available for leasing, and only those tracts of land included previously in the 1994 RMP and 1994, 1996, or 2004 amendments would be considered for leasing.

2.4.1.2 Maximum Coal Development—Alternative B

Under Alternative B, the four areas would be made available for leasing, allowing for potential development of all lands within the leased areas with the exception of those lands considered to be unsuitable for development (in accordance with the unsuitability criteria of the coal screen [BLM 2011a]). The estimated total number of acres within the four areas considered at this time as unsuitable for development, after stipulations, is approximately 139 acres, which is about 3.5 percent of the total 4,000.62 acres. The unsuitable areas are located in the Liberty LBA and Milton Lease Modification areas. Table 2-3 presents a summary of the area unsuitable for development for each area under Alternative B.

2.4.1.3 Balanced Coal Development and Other Resource Protection—Alternative C

Under Alternative C, the four areas would be made available for leasing, allowing for potential development of all lands within the leased areas with the exception of those lands considered to be unsuitable for development (1) in accordance with the unsuitability criteria and (2) considering the results of the multiple-use screen, which identified wetlands, stream, and riparian zones as well as potential archaeological and historical sites, potential habitat for special status wildlife species, and potential conflict with existing land uses. The estimated total number of acres within the four areas considered at this time as unsuitable for development, after stipulations and the multiple-use screen, is approximately 323 acres, which is about 8.1 percent of the total 4,000.62 acres. Table 2-3 presents a summary of the area unsuitable for development for each area under Alternative C.

**TABLE 2-3
AREAS CONSIDERED UNSUITABLE FOR
DEVELOPMENT FOR ALTERNATIVES B AND C**

Application Area	Total Acres	Area Considered Unsuitable (acres)	Percent of Total Considered Unsuitable	Area Considered Suitable (acres)
Alternative B (unsuitable areas excluded only)				
Milton	290.00	1.4	0.5	288.6
Spiro	790.00	Not applicable ¹	0.0	790.0
Liberty	1,620.00	137.6	8.5	1482.4
McCurtain	1,300.62	Not applicable ¹	0.0	1300.62
Total	4,000.62	139.0	3.5	3861.62
Alternative C (multiple-use screen and unsuitable areas)²				
Milton	290.00	26.3	9.0	263.7
Spiro	790.00	0.0	0.0	790
Liberty	1,620.00	297.1	18.3	1322.9
McCurtain	1,300.62	0.0	0.0	1300.62
Total	4,000.62	323.4	8.1	3677.22
	NOTES: ¹ Planning area exempt from Alternative C criteria due to proposed underground mining. ² Although known cultural resource sites were not mapped in detail and site area is not included in the calculation of acreage, site area is not anticipated to add substantively to the acreage considered unsuitable for development under Alternative C.			

2.4.1.4 Alternative Considered but Not Analyzed in Detail

A fourth alternative of Balanced Coal Development and Other Resource Protection using the 1994 Coal Lease Stipulation 4 was considered, but not further analyzed given that the American burying beetle conservation measures outlined in that stipulation were no longer valid according to the USFWS. The CLS-4 stipulation from the 1994 RMP has been revised to reflect current USFWS American burying beetle protocols and conservation measures and is discussed further in Section 2.4.4.2. This alternative was not considered because it is not consistent with ESA and FLPMA and therefore did not conform with the purpose and need of the RMPA.

2.4.2 Comparison of Alternatives

The three alternatives are distinguished from one another by the type and degree of constraints.

- **Alternative A – No Action Alternative** – The planning areas would not be made available for leasing and, therefore, no subsequent development would result.
- **Alternative B – Maximum Coal Development** – The planning areas would allow development of all lands made available for leasing within the planning areas except for those lands considered at this time to be unsuitable for development, which amounts to approximately 139 acres. These unsuitable lands include ROWs and easements; buffer zones of ROWs, communities, and buildings; floodplains; and municipal watersheds.
- **Alternative C – Balanced Coal Development and Other Resource Protection** – The planning areas would allow development of all lands made available for leasing within the planning areas except for those lands considered unsuitable for development under Alternative B and, in

addition, wetland, stream, and riparian areas and cultural resources would be considered unsuitable for development. Similar to the Unsuitability Analysis, areas being proposed for underground mining were considered exempt from the criteria for Alternative C. Wetland and cultural resource areas add 184.4 acres to the 139 acres from Alternative B, totaling 323.4 acres. It should be noted that, although known cultural resource sites were not mapped and site area is not included in the calculation of acreage, site area is not anticipated to add substantively to the acreage considered unsuitable for development under Alternative C.

2.4.3 Preferred Alternative (Proposed Action)

The BLM’s Preferred Alternative is Alternative C – Balanced Coal Development and Other Resource Protection.

2.4.4 Management Guidance Common to All Alternatives

2.4.4.1 Laws, Regulations, and Policies

Regardless of the alternative selected, BLM’s management of the federal mineral estate and surface resources is governed by several laws, regulations, Executive Orders, and policies, some of which are summarized below and in Table 2-4. Applicable decisions from the 1994 RMP, cooperative agreements or memoranda of understanding with state and other federal agencies would continue and are common to all alternatives.

**TABLE 2-4
APPLICABLE MAJOR LAWS, REGULATIONS, AND POLICIES**

Law/Regulation	Applies to
American Indian Religious Freedom Act of 1978; 42 U.S.C. 1996	American Indian religious places and access
Archaeological Resources Protection Act of 1979; 16 U.S.C. 470	Archaeological resources
BLM NEPA Handbook H-1790-1 (2008)	
Clean Air Act of 1970, as amended 1990; 42 U.S.C. 7401 <i>et seq.</i>	Air quality
Clean Water Act, as amended; 33 U.S.C. 1252 <i>et seq.</i>	Surface water quality
Comprehensive Environmental Response, Compensation, and Liability Act of 1986	Hazardous substances reporting and cleanup
Endangered Species Act; 16 U.S.C. 1531 <i>et seq.</i> , as amended	Threatened and endangered species
Energy Policy Act of 2005	Federal coal leases
Federal Coal Leasing Amendments Act of 1976; 30 U.S.C. 201	
Federal Land Policy and Management Act of 1976; 43 U.S.C. 1700, <i>et seq.</i>	Federal lands, special management areas
Federal Noxious Weed Act of 1974, as amended	Noxious weeds
Federal Water Pollution Control Act, as amended 1972	Watersheds
General Mining Law of 1972; 30 U.S.C. 22-54	
Migratory Bird Treaty Act of 1918, as amended	
Mineral Leasing Act of 1920	
Mineral Leasing Act of 1947; 30 U.S.C. 351, 352, 354, 359	
Mining and Mineral Policy Act of 1970; 30 U.S.C. 219	Mining
Mining Law of 1872, as amended	Mining claims
National Environmental Policy Act of 1969 and implementing regulations 40 CFR 1500-1508	Federal undertakings

**TABLE 2-4
APPLICABLE MAJOR LAWS, REGULATIONS, AND POLICIES**

Law/Regulation	Applies to
National Historic Preservation Act of 1966; 16 U.S.C. 470	Archaeological and historic properties
National Materials and Minerals Policy Research Development Act of 1980	Mineral Resources
Native American Grave Protection and Repatriation Act of 1990	
Resource Conservation and Recovery Act of 1986, as amended	Hazardous and solid waste
Soil and Water Conservation Act of 1977	
Surface Mining Control and Reclamation Act of 1977; 30 U.S.C. 1201 <i>et seq.</i>	
Water Quality Act of 1987	Riparian area, wetlands
Watershed Protection and Flood Control Act of 1954	Watersheds
Executive Order 11593 of May 15, 1971	Protection and enhancement of the cultural environment
Executive Order 11988 of May 24, 1977	Floodplain management
Executive Order 11989 of May 24, 1977	Off-highway vehicles
Executive Order 11990 of May 24, 1977	Protection of wetlands
Executive Order 12898 of February 11, 1994	Environmental justice
Executive Order 13006 of May 21, 1996	Historic properties
Executive Order 13007 of May 24, 1996	Indian sacred sites
Executive Order 13186 of January 10, 2001	Responsibilities of federal agencies to protect migratory birds
Executive Order 13112 of February 3, 1999	Invasive species
Executive Order 13287 of March 3, 2003; updated May 11, 2009	Preserve America

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3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

In accordance with the NEPA regulations codified in 40 CFR 1502.15, this chapter presents a summary of the existing condition of the human and natural environment in the areas that potentially could be affected, beneficially and adversely, by the management alternatives considered in the RMPA (refer to Chapter 2.0). This information serves as a baseline from which the impacts anticipated to the results from implementing the management alternatives were assessed. The affected environment is characterized for the following resources, land uses, and social and economic conditions:

- Climate and Meteorology
- Lands and Realty
- Access and Transportation
- Geology and Coal Minerals
- Energy and Mineral Resources
- Soils
- Water Resources
- Air Quality
- Vegetation
- Wildlife
- Wildlife Management Areas
- Special Status Species
- Noxious Weeds
- Hazardous Materials
- Noise
- Cultural Resources
- Paleontological Resources
- Recreation
- Visual Resources
- Social and Economic Conditions

These topics were selected based on federal regulatory requirements and policies, concerns of the BLM, and/or issues derived from comments expressed by the public during scoping.

Much of the information presented in this chapter is summarized from information contained in the Analysis of Management Situation (USDI BLM 2012a). In development of the Analysis of Management Situation, existing data for each resource were collected and compiled from multiple sources, including limited onsite review. The majority of the data were obtained from federal, state, county, and local agencies. Data included published and unpublished reports, maps, and spatial data. The resulting descriptions are at a level of detail appropriate to this RMPA/EA. New data were not developed as part of the assessment process, although limited field verification was conducted for biological, cultural, land use, and visual resources. Sources used in the preparation of this RMPA/EA are listed in the references section.

3.2 PHYSIOGRAPHY AND TOPOGRAPHY

3.2.1 Physiography

Physiographic, also known as geomorphic, regions are sweeping descriptions of geologic context based on terrain, rock type, geologic structure, and geologic history. The physiographic classifications represented within the planning areas include portions of the Arkansas Valley section of the Ouachita province of the Interior Highlands physiographic division. The Arkansas Valley province is comprised of broad, gently rolling plains and valleys with scattered hills ranging from 100 to 300 feet high. These hills are capped with Pennsylvanian age sandstones (Johnson 2008).

3.2.2 Topography

3.2.2.1 Milton Planning Area

The Milton planning area (Map 3-1) comprises portions of sections 23, 24, 25 within Township 8 North, Range 22 East of the Indian Meridian, in Haskell County and sections 19 and 30 within Township 8 North, Range 23 East, in LeFlore County. The planning area ranges in elevation from approximately 710 feet on the top of a ridge within Section 24 to approximately 510 feet at Wildhorse Creek, which bisects the planning area. Several intermittent streams dissect the Milton planning area, including Wildhorse Creek and its tributaries. The planning area generally follows a central ridge, which runs west to east. The northern portion of the planning area, on the downward ridge slope, is characterized by former strip-mine lands and pits.

3.2.2.2 Spiro Planning Area

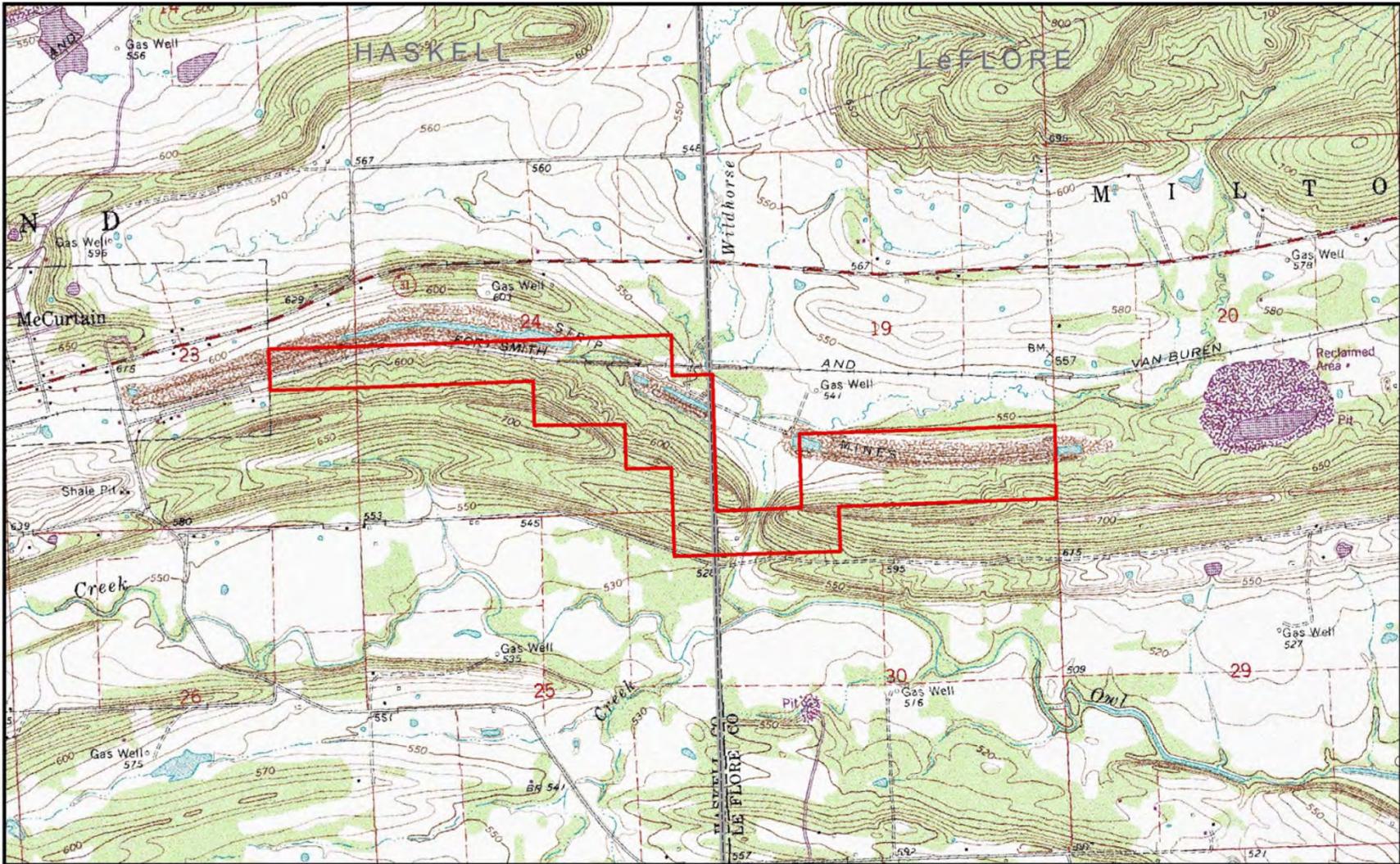
The Spiro planning area (Map 3-2) comprises portions of sections 21, 22, 23, 26, and 27 within Township 9 North, Range 26, in LeFlore. The planning area ranges in elevation from approximately 485 feet within Section 21 to approximately 390 feet at the Poteau River, which makes up the eastern boundary of the planning area. The area has an overall gentle slope from northwest to southeast at 37 feet per mile.

3.2.2.3 Liberty Planning Area

The Liberty planning area (Map 3-3) comprises portions of sections 28, 29, 32, and 33 within Township 10 North, Range 21 East, in Haskell County. The planning area ranges in elevation from a low point of 520 feet on the west side at the Taloka Creek crossing, to a high point of 600 feet on the east side. The planning area has an overall slope of 42 feet per mile. Topography generally slopes down to the west. Several unnamed tributaries of Taloka Creek dissect the area and connect to the main stream southeast of the planning area.

3.2.2.4 McCurtain Planning Area

The McCurtain planning area (Map 3-4) comprises portions of sections 11, 12, and 14 within Township 8 North, Range 22 East of the Indian Meridian, in Haskell County and Section 7 of Township 8 North, Range 23 East, in LeFlore County. The planning area ranges from a low of 570 feet at the southwest and northwest corners to almost 720 feet at the northeast corner, in Section 7. The planning area has areas of both broad plains with little slope to former strip pits with severe slopes. The topography is generally highest along the center of its length and slopes to the north and south. The planning area is characterized by rolling forested hills and strip mine pits.



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 Milton Planning Area

Map 3-1: Milton Area Topography

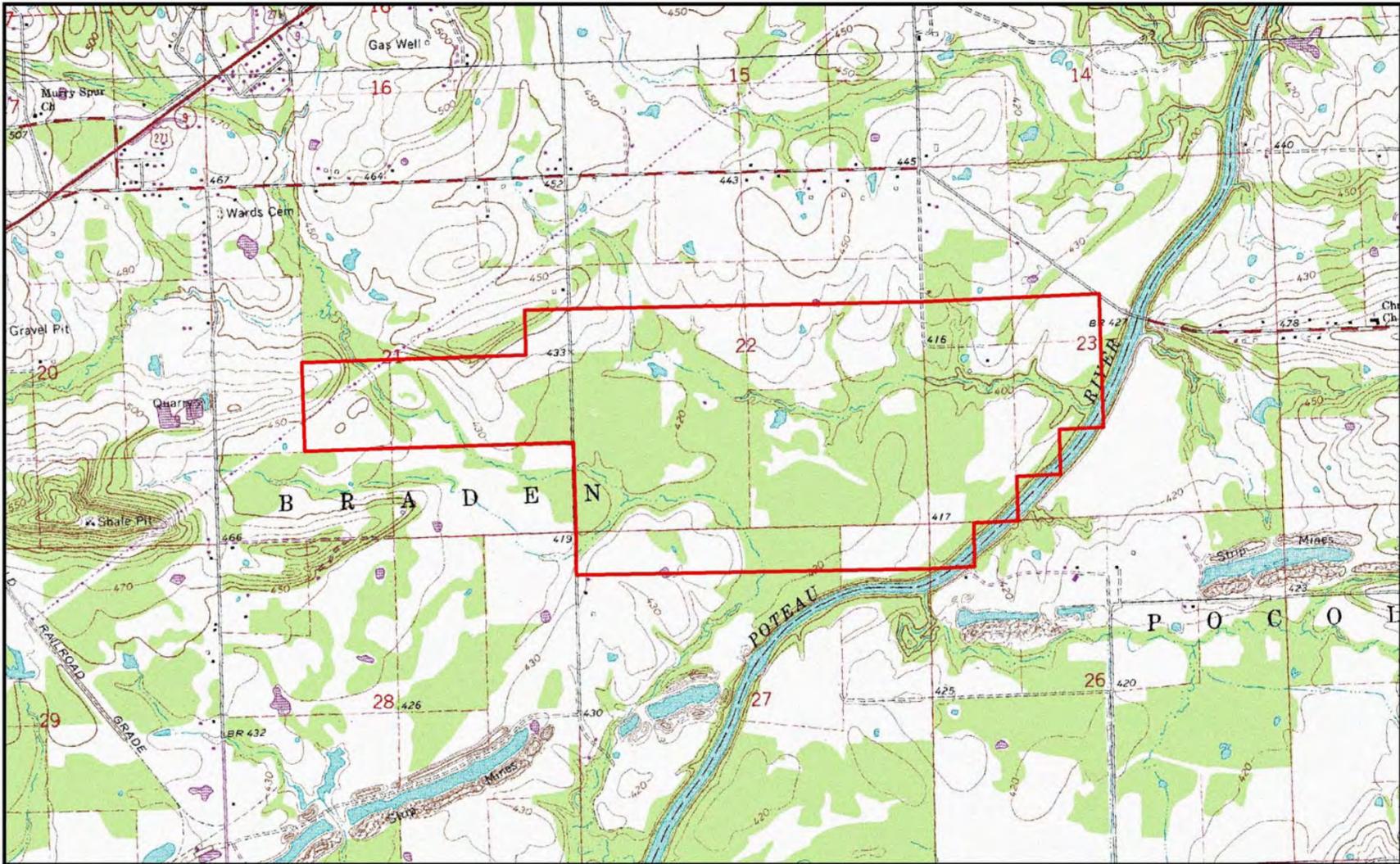
Source:
2011 BLM
USGS 7.5 Minute Series
McCurtain, OK Quadrangle



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 Spiro Planning Area

Map 3-2: Spiro Area Topography

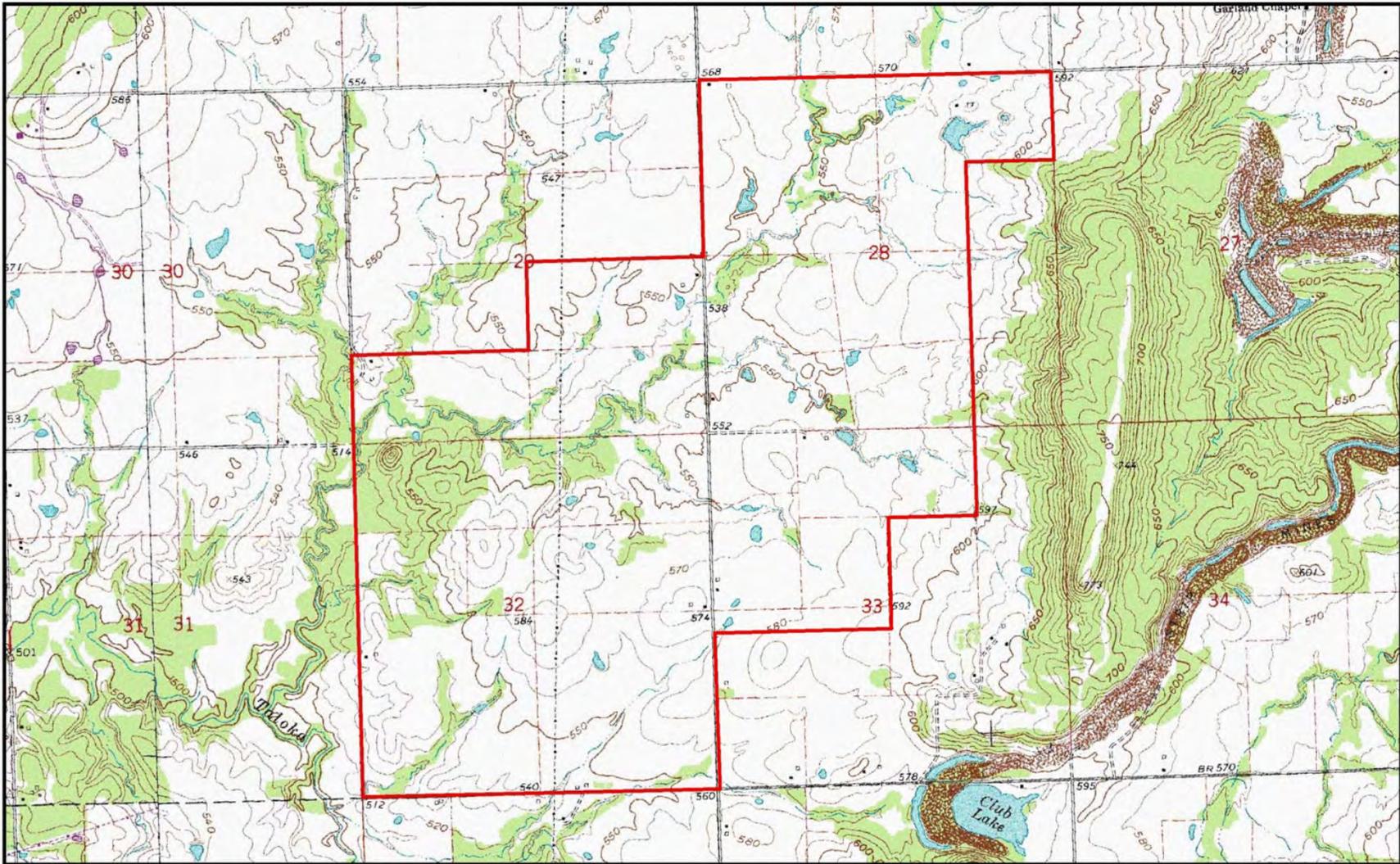
Source:
2011 BLM
USGS 7.5 Minute Series
Spiro, OK Quadrangle



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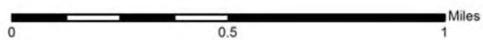
 Liberty Planning Area

Map 3-3: Liberty Area Topography

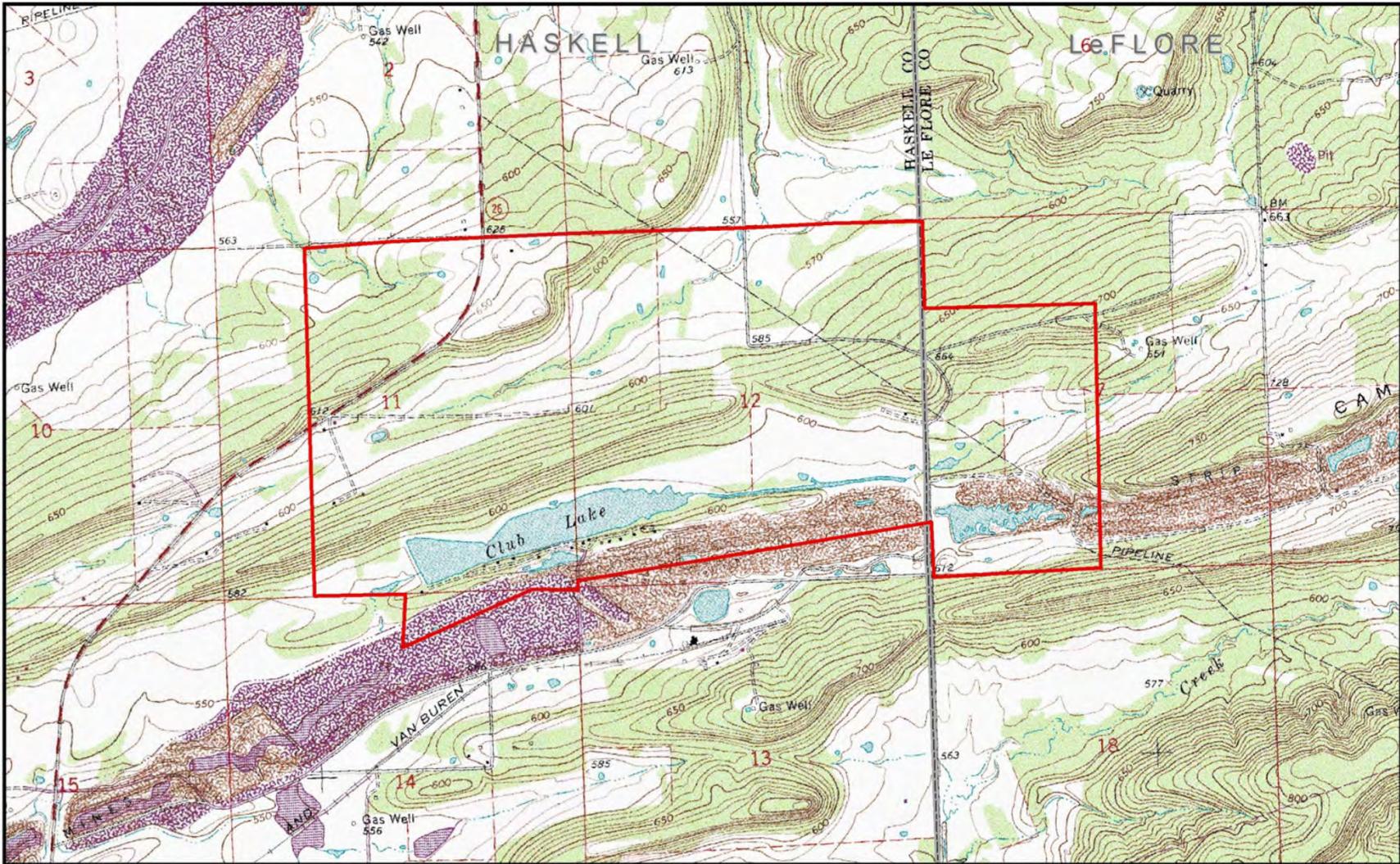
Source:
2011 BLM
USGS 7.5 Minute Series
Stigler East, OK Quadrangle



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 McCurtain Planning Area

Map 3-4: McCurtain Area Topography



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Source:
2011 BLM
USGS 7.5 Minute Series
McCurtain, OK Quadrangle



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3.3 CLIMATE AND AIR QUALITY

The climate of Haskell and LeFlore counties is consistent with that of the Great Plains overall, with long, hot summers and short winters with few periods of extreme cold. Oklahoma is known for its prevailing winds, which in Haskell and LeFlore counties range from southerly to southeasterly in the spring through fall to bimodal northerly and southerly winds during the winter (Oklahoma Climatological Survey [OCS] 2004).

Haskell County, where the Liberty planning area and portions of the McCurtain and Milton planning areas are located, has an average annual temperature of 61 degrees Fahrenheit and a growing season of 216 days. Annual precipitation in Haskell County averages 47.43 inches and comes mostly during fall and spring.

Average wind speed for Haskell County is 7 miles per hour and average humidity is 73 percent. Haskell County receives an average of 7.2 inches of snow per year (OCS 2005a).

Similarly, LeFlore County, where the Spiro planning area and portions of the McCurtain and Milton planning areas are located, has an average annual temperature of 62 degrees Fahrenheit and a growing season of 210 days. Annual precipitation in LeFlore County averages 49.06 inches, occurring primarily in the spring and fall months. Average wind speed for LeFlore County is 5 miles per hour and average humidity is 75 percent. LeFlore County receives an average of 6.3 inches of snow annually (OCS 2005b).

Since the RMP was amended in 2004, new information about GHGs and their effects on national and global climate conditions has emerged. Global mean surface temperatures have increased nearly 0.8°C (1.4°F) from 1880 to 2012 (Goddard Institute for Space Studies, 2013). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring and modeling systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions; what is known is that increasing concentrations of GHGs are likely to accelerate the rate of climate change. Baseline data on ambient greenhouse gas concentrations for the southeastern Oklahoma region are not currently available for reference.

Data regarding how the resources specific to the action area may be changing as a result of climate change have been projected on a regional scale. Studies of potential temperature changes resulting from climate changes were evaluated by the OWRB (2011c). These evaluated five composite climate scenarios for temporal projections of 2030 and 2060. These projected increases ranging from 0.8 to 1.4 degrees Celsius for the planning areas in 2030 and further increases ranging from 1.8 to 3.2 degrees Celsius in by 2060.

The same study evaluated potential changes in average annual total precipitation. The planning areas total precipitation was projected to range from -5% to +5% of historic levels by 2030. By 2060 the changes to total precipitation were project to range from -9% to +10% compared to historic levels. Milley et al. (2005) reported that roughly two-thirds of climate change models available at that time predicted a 5% to 10% reduction in streamflows in the Arkansas and Red River basins. For reference, the planning areas are located in the Arkansas River basin. Seager et al (2007) also suggested that there is a broad consensus among the climate models reviewed in that study indicating additional drying in the American southwest.

GHGs that are included in the US GHG Inventory are: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). CO₂ and CH₄ are typically emitted from combustion activities or are directly emitted into the atmosphere. On-going scientific research has identified the potential impacts of GHG emissions (including CO₂; CH₄, N₂O; and several trace gases) on global climate. Through complex interactions on regional and global

scales, these GHG emissions cause a net warming effect of the atmosphere (which make surface temperatures suitable for life on Earth), primarily by decreasing the amount of heat energy radiated by the Earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), recent industrialization and burning of fossil carbon sources have caused CO₂ concentrations to increase dramatically, and are likely to contribute to overall climatic changes. Increasing CO₂ concentrations may also lead to preferential fertilization and growth of specific plant species.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4°C to 5.8°C (2.5°F to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. Computer-model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. It is not, however, possible at this time to predict with any certainty the causal connection of site-specific emissions from sources to impacts on the global/regional climate relative to the proposed coal leasing and subsequent mining activities.

A 2007 US Government Accountability Office (GAO) Report on Climate Change found that, “federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses.”

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO₂ and CH₄) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and life span of the atmosphere.

3.4 LANDS AND REALTY

The planning areas occur on split-estate land (private surface ownership with federally owned minerals); although BLM does not have direct management responsibilities on surface management of these parcels, BLM is required to ensure that federal rules and regulations are complied with relative to any permitted federal activities. Although there is no direct management authority given to the BLM, the BLM is responsible for ensuring mineral development occurs in accordance with existing statutes and regulatory requirements. Impacts on the surface land uses are described and reported through the development of this NEPA documentation.

The planning areas are located in an area characterized by open space and rural development with pockets of suburban development. The BLM administers 222,313.3 acres of federal coal split-estate lands within the two-county area (USDI BLM 2012b). Coal mining is an ongoing activity within the region.

From 2009 through 2011, the BLM received applications for two competitive coal LBAs and two coal lease modifications from FCMC, GCI, EMC, and MSC in Haskell and LeFlore counties. The 4,000.62 total acres included in the applications are contained within federal split-estate lands administered by the BLM, but the surface rights of these lands are privately owned. The McCurtain and Milton tracts include

lands that have been previously mined during the early twentieth century. Mining in these areas is being pursued due to improvements in mining technology and economic demand.

3.4.1 Milton Planning Area

The Milton planning area is adjacent to a MSC existing coal lease (OKBLM 017902) issued in 1949, but mining activities are currently inactive. The current mined area was identified in the 1994 RMP. The proposed lease-modification area is 290 acres and located in parts of sections 23, 24, and 25 within Township 8 North, Range 22 East; and sections 19 and 30 within Township 8 North, Range 23 East in Haskell and LeFlore counties. The surface estate of the entire planning area is owned by private landowners.

Land uses contained in this narrow planning area are primarily abandoned strip mines, which have filled with water to create linear ponds and adjacent undeveloped woodlots.

3.4.2 Spiro Planning Area

The Spiro planning area is adjacent to an existing GCI coal lease (OKN91190) issued in 1995. The existing coal lease area was identified in the 1994 RMP. The total area proposed for this lease-modification area is 790 acres, located in parts of sections 21, 22, 23, 26, and 27 within Township 9 North, Range 26 East, in LeFlore County. The southeast corner of the planning area abuts the Poteau River, which flows into the Arkansas River approximately 12 miles north of the site.

The primary uses of the land in the Spiro planning area are pasturelands, agricultural fields, and undeveloped woodlots. Underground mining methods are proposed for this lease area, which would reduce conflicts with existing land uses. An existing transmission line crosses the western edge of the planning area for approximately 0.25 mile.

3.4.3 Liberty Planning Area

The Liberty planning area lies adjacent to an active strip mine operated by FCMC. The existing mine was permitted under ODM permit No. 4279. A total of 1,620 acres are contained in Liberty planning area while the LAA includes 460 acres of the total. The planning area is located in sections 28, 29, 32, and 33 within Township 10 North, Range 21 East, in Haskell County. Eleven occupied structures are located within the Liberty planning area (four within the smaller LAA) and no written permission has been given to mining within 300 feet of these structures.

Land uses within the Liberty area are mostly residential with associated agricultural development, pasturelands, and small undeveloped woodlots. Several existing transmission lines are located within the Liberty planning area. Specifically, a double-circuit transmission line is located along the southern boundary of the planning area adjacent to County Road E1190. Additionally, a transmission line bisects the area between County Road N4440 and Airport Road (for approximately 1.5 miles) from the southwest corner of the planning area to the area of existing mining operations northeast of the airport.

3.4.4 McCurtain Planning Area

The McCurtain planning area comprises portions of sections 11, 12, and 14 within Township 8 North, Range 22 East, in Haskell County and Section 7 of Township 8 North, Range 23 East, in LeFlore County. This planning area is made up of applications from both FCMC and EMC. The McCurtain Area LAA would add approximately 960 acres adjacent to the FCMC existing coal lease area (OKNM 108097) identified in the 2004 RMPA. The surface ownership of this planning area is made up of private landowners. A portion of State Highway 26 and its easement crosses the planning area in the northwest

corner. This two-lane asphalt highway links the towns of Keota and McCurtain. Underground mining is the proposed mining technique for this area, which would minimize surface disturbance and conflict with surface ownership and easements.

Land uses within this area include pasturelands, agricultural fields, and undeveloped woodlots. Abandoned strip mines located along the southern portion of the planning area have created small ponds and wetlands.

3.5 ACCESS AND TRANSPORTATION

The planning area contains an extensive network of roads ranging from U.S. highways to county gravel roads. Access to the LAAs would be provided by these roads, in particular the county roads that cross the planning areas.

No federal laws or regulations directly apply to gaining access to the planning areas. However, BLM Handbook H-1601-1, Land Use Planning Handbook, states that access routes should protect unique resources and values where the BLM determines it necessary.

3.5.1 Milton Planning Area

State Route 31 would provide highway access to the Milton planning area along its northern edge. This two-lane asphalt highway provides a link between McCurtain, the planning area, and U.S. Highway 59. Only one county road provides access within the application area, County Road E1290/55C, which runs along the southern boundary and crosses the planning area for approximately 400 feet. Other access roads within the planning area provide access along previously mined areas.

3.5.2 Spiro Planning Area

The closest highway access to this planning area is from U.S. Highway 271, 2 miles to the north, by way of County Road 11 or County Road 19. U.S. Highway 271 is an asphalt highway that ties to Interstate 40 north of Fort Smith, Arkansas. In addition to the county roads that connect to the U.S. Highway, County Road N4770 provides access to the northeast portion of the application area.

3.5.3 Liberty Planning Area

State Highway 9 is located approximately 2 miles to the south of the Liberty planning area and is the closest highway access point. This two-lane asphalt highway runs parallel to Interstate 40 located approximately 20 miles to the north. County Road N4450 links both the Liberty planning area to this state highway. This road crosses the Liberty LAA area for 1 mile and is the western boundary of the LAA. No other county roads cross through these mining areas. The Liberty planning area is bordered on the west by County Road N4440, County Road E1190 to the south, and County Road E1170 to the north.

3.5.4 McCurtain Planning Area

Highway access to the McCurtain area is provided by State Route 26, which runs through the northwest corner of the planning area. This two-lane asphalt highway links the planning area to the town of McCurtain. Approximately 0.75 mile of this highway lies in the planning area. County Road E1260 runs across the northern edge of the planning area. There are a few county roads that provide additional access to the interior of the application area, including County Road N45, County Road N4534, County Road E1263, and County Road D1264.

3.6 GEOLOGY AND COAL MINERALS

The planning areas generally lie in the east-central Oklahoma portion of the Arkoma Basin coal region. Most of the sedimentary rocks within the basin are thought to have been deposited in a deltaic environment from materials that originated in the highlands to the northeast, north, and northwest. The coals are thought to have originated from peat deposits in low-lying swamps, which were located lateral to the deltaic channels. These sediments were compressed, lithified, folded, and faulted into a series of east-west oriented anticlinal and synclinal folds during the development of the Ouachita Mountains and Ouachita Uplift. Later erosional processes exposed the coal seams at the surface, appearing as ribbons that wind across east central Oklahoma (ODM 2011).

The Secretary of the Interior maintains the decision-making authority regarding leasing, sale, and development of federal energy and mineral resources, including coal resources. This authority has been granted by the following series of federal laws and regulations:

- The General Mining Law of 1872 (30 U.S.C. 22-54) governs mining activity on public land including entry and mine claims. The General Mining Law originally included claims for coal, oil and gas. In 1909, President Theodore Roosevelt issued a Proclamation withdrawing public land from claims until such land could be protected. That protective legislation was enacted with the Mineral Leasing Act of 1920.
- The Mineral Resources on Weeks Law Lands Act of 1917 (39 Stat. 1150, as supplemented; 16 U.S.C. 520) authorizes the Secretary of the Interior to prescribe general regulations for permitting prospecting, development, and use of the mineral resources of federal lands acquired under the Weeks Law (Act of March 1, 1911). Lands acquired under the Weeks Law have been included in National Forests.
- The General Mining Law of 1872 as amended by the Mineral Leasing Act of 1920 gives the federal government authority to lease certain federal onshore minerals, including oil, gas, phosphate, sodium, and potassium. Section 43 closes leasing of specified lands (30 U.S.C. 226-3).
- The Mineral Leasing Act for Acquired Lands of 1947 (Ch. 513, 61 Stat. 913; 30 U.S.C. 351, 352, 354, 359) provides for leasing of federal deposits of certain minerals (e.g., oil, gas, oil shale, coal, sulfur, phosphate, sodium, and potassium) occurring on acquired lands under the same leasing provisions provided in the mineral leasing laws.

The Mining and Minerals Policy Act of 1970 (30 U.S.C. 219) amends the Mineral Leasing Act of 1947 to modernize federal policy regarding mineral resources. Additional federal regulations pertaining to coal mining include the following:

- Energy Policy Act of 2005 updates many facets of the federal energy policy. Section 432 pertains to federal coal leases and repeals the 160-acre limitation on leases. In response, the BLM has issued interim guidance Instruction Memorandum (IM) 2006-004 (USDI BLM 2005).
- The Federal Coal Leasing Amendments Act of 1976 (30 U.S.C. 201) amends Section 2 of the Mineral Leasing Act of 1920 and requires a competitive leasing process in most cases.
- The Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.) establishes the OSM to set forth guidelines for the reclamation of surface coal mining areas and/or direct the establishment of reclamation programs within individual states.

- The National Materials and Mineral Policy, Research, and Development Act of 1980 (30 U.S.C Chapter 28)

Regulations that govern coal leasing through the BLM are found in 43 CFR 3000 and 3400. Regulations and policies specific to the BLM include:

- BLM Manual 1601 and Handbook H-1601-1 (2005) Land Use Planning
- BLM Manual Series 3031, Energy and Mineral Resource Assessment
- IM No. 2002-222 provides the Internet link for access to the draft *Solid Minerals Reclamation Handbook*, September 9, 2002.

The State of Oklahoma has been granted primacy by the USDI for administrating the Surface Mining Control and Reclamation Act of 1977. Oklahoma regulations generally adopt the federal requirements by inclusion in Title 460 of the Oklahoma Administrative Code. The ODM is the state agency that is responsible for ensuring the reclamation of land affected by mining activities.

3.6.1 Milton Planning Area

The Milton planning area is located east of the town of McCurtain in eastern Haskell County and crosses the county line into western LeFlore County. Surface lithology within the planning area primarily consists of shales and sandstones of the Atoka Formation, Hartshorne Sandstone, and McAlester Formation. The target coal seam is within the Hartshorne Sandstone that is stratigraphically above the Atoka Formation and outcrops along the flanks of the Milton anticline. A review of the Geologic Map of Oklahoma (Miser 1954) reveals the area is located within the Milton anticline immediately south of a thrust fault. A normal fault is located approximately 1 mile north-northwest of the area. The geology of the planning area is shown on Map 3-5.

3.6.2 Spiro Planning Area

The Spiro planning area is located in northeastern LeFlore County, east of the City of Spiro. Surface lithology within the planning area consists of shales and sandstones of the McAlester Formation.

Throughout most of the planning area, Quaternary-aged alluvium associated with the Poteau River overlies the McAlester Formation. The target coal seam is within the underlying Hartshorne Sandstone. A review of the Geologic Map of Oklahoma (Miser 1954) reveals the area is located along the north side of faulting associated with an anticlinal structure to the south. The geology of the planning area is shown on Map 3-6.

3.6.3 Liberty Planning Area

The Liberty planning area is located in northern Haskell County near the northern edge of the Arkoma Basin coal region. Surface lithology consists of shales and sandstones of the McAlester Formation and a small area of Quaternary terrace deposits in the southwestern portion of the area. The McAlester Formation consists of several hundred feet of shale with a few interbedded minor sandstone intervals. The unit ranges from about 500 to 2,300 feet in thickness (USDI USGS 1899). The Stigler coal seam, also within the McAlester Formation, lies approximately 80 to 220 feet below the surface within the mining area (Open File Report 79-307). The McAlester Formation is lower Desmoinesian (Pennsylvanian) in age and conformably overlies the Hartshorne Sandstone. A review of the Geologic Map of Oklahoma (Miser 1954) reveals a series of approximately three normal faults located within approximately 3 miles of the Liberty planning area to the northeast. One of these faults is mapped within the northeastern portion of the Liberty planning area. The geology of the Liberty planning area is shown in Map 3-7.

3.6.4 McCurtain Planning Area

The McCurtain planning area is located in eastern Haskell County and western LeFlore County. Surface lithology within the planning area consists of shales and sandstones of the McAlester Formation (Miser 1954). The target coal seam is within the underlying Hartshorne Sandstone. The Hartshorne Sandstone crops out on the land surface on the flanks of the Milton anticline located southeast of the planning area. The Hartshorne is near the land surface at the southeastern corner of the mining area and dips into the subsurface to the northwest toward the axis of the Cowlington syncline. A review of the Geologic Map of Oklahoma (Miser 1954) reveals a normal fault immediately south of the planning area. A thrust fault associated with the Milton anticline is located approximately 1 mile southeast of the area. The geology of the planning area is shown in Map 3-8.

3.7 ENERGY AND MINERAL RESOURCES

Energy and mineral resources in the planning area include coal, oil and gas, coalbed methane gas, clay and shale, limestone, dimensional stone, and sand and gravel.

3.7.1 Coal

The 2004 RMPA screened the coal development potential within three application areas in Haskell, Latimer, and LeFlore counties (USDI BLM 2004). Changes in economics of coal mining since that time have prompted this study. The 2013 Unsuitability Analysis for the RMPA documents the evaluation of coal mining suitability of the four planning areas with approximately 4,000 acres in Haskell and LeFlore counties (USDI BLM 2013). Geology of the coal resources is detailed in Section 3.6. The coal areas that would be affected by the proposed activities associated with the Proposed Action are discussed in the following sections.

3.7.1.1 McCurtain and Milton Planning Areas

The McCurtain and Milton areas are located near the Town of McCurtain in eastern Haskell County and western LeFlore County. Mining has previously occurred in the McCurtain and Milton planning areas. Coal in these areas is recoverable from the Hartshorne Sandstone (Upper and/or Lower Hartshorne). Within the McCurtain planning area, the estimated coal resource is approximately 3.6 million tons and approximately 567,000 tons within the Milton Lease Modification (USDI BLM 2013). Average sulfur content of the Hartshorne coal ranges from 0.83 to 0.91 with an average energy content of 13,989 to 15,740 British thermal units (BTU) per pound (USDI BLM 2013).

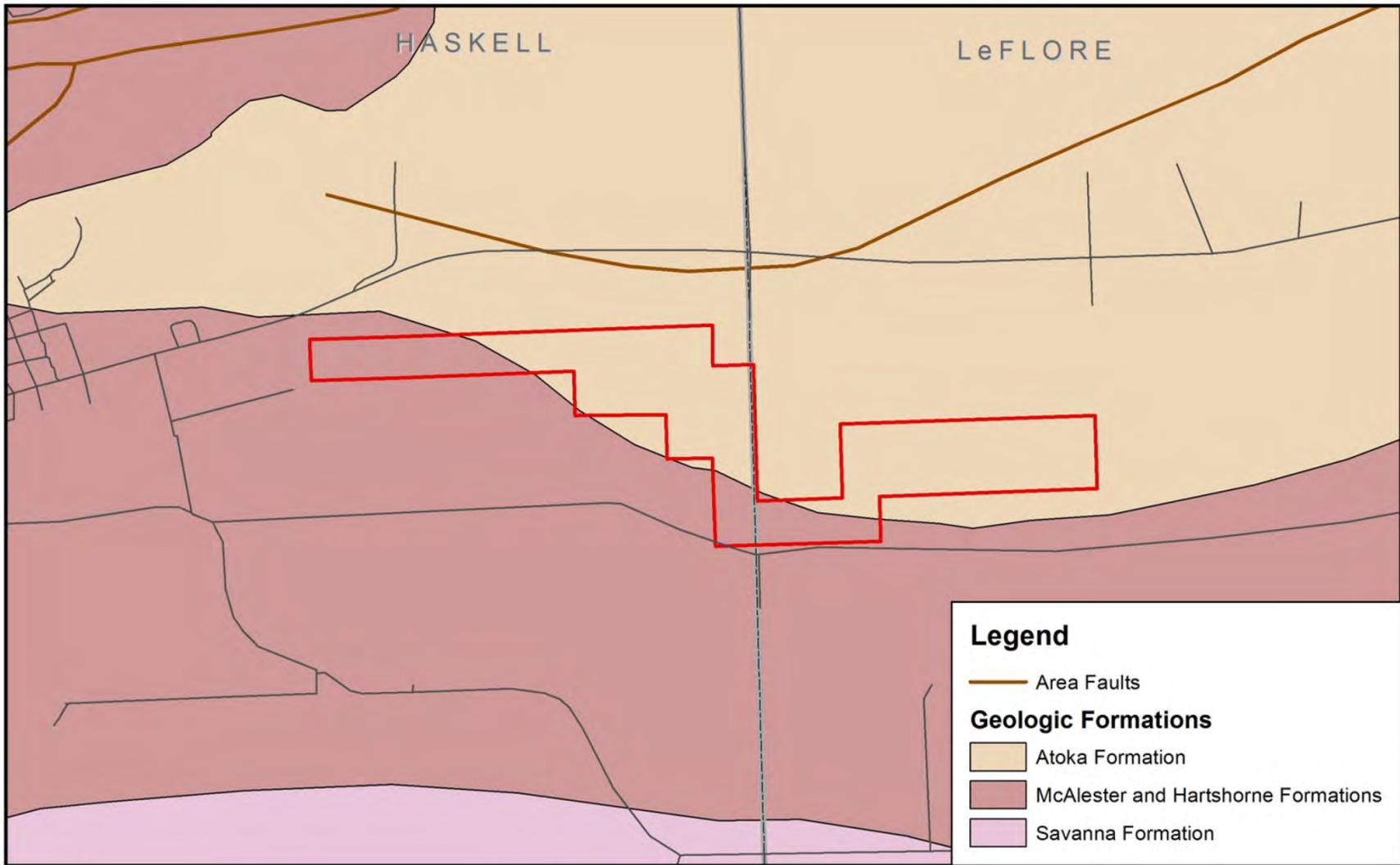
3.7.1.2 Spiro Planning Area

The Spiro planning area is located east of the City of Spiro in eastern LeFlore County. Coal in this area is recoverable from the Hartshorne coal seam. Within the Spiro LM, the estimated coal resource is approximately 4.5 million tons (USDI BLM 2013). Coal in this area is expected to have a relatively high sulfur content than the other planning areas, with an average range from 1.1 to 2.8, but a low-energy content (approximately 12,265 to 13,220 BTU per pound) (USDI BLM 2013).

3.7.1.3 Liberty Planning Area

The Liberty planning area is part of the Morgan Mountain Coal Area located in northern Haskell County north of the City of Stigler, Oklahoma. The thickness of the Stigler coalbed in this area ranges from 1.5 to 2.1 feet (Open File Report 79-307), with the dip varying from 3 to 4 degrees. Within this area, the estimated coal resource is approximately 1.4 million tons (USDI BLM 2013). The quality of the Stigler coal is suitable for steam generation and has an average sulfur content of 0.4 to 1.0 and approximately

14,260 to 14,710 BTU per pound (USDI BLM 2013). An adjacent area, the Liberty West planning area, has previously been mined by FCMC.



Legend
 Milton Planning Area
 County Roads

Map 3-5: Milton Area Geology



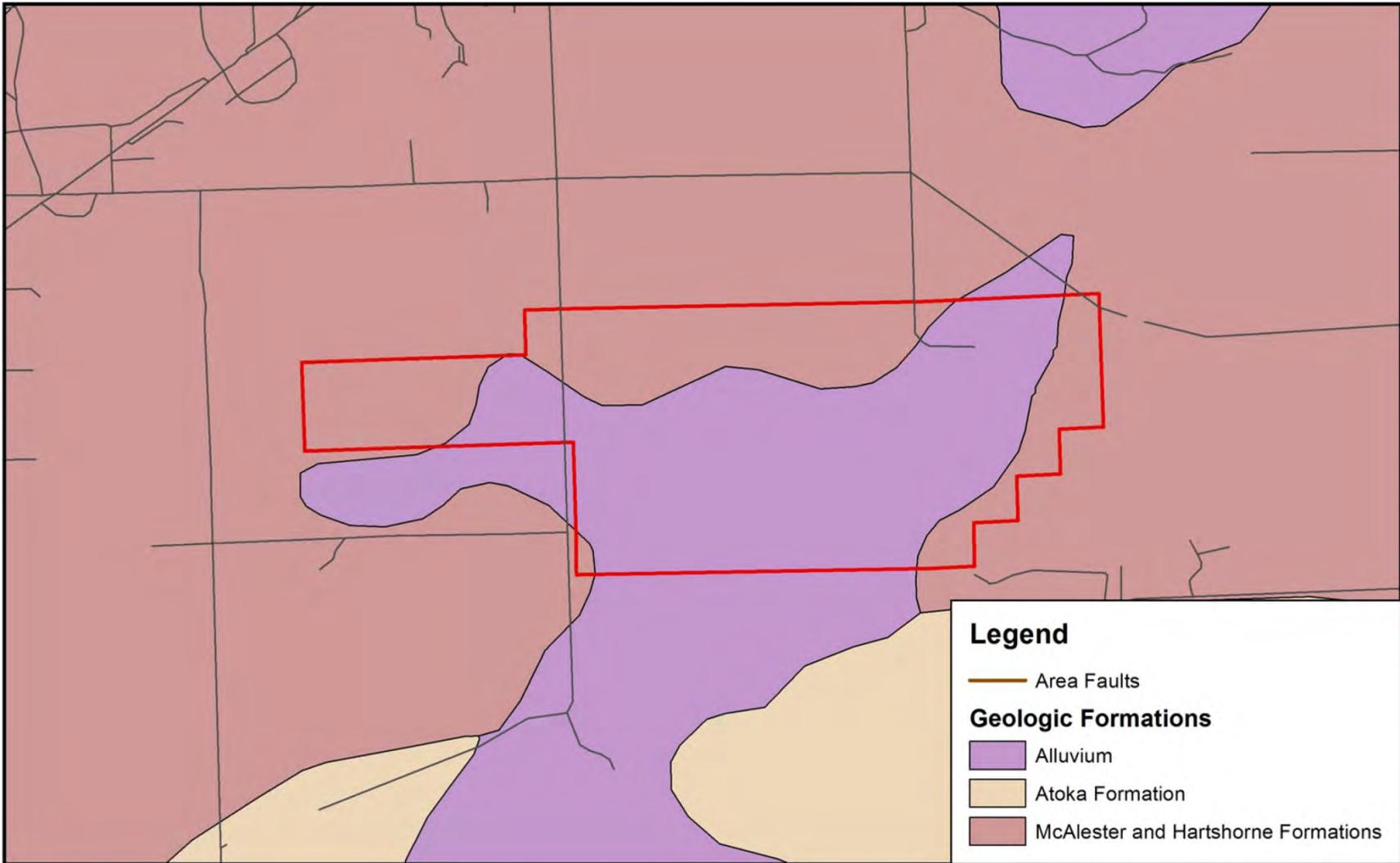
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Source:
 2011 BLM
 2011 USGS Oklahoma Geologic Data



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Map 3-6: Spiro Area Geology

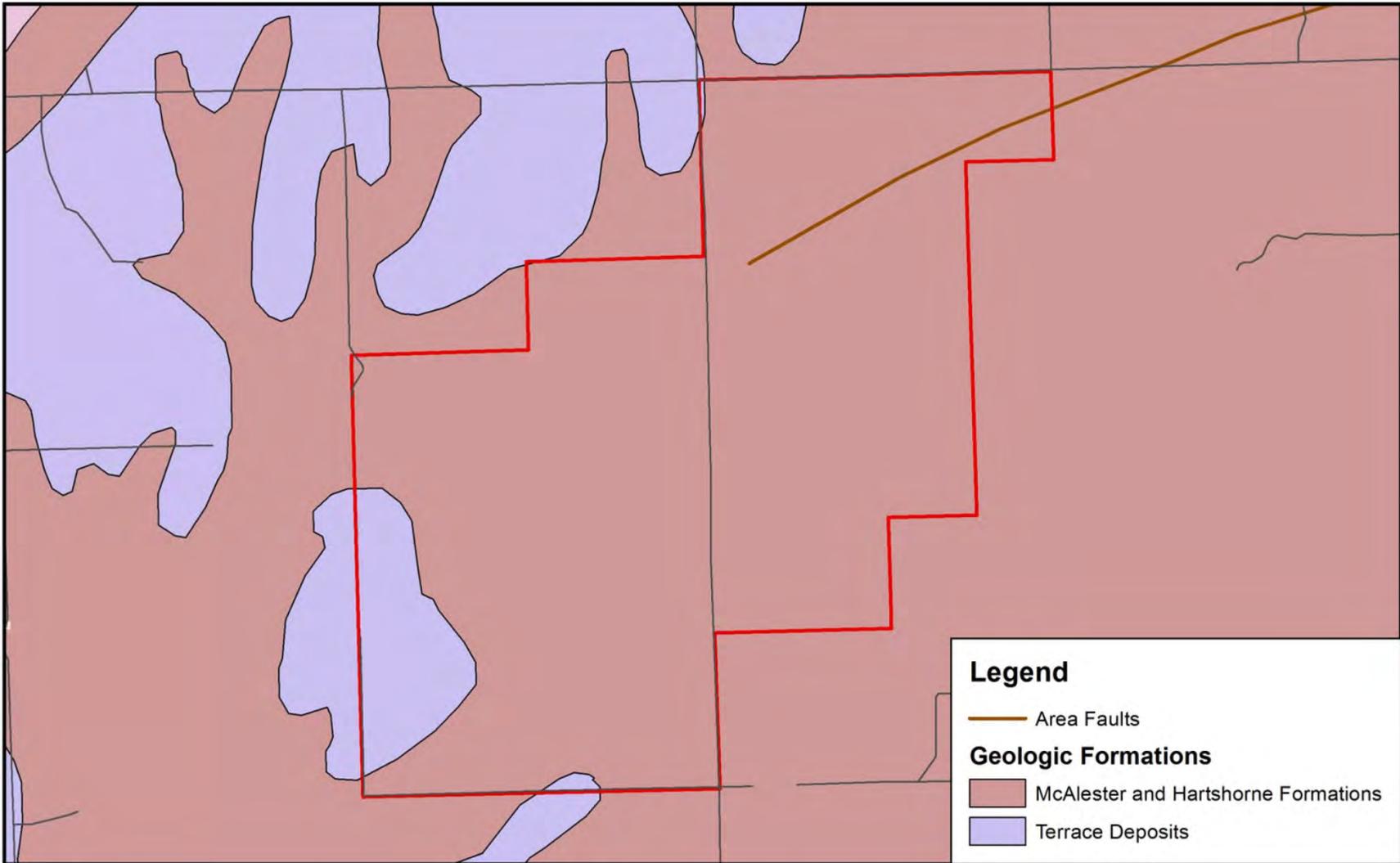
Source:
2011 BLM
2011 USGS Oklahoma Geologic Data



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Legend
 Liberty Planning Area
 County Roads

Map 3-7: Liberty Area Geology

Legend
 Area Faults
Geologic Formations
 McAlester and Hartshorne Formations
 Terrace Deposits

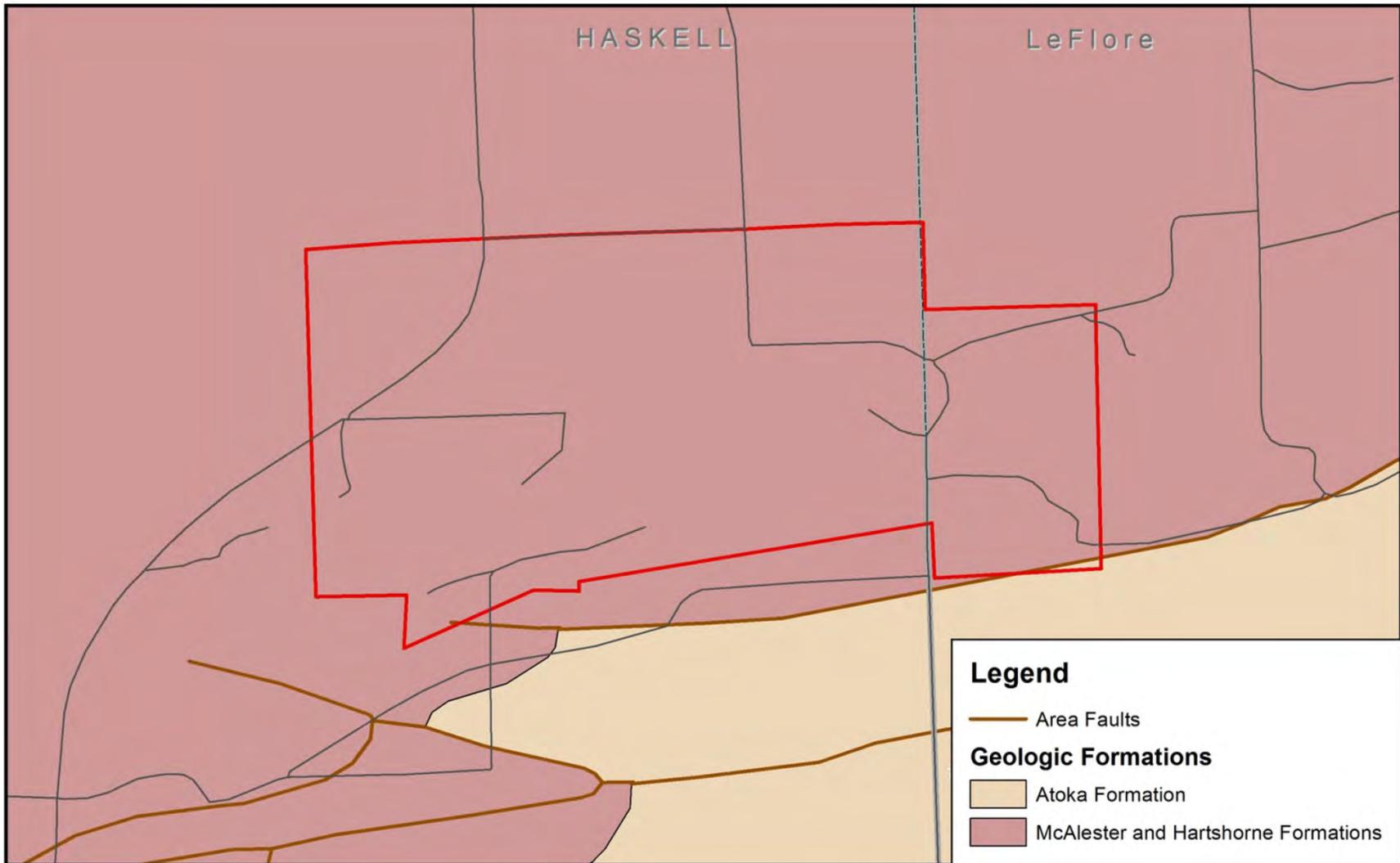
Source:
 2011 BLM
 2011 USGS Oklahoma Geologic Data



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Legend
 McCurtain Planning Area
 County Roads

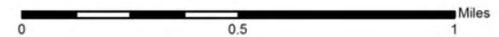
Map 3-8: McCurtain Area Geology

Legend
 Area Faults
Geologic Formations
 Atoka Formation
 McAlester and Hartshorne Formations

Source:
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 2011 USGS Oklahoma Geologic Data



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3.7.2 Oil and Gas

The four planning areas are located within the Arkoma Basin geologic province, which is a deep sedimentary basin that stretches across southeastern Oklahoma between the Ozark Uplift to the north and the Ouachita Mountain Uplift to the south (Oklahoma Geological Survey [OGS] 1995). The Arkoma Basin is characterized by normal faults, which affect Early Pennsylvanian and older rocks. Sedimentary rocks in the Arkoma Basin range in thickness from 3,000 to 20,000 feet and consist primarily of pre-Mississippian carbonate shelf deposits, organic-rich Mississippian marine shales, and Pennsylvanian fluvial deposits. Petroleum fields in Haskell and LeFlore counties are characterized as natural gas fields where the gas to oil ratio is greater than 20,000:1 (OGS 1997).

Figure 3-1 presents data provided by the OGS (2002) to show the location of active natural gas fields in relation to the subject planning areas. Active natural gas fields within or adjacent to the four planning areas include:

- **The Stigler (OGS No. 2690) Field** – This small field is located southwest of the Liberty planning area. The Stigler Field is irregularly shaped and approximately 5 miles (north to south) by 5 miles (east to west) in extent (Figure 3-1; OGS 2002).
- **The Kinta Field (OGS No.1499)** – This field is approximately 60 miles in length and trends east-northeast from northwestern Latimer County to southwestern Sequoyah County (OGS 1997 and 2002). Kinta Field includes the McCurtain and Milton planning areas.
- **The Cedars Field (OGS No. 550)** – This field includes the Spiro planning area. This natural gas field includes an area greater than 25 square miles in extent within LeFlore County.

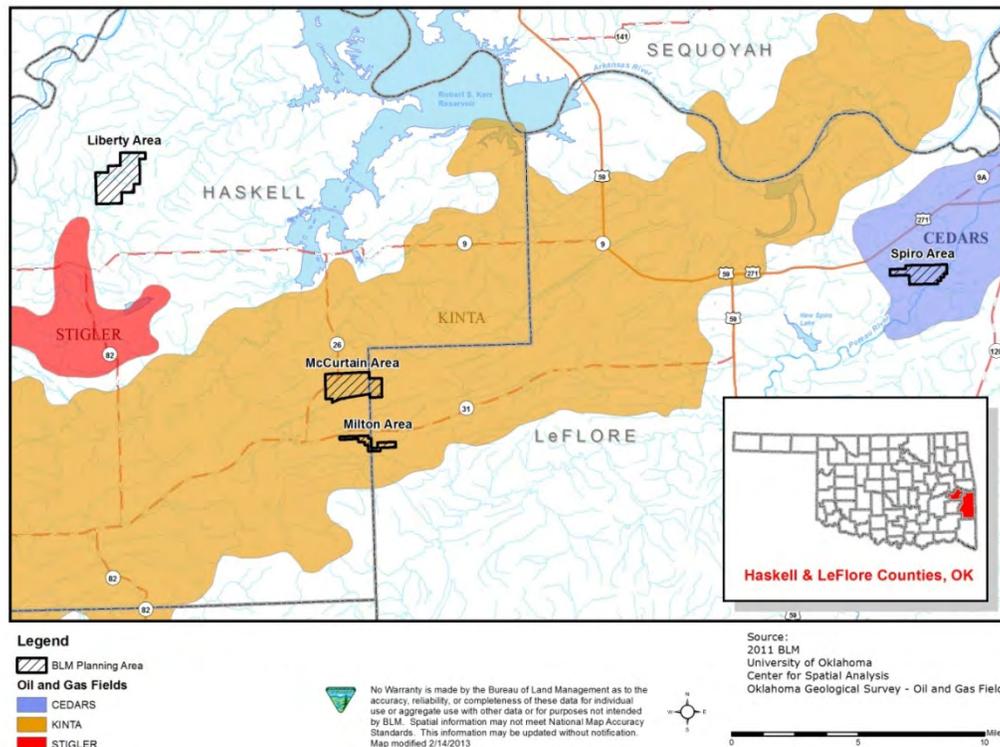


FIGURE 3-1 OIL AND GAS FIELDS NEAR PLANNING AREAS

The USGS completed an assessment of the undiscovered, technically recoverable petroleum resources of the Arkoma Basin province. The planning area is located within the following USGS assessment units:

- **Arkoma Shelf Conventional Gas Play** – Conventional gas reserves in the Arkoma Basin are relatively minor. The USGS assessed three conventional gas plays in the basin, of which the Arkoma Shelf play was the smallest by volume (approximately 45 billion cubic feet of gas). The sum of all three conventional plays (approximately 1 trillion cubic feet of gas) represents approximately 3 percent of the total estimated undiscovered gas in the Arkoma Basin (USDI USGS 2010). The McCurtain, Spiro, and Liberty planning areas are entirely located within the Arkoma Shelf. The Milton planning area is located approximately along the southern extent of the Arkoma Shelf at the boundary with the Ouachita Thrust Belt.
- **Woodford Shale Gas Continuous Play** – The Woodford Shale is a Devonian-Mississippian-aged shale formation in eastern Oklahoma and western Arkansas that is laterally equivalent to the Chattanooga Shale further to the east. More than 700 billion cubic feet of gas has been produced, and 10.7 trillion cubic feet of gas and approximately 142 million barrels of natural gas liquids are estimated to remain within the Woodford Shale. The presence of natural gas liquids is primarily limited to areas of low thermal maturity in the westernmost portion of the basin (USDI USGS 2010). The Milton Lease Modification is located approximately along the southern extent of the Woodford Shale Gas assessment unit, which includes the other three lease areas.
- **Caney Shale Gas Continuous Play** – The Caney Shale of eastern Oklahoma is a Mississippian-aged shale formation that has been a minor focus of historical exploration. The Caney Shale is laterally equivalent to the Fayetteville Shale located in Arkansas. The Caney Shale is estimated to contain 1.1 trillion cubic feet of gas of recoverable natural gas. The Caney and Woodford shales (and units) are estimated to account for more than 70 percent of the total undiscovered gas within the Arkoma Basin (USDI USGS 2010). The Milton Lease Modification is located approximately along the southern extent of the Caney Shale Gas assessment unit, and the area includes the other three lease areas.

3.7.3 Coalbed Methane Gas

Coalbed methane gas plays are related to the subject coal seams. Typically, however, they are separated by great depths. For example, the primary target coalbed for coalbed methane gas is the Hartshorne seam. Portions addressed for this project include surface outcrops of this coal seam while coalbed methane gas targets are generally located within the same seam at depths of 500 to 7,000 feet or more (downdip) (USDI USGS 1995). Thus, the areas with recoverable coal from the surface are not typically colocated with coalbed methane gas targets at depth. However, in some areas, like the McCurtain planning area, the geologic setting may allow for the production of coalbed methane in close proximity to areas of surface coal mining. In this case, required wellhead offsets may affect surface mining. In fact, there are two well CBM wells located in N/2 of section 11 T8N R22E within the McCurtain planning area. There are no CBM wells located in the Spiro, Liberty or Milton planning areas.

The 2010 USGS assessment of the Arkoma Basin places the planning areas within the Arkoma Coalbed Gas assessment unit. The volume of recoverable gas within the Arkoma Coalbed Gas unit of Oklahoma and Arkansas is expected to be 3.5 trillion cubic feet of gas within Pennsylvanian-aged coals, based on fully risked statistical estimates. This represents approximately 9 percent of the total undiscovered gas within the Arkoma Basin (USDI USGS 2010).

3.7.4 Clay and Shale

Clay and shale, found abundantly throughout Oklahoma, are used mainly in the manufacture of brick and tile. Stoneware and pottery manufacturing account for a smaller portion of clay production and usage. The major production of clay occurs near the state's two major cities—Oklahoma City and Tulsa. Information on clay production is available on a county basis. LeFlore County produced 39,012 tons of clay and 8,176 tons of shale mineral in 2010. No production was noted for Haskell County (ODM 2011).

3.7.5 Limestone and Dimensional Stone

Limestone represents one of the most widely available mineral resources of Oklahoma and generally has accounted for approximately 60 percent of the reported tonnage of all nonfuel minerals mined in the state. In 2010, Haskell County produced 448,243 tons of limestone and LeFlore County produced 34,939 tons (ODM 2011).

Limestone is used mainly in the crushed state as asphalt and concrete aggregate for building highways and other structures, railroad ballast, glass manufacturing, cement production, preparation of lime, and agricultural purposes. Some limestone is used as dimensional building stone, although the ODM reports dimensional stone separately. In 2010, Haskell County produced 171,471 tons of dimensional stone and LeFlore County produced 183,384 tons. Haskell County also produced 1,913 tons of sandstone in 2010 (ODM 2011).

3.7.6 Sand and Gravel

Sand and gravel are produced in most counties in Oklahoma from deposits that are found near the many rivers and streams. Principal uses are in mixing concrete for highway building and other construction, and for railroad ballast. Silica sands, used in the manufacture of various grades of glass and other chemical and industrial activities, are found chiefly in the Arbuckle Mountain region of south-central Oklahoma. In the Planning Area, Haskell County produced 480 tons in 2010 while LeFlore County produced 407,754 tons in the same period (ODM 2011).

3.8 SOILS

In the following sections, soils for each Planning Area are described in terms of predominant and minor soil types as well as over suitability for reuse in mine reclamation and erosion potential. The soils are rated “good,” “fair,” or “poor” as potential sources of reclamation material. A rating of “good” means that establishing and maintaining vegetation are relatively easy, that the surface is stable and resists erosion, and that the reclaimed soil has good potential productivity. A rating of “fair” means that vegetation can be established and maintained and the soil can be stabilized through modification or amendment. A rating of “poor” means that revegetation and stabilization are very difficult and costly. Similarly, erosion potential is rated as “slight,” “moderate,” “severe,” or “very severe.” A rating of “slight” indicates that erosion is unlikely under ordinary conditions; “moderate” indicates that some erosion is likely and that erosion-control measures may be needed; “severe” indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and “very severe” indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical. The ratings evaluate soil loss where a 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or similar disturbance.

In general, federal legislation pertinent to the management and protection of soils and prime farmland includes the FLPMA, the Clean Water Act of 1972 (CWA), Farmland Protection Policy Act of 1984, Taylor Grazing Act of 1934 (as amended), Bankhead-Jones Farm Tenant Act of 1937, and the Soil and Water Conservation Act of 1977. BLM guidance for the management of soil resources of public lands are

found in BLM Manual sections 7000 and 7100. At the state level, the Oklahoma Department of Agriculture, Food and Forestry regulates farming and forestry activities within the state. There are no additional state laws, regulations, or policies that pertain to soils management in the planning areas.

3.8.1 Milton Planning Area

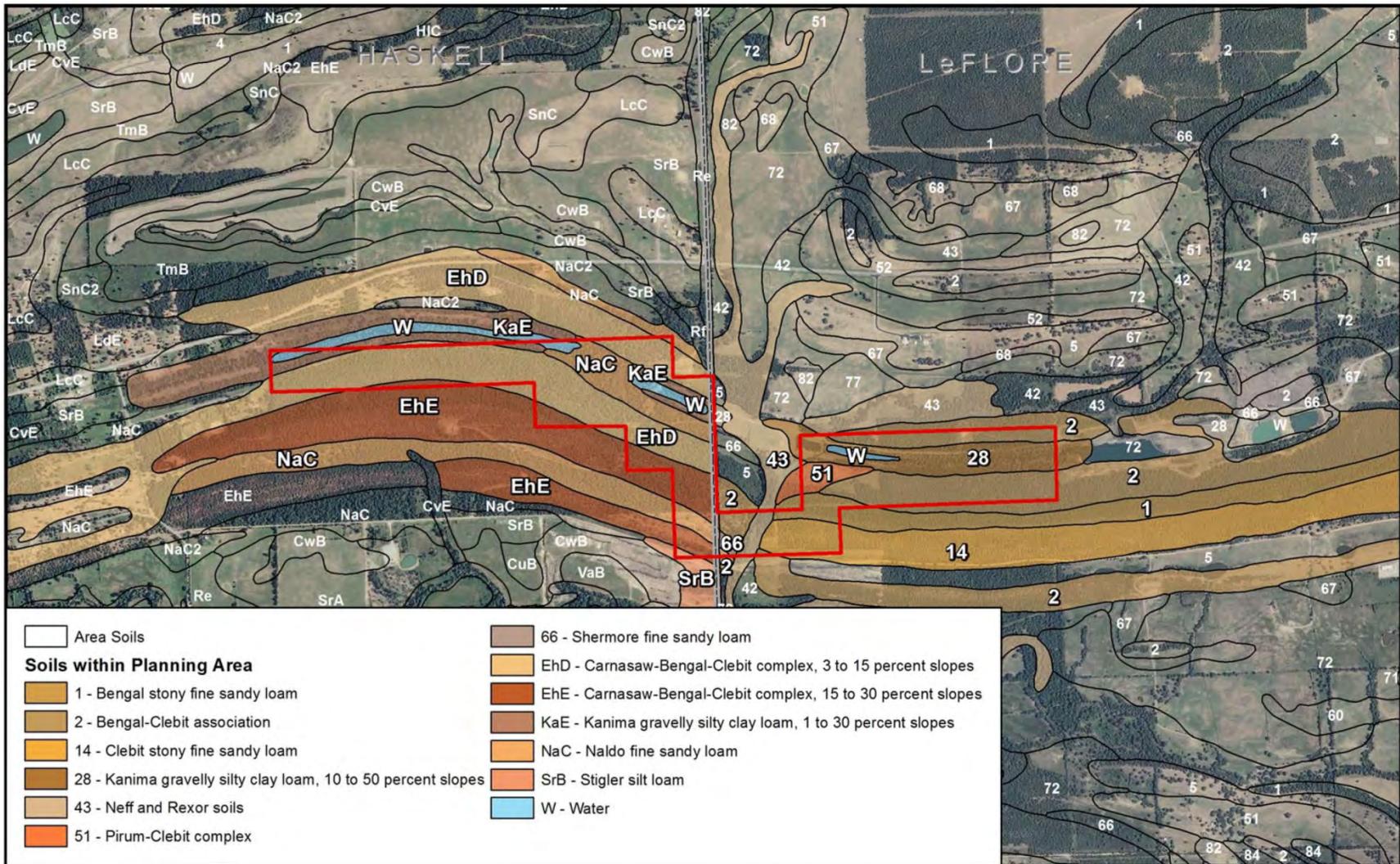
Predominant soils in the Milton planning area are the Carnasaw-Bengal-Clebit complex with more minor areas of Kamina Series (Map 3-9). These soils generally develop on hillslopes and are derived from clayey or gravelly residuum weathered from underlying shaley or sandstone parent rocks. Carnasaw-Bengal-Clebit complex soils are generally well drained and consist of silty to sandy loam surficial soil that grades to clay and gravelly clay at depth (U.S. Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS] 2009). These soils may sustain woodland vegetation and wildlife but are not suited for croplands or wetlands. In the Milton planning area, 47 percent (135 acres) of the soils are rated by the NRCS as having poor potential use in reclamation while 49.5 percent (142 acres) are rated as fair. An additional 3.5 percent of the surface area is covered by water and not rated by the NRCS. The higher-rated soils are located along the northern slope of the planning area. In terms of erosion hazard, 11.6 percent (33 acres) are indicated to have a severe potential for erosion, while 21.5 percent (62 acres) have a moderate risk, and 63.4 percent (182 acres) have a slight potential for erosion. The areas of highest erosion hazard were in the Kanima gravelly silty clay loam with 10 to 50 percent slopes, located on the northern slope and moderate erosion hazard was associated with the southern slope.

3.8.2 Spiro Planning Area

Predominant soils in the Spiro planning area are the Pocola silt loam with more minor areas of Stigler silt loam and similar soil types (Map 3-10). The Pocola silt loam is generally found in floodplains and develops from underlying clayey alluvium. The Stigler silt loam develops from clayey alluvium of paleoterrace deposits over sandstone and shale. The Pocola and Stigler silt loams are generally poorly drained and consist of silt loams that grade into silty clay at depth. These soils may have high water capacity to support cropland (USDA NRCS 2009). In the Spiro planning area, 56.2 percent (445 acres) of the soils are rated by the NRCS as having poor potential use in reclamation while 43 percent (340 acres) are rated as fair. An additional 0.8 percent of the surface area is covered by water and not rated by the NRCS. The higher-rated soils are located along the northern and western portions of the planning area. In terms of erosion hazard, almost the entire planning area (99.2 percent or 785 acres) were indicated to have a slight potential for erosion while 0.8 percent were areas of water and not rated.

3.8.3 Liberty Planning Area

Predominant soils in the Liberty planning area include Tamaha silt loam (denoted as TmC and eroded TmC2 soils) and Stigler silt loam (denoted as SrA and SrB soils) (Map 3-11). The Tamaha silt loam occurs along hillslopes and develops from clayey and loamy alluvium derived from sandstone and shale (USDA NRCS 2009). The Stigler silt loam, Tamaha silt loam, and soils of the Counts-Dela complex occur along intermittent streams in the area. The Stigler silt loam and the Counts-Dela complex soils are derived from shale or clayey sediment and are found in narrow bands along either side of intermittent streams in the area. The Stigler silt loam also is capable of sustaining forest growth and numerous wildlife types. Approximately 26 other soil types are mapped within the Liberty planning area, although these soils are also generally silty to fine-sand loams. In the Liberty planning area, 67 percent of the area soils, or 1,088 acres, are rated by the NRCS as having poor potential use in reclamation while 32.6 percent (529 acres) are rated as having a fair potential for use in reclamation. The higher-rated soils were generally associated with uneroded soils along intermittent streams. Almost all, 99.2 percent or 1608 acres, of the planning area is shown to have soils with a slight potential for erosion.



Map 3-9: Milton Area Soils

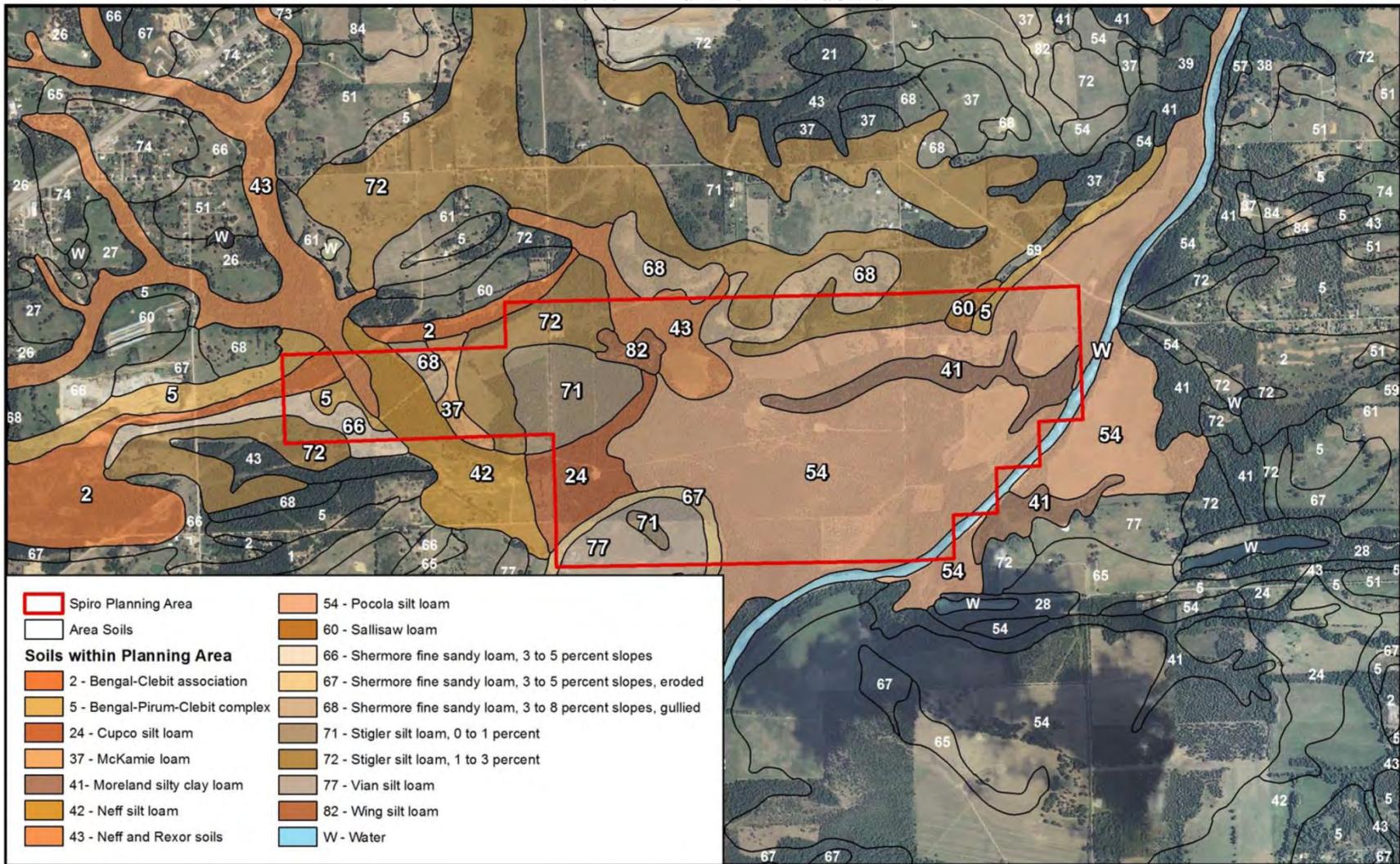
Source:
 2011 BLM
 USDA NRCS Soil Survey Geographic Database
 2010 USDA NAIP -
 Haskell and LeFlore Counties, Oklahoma



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Spiro Planning Area

Map 3-10: Spiro Area Soils

Source:
2011 BLM
USDA NRCS Soil Survey Geographic Database
2010 USDA NAIP - LeFlore County, Oklahoma



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3.8.4 McCurtain Planning Area

Predominant soils in the McCurtain planning area include soils from the Bengal Complex, Shermore Series, Counts Complex, Hector Series, and Stigler Series (Map 3-12). These soils are generally found on gently sloping uplands and are developed from the underlying shales and sandstones. Specifically, soils of the Hector stony loam and the Hector-Linker complex, derived from weathered shale and sandstone, cap the higher elevations and hillslopes in the central portion of the planning area. Hector Complex and Bengal Complex soils are the most prevalent mapped soil types in the planning area. These stony loam soils are well drained and have relatively rapid permeability (USDA NRCS 2009). They may sustain woodland vegetation and wildlife but are not suited for croplands or wetlands. In the McCurtain Planning Area, 65 percent (605 acres) of the soils are rated by the NRCS as having poor potential use in reclamation while 29 percent are rated as fair. An additional 6 percent of the surface area is covered by water. The higher-rated soils are located along intermittent streams and drainages. In terms of erosion hazard, 75.3 percent or 701 acres are indicated to have a slight potential for erosion while 18.3 percent or 171 acres have a moderate erosion hazard. The areas of moderate erosion hazard also are located along streams and drainages.

3.9 PRIME AND UNIQUE FARMLANDS

Prime farmland soils are defined by USDA as those “best suited to producing food, seed, forage, fiber, and oilseed crops” (USDA NRCS 2009). Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed forage, fiber, and oilseed crops and is available for these uses. The NRCS evaluates and classifies soils as prime farmland based on qualities that favor economical agricultural production. There are eight criteria for prime farmlands (Wheeler, et al. 1983), as follows:

1. Adequate moisture supply and water-storage capacity
2. Suitable annual soil temperature and growing-season length
3. Neutral soils for plant growth
4. Water table that does not affect plant growth
5. Land that is not subject to frequent flooding
6. Soils that do not have a severe erosion hazard
7. Soil permeability of at least 0.06 inches per hour
8. Soil surfaces that are not so stony as to impede use of farm equipment

Unique farmlands are differentiated from prime farmland by having the capacity to produce sustained high-quality and/or high yields of a specific crop. Examples of this in Oklahoma might be pecan or fruit farms. Unique farmland combines favorable factors of soil quality, growing season, temperature, humidity, air drainage, elevation, aspect, or other condition (e.g., nearness to market) that favor the growth of a specific food or fiber crop (USDA NRCS 2009). No unique farmlands were listed for Haskell or LeFlore counties (USDA NRCS 2009).

3.9.1 Milton Planning Area

Prime farmlands occupy only a minor portion of the soils within the Milton planning area, totaling approximately 28.1 acres in Haskell County and 6.7 acres in LeFlore County. The following soils were listed as prime farmland for the Milton area: Naldo fine sandy loam, Stigler silt loam, and the Pirum-Clebit complex.

3.9.2 Spiro Planning Area

The Spiro planning area includes sections of the prime farmland soil, Stigler silt loam. These prime farmland soils are present on approximately 222 acres within the Spiro planning area.

3.9.3 Liberty Planning Area

Within the Liberty planning area, prime farmland soils include the Stigler silt loam (1 to 3 percent and 3 to 5 percent slopes) and the Tamaha silt loam (1 to 3 percent and 3 to 5 percent slopes). Prime farmlands in the Liberty planning area occupy approximately 871 acres.

3.9.4 McCurtain Planning Area

The McCurtain planning prime farmland soils include the Counts silt loam (0 to 1 percent slopes), the Stigler silt loam (1 to 3 percent and 3 to 5 percent slopes), and the Shermore fine sandy loam (1 to 3 percent and 3 to 5 percent slopes). Prime farmland soils make up 219 acres of the McCurtain planning area.

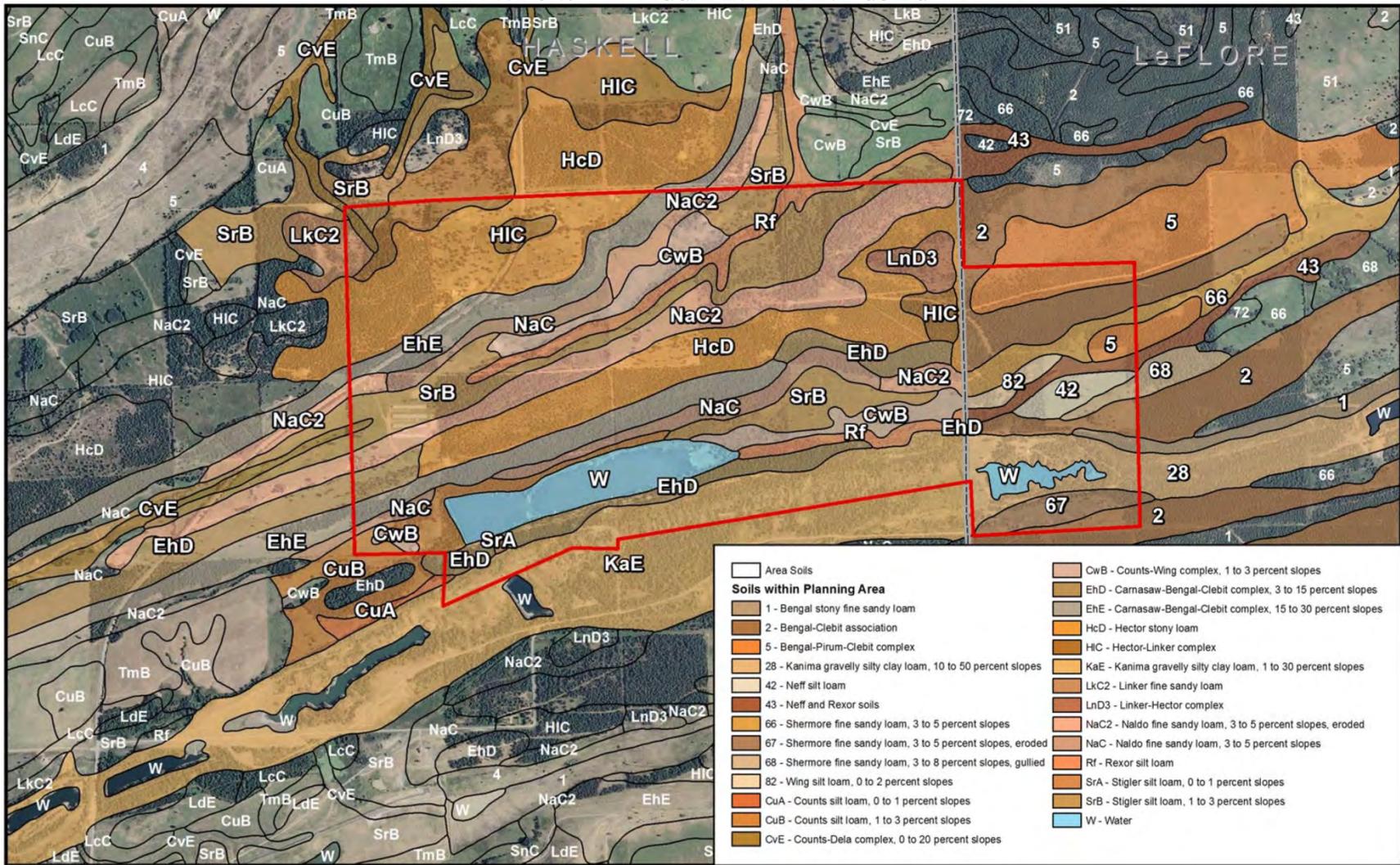
3.10 WATER RESOURCES

3.10.1 Groundwater

FLPMA requires that BLM must comply with all applicable state and federal groundwater-pollution-control laws and water-quality standards. Other than the laws and regulations stated in Section 2.4.4, there is no specific BLM management direction regarding groundwater.

Haskell and LeFlore counties rely primarily on surface water for public-water supply. A basin-wide analysis of the water supply for Haskell, Latimer, LeFlore, and Sequoyah counties was performed by the U.S. Army Corps of Engineers (USACE 1983) to determine water-supply need within the Poteau River Basin. The analysis found groundwater to be limited and of little consequence as a source of municipal and industrial-water supply. Groundwater supplies are primarily used for mining, non-irrigation agriculture, and private-water supply (Oklahoma Water Resources Board [OWRB] 2003). However, the scoping process indicated groundwater is a major concern to residents in and around the planning areas. Groundwater is used at these locations for domestic, as well as agricultural use and for cooling in poultry (chicken) operations. Concerns from scoping centered on potential water-supply loss due to dewatering from the mining operations, as well as degradation resulting from point and nonpoint source pollution.

Within Haskell and LeFlore counties, there are no major bedrock aquifers (USDI USGS 1996). In Haskell County, total use of groundwater for livestock and aquaculture is estimated to be 0.23 million gallons per day with no groundwater used for public supply or irrigation. Groundwater usage in LeFlore County is higher with 0.16 million gallons per day (public supply), 0.64 million gallons per day (irrigation), and 0.99 million gallons per day (livestock) (Tortorelli 2009). However, the Arkansas River alluvial aquifer extends near the northern boundary of the Liberty planning area. The Arkansas River alluvial aquifer is a stream-valley alluvial aquifer that consists of terraced alluvial deposits of Pleistocene age and floodplain alluvial deposits of Holocene age. This aquifer typically is characterized by a lower unit of sand and gravel that was deposited by lateral fluvial accretion and an upper confining unit of silt and clay formed by vertically accreted flood deposits.



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Water levels within the Arkansas alluvial aquifer range from within a few feet of land surface to 25 feet below the land surface. However, hydrologic conditions within the Arkansas River alluvial aquifer have been altered locally by the reservoirs, locks and dams, and levees. Such control structures locally have raised upstream river stages and nearby groundwater levels, which affect the local direction of groundwater flow. In the area of the Liberty planning area, groundwater direction is anticipated to be to the north and east, toward the Arkansas River and the Robert S. Kerr Reservoir. As in most alluvial aquifers, the OWRB has classified groundwater within the Arkansas River alluvial aquifer as having “Very High” vulnerability to contamination sources (OWRB 1999). Alluvial aquifers are typically in direct communication with a nearby river with shallow groundwater beneath the ground surface.

Wells are reported to yield from 300 to 700 gallons per minute from the Arkansas River alluvial aquifer. Although the quality of water within the Arkansas River alluvial aquifer is suitable for most uses, large concentrations of iron and nitrate and excess hardness locally make the water undesirable for some public supply and industrial uses. Water within this aquifer is a calcium magnesium bicarbonate type. Dissolved solids concentrations locally may exceed 500 milligrams per liter (USDI USGS 1996).

According to the OWRB (2011a) well permit database, there are 11 permitted groundwater wells within approximately 1 mile of the Liberty planning area. Of these wells, six wells are owned by FCMC for water-quality-monitoring purposes. The remaining five wells are used for domestic-water supply purposes. The domestic wells are completed to depths of 40 to 350 feet below the ground surface (bgs) and the shallowest water-bearing zone is reported to be 14 feet bgs. Estimated yields range between 0.8 and 8 gallons per minute.

OWRB (2011a) records indicate there are 20 groundwater wells located within approximately 1 mile of the McCurtain and Milton planning areas in Haskell County and five wells in LeFlore County. Of the 25 wells, 11 are for domestic use and 14 were installed for water quality monitoring or assessment. Six groundwater monitoring wells are owned by FCMC in the McCurtain planning area. The domestic wells range from 60 to 300 feet bgs, with an estimated yield of 0.8 to 15 gallons per minute. The shallowest reported water-bearing zone was 2.5 feet bgs.

OWRB permit records indicate there are 13 groundwater wells within approximately 1 mile of the Spiro Lease Modification. Only one of these wells is permitted for domestic use and the remaining 10 wells are for groundwater-quality monitoring or assessment. The domestic well was drilled to 115 feet bgs, with a static water level of 10 feet bgs and estimated yield of 15 gallons per minute.

3.10.2 Surface Water

Surface-water management within the planning area is required to comply with all applicable local, state, and federal regulations as stated in Section 2.4.4. BLM direction on surface-water resources is located in department manuals: (1) BLM Manual, Section 7200 – Water Resources, including subsections on watershed-condition analysis, watershed-activity planning, floodplain management, groundwater, water quality, water rights, and floodplain management; and (2) dispersed within the manuals for rangeland health, minerals management, mining, special status plants and animals management, fishery management, recreation engineering, habitat management, and general program management and administration.

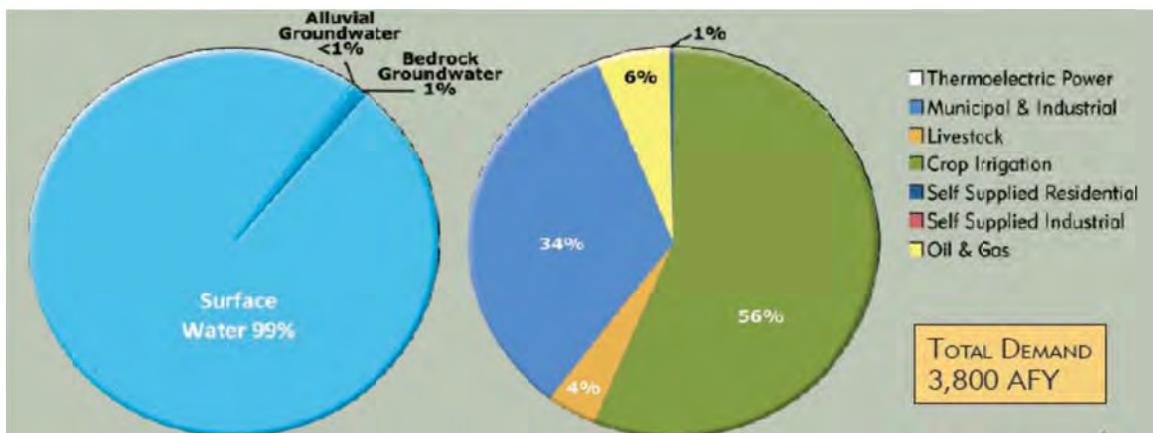
In addition, BLM in 1998 adopted as policy a portion of the larger Federal Clean Water Action Plan. The plan called out existing BLM activity in three management areas: riparian restoration and management, abandoned mine lands, and rangeland health. The plan also committed to a watershed approach in monitoring, assessing, reclaiming, and maintaining water resources.

3.10.2.1 Surface Water Quantity and Use

Water quantity and use data are provided by the OWRB by watershed planning basin. As such, water quantity data are discussed in this section by basin.

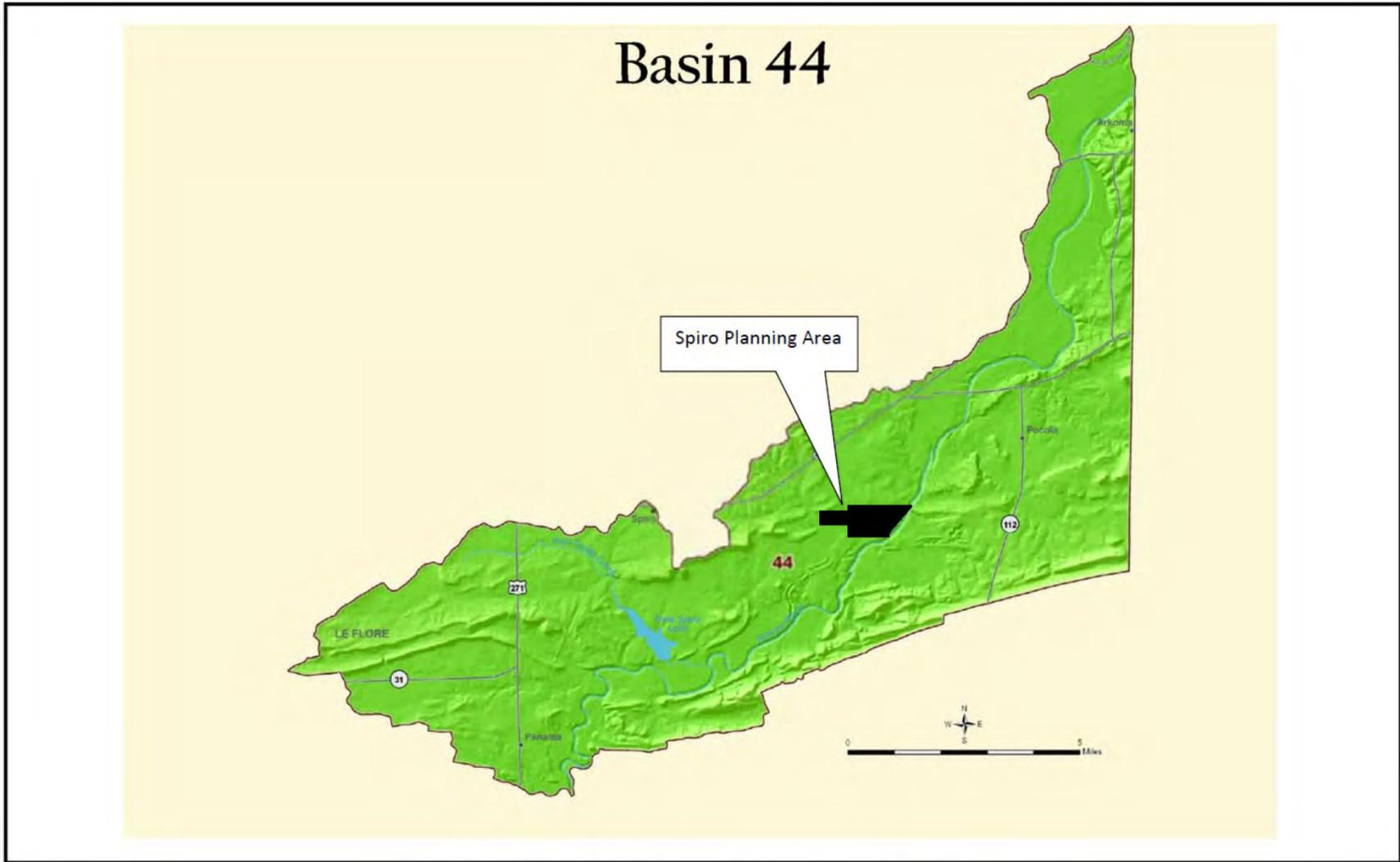
Basin 44

The Spiro planning area is located in Basin 44 (Map 3-13). Water use in Basin 44 accounts for only 2 percent of the overall demand in the Lower Arkansas Watershed Planning Region. As shown in Figure 3-2, surface water is the primary water-supply source for all uses and approximately 1 percent is supplied by groundwater in Basin 44 (OWRB 2011b). The primary water use sector is crop irrigation, followed by municipal and industrial demands. Water demands in this sector are seasonal, with summer demands being approximately seven times those in winter. This is primarily due to the summer demand for crop irrigation.



SOURCE: OWRB 2011b
FIGURE 3-2 CURRENT DEMAND BY SOURCE AND SECTOR – LOWER ARKANSAS REGION, BASIN 44

Streamflow data (Figure 3-3) is based on a 58-year period of record from USGS data and varies seasonally. The median flow in the Poteau River near Panama is greater than 16,500 acre feet (AF) per month throughout the year and highest in the winter and spring months (greater than 110,000 AF per month). New Spiro Lake is located west of the Spiro planning area and provides water supply for the City of Spiro. The supply yield of this reservoir is unknown and no other major reservoirs are located in Basin 44.



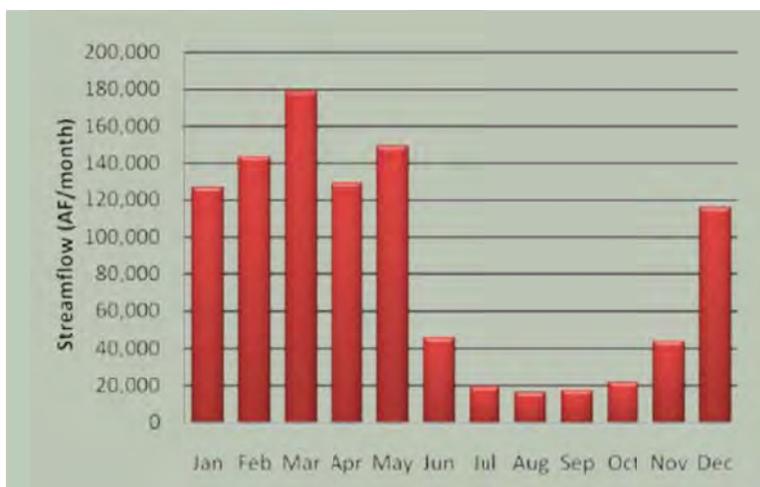
**Map 3-13: Spiro Area Watershed Region
(Basin 44)**

Source:
Oklahoma Water Resource Board -
Lower Arkansas Watershed Planning Region Report



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SOURCE: OWRB 2011b

FIGURE 3-3 MEDIAN HISTORICAL STREAMFLOW AT THE BASIN OUTLET – LOWER ARKANSAS REGION, BASIN 44

In the state’s planning period of 2010 through 2060, water-supply demands in Basin 44 are expected to increase by 63 percent, from 3,800 acre feet per year (AFY) in 2010 to 6,210 AFY in 2060. Projected demand growth by sector over time is shown in Table 3-1. The primary increase in demand is anticipated to occur in the crop irrigation and municipal and industrial sectors. Oil-and-gas sector demand also is expected to play a greater part over the next 50 years than is currently experienced.

TABLE 3-1 TOTAL DEMAND BY SECTOR – LOWER ARKANSAS REGION, BASIN 44

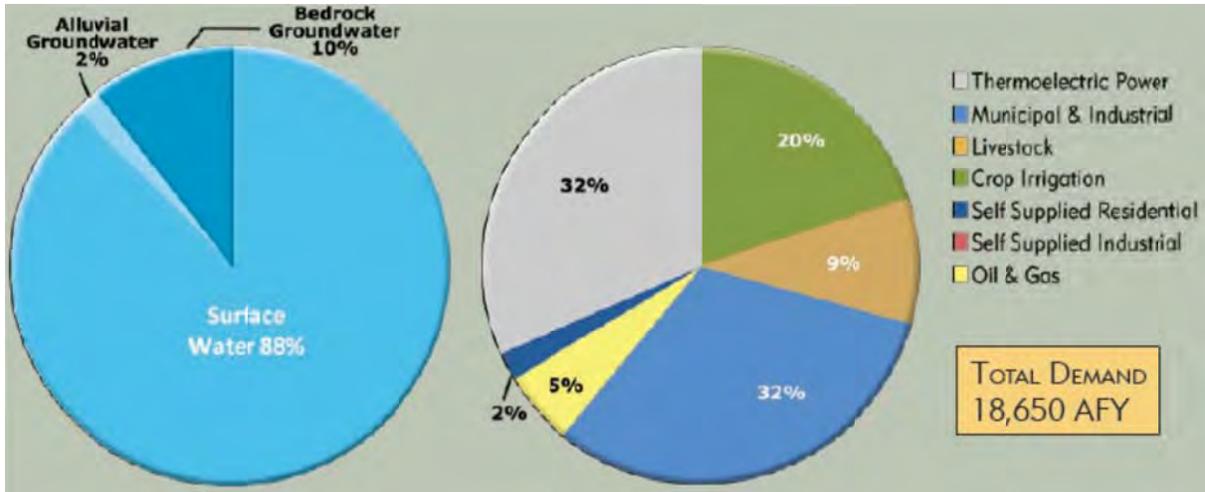
Planning Horizon	Crop Irrigation	Livestock	Municipal & Industrial	Oil & Gas	Self Supplied Industrial	Self Supplied Residential	Thermoelectric Power	Total
	AFY							
2010	2,140	150	1,280	220	0	10	0	3,800
2020	2,150	150	1,360	460	0	10	0	4,130
2030	2,150	150	1,450	770	0	10	0	4,530
2040	2,150	160	1,540	1,160	0	10	0	5,020
2050	2,150	160	1,630	1,620	0	10	0	5,570
2060	2,150	180	1,720	2,170	0	10	0	6,210

SOURCE: OWRB 2011b

The primary source of water supplies is anticipated to continue to be surface water. Ninety-nine percent of current water supply needs are met by surface water; future demands will continue to be almost entirely provided by surface water sources.

Basin 45

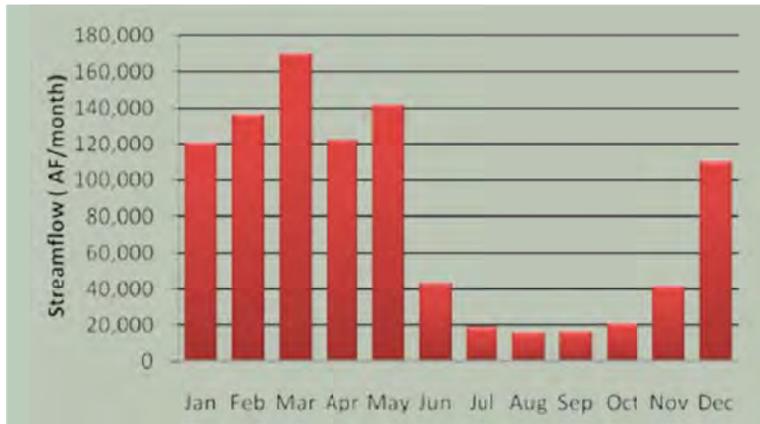
The Milton planning area is located in Basin 45 (Map 3-14). Water usage in Basin 45 accounts for approximately 9 percent of the current demand for water in the Lower Arkansas Watershed Planning Region. As shown in Figure 3-4, there are two primary uses of water in Basin 45: municipal and industrial service (32 percent) and thermoelectric-power generation (32 percent). Together with crop irrigation (20 percent) and livestock (9 percent), these sectors account for over 90 percent of the current water usage in Basin 45. Surface water makes up the primary water source in the basin, with minor volumes provided by bedrock and alluvial.



SOURCE: OWRB 2011b

FIGURE 3-4 CURRENT DEMAND BY SOURCE AND SECTOR – LOWER ARKANSAS REGION, BASIN 45

Because the primary water demands are tied to marginally seasonal uses, the peak summer month demand is just over two times the winter demand. According to the Oklahoma Water Plan (Figure 3-5), the Poteau River typically has flows greater than 18,000 AF per month throughout the year and greater than 100,000 AF per month in the winter and spring.



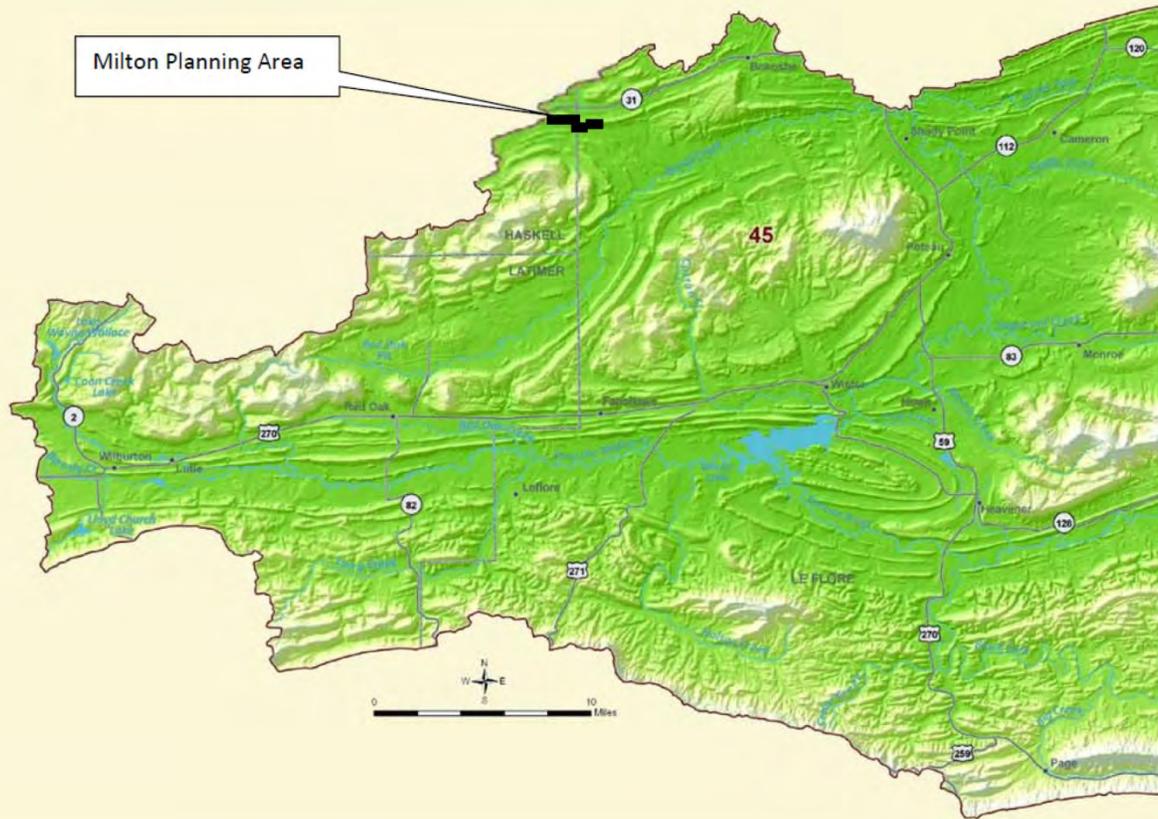
SOURCE: OWRB 2011b

FIGURE 3-5 MEDIAN HISTORICAL STREAMFLOW AT THE BASIN OUTLET – LOWER ARKANSAS REGION, BASIN 45

The major reservoir in Basin 45 is Wister Lake, a USACE reservoir that provides water supply for the applied energy system (Shady Point thermoelectric power plant) for power generation. Additional water rights within Wister Lake are allotted to the City of Heavener and Poteau Valley Improvement Authority. Wister Lake is located upstream of the planning areas.

Future water demands are anticipated to continue to be primarily in the thermoelectric power and municipal and industrial sectors. Overall demand is expected to increase by 83 percent from 2010 to 2060. The largest growth in demand during this period is projected to be the oil-and-gas sector. Demand by sector over time as projected by the OWRB is shown in Table 3-2.

Basin 45



Map 3-14: Milton Area Watershed Region
(Basin 45)

Source:
Oklahoma Water Resource Board -
Lower Arkansas Watershed Planning Region Report



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**TABLE 3-2
TOTAL DEMAND BY SECTOR – LOWER ARKANSAS REGION, BASIN 45**

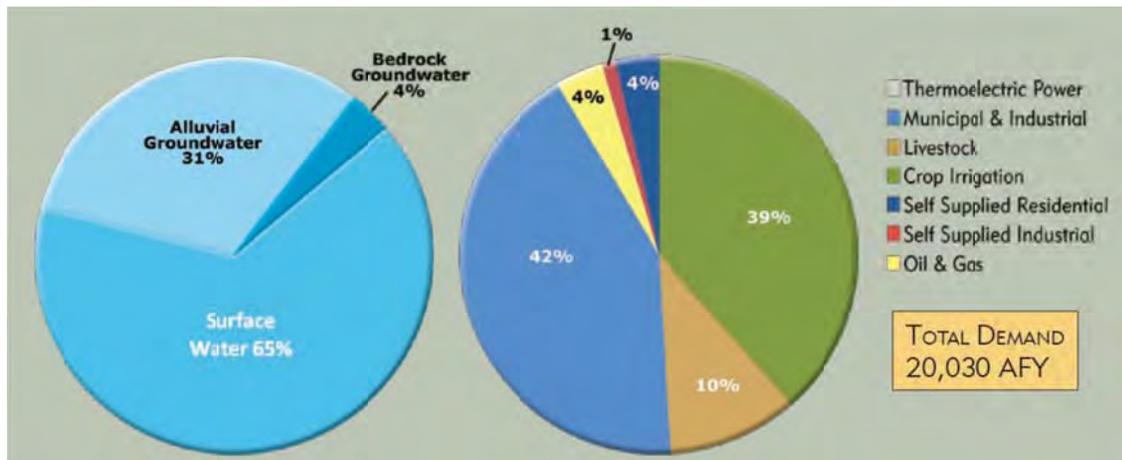
Planning Horizon	Crop Irrigation	Livestock	Municipal & Industrial	Oil & Gas	Self Supplied Industrial	Self Supplied Residential	Thermoelectric Power	Total
AFY								
2010	3,740	1,720	5,890	1,020	0	390	5,890	18,650
2020	4,070	1,730	6,270	1,940	0	420	6,570	21,000
2030	4,400	1,750	6,660	3,130	0	450	7,320	23,710
2040	4,730	1,760	7,060	4,600	0	490	8,170	26,810
2050	4,980	1,770	7,460	6,350	0	520	9,120	30,200
2060	5,380	1,780	7,890	8,390	0	550	10,170	34,160

SOURCE: OWRB 2011b

Over this period, surface-water use, as a percentage of all water supplies, is anticipated to grow from the current 88 percent to 90 percent, supplying 14,650 AFY in Basin 45.

Basin 46

The McCurtain planning area is located in Basin 46 (Map 3-15). Water use in Basin 46 makes up approximately 10 percent of the current demand for water in the Lower Arkansas Watershed Planning Region (OWRB 2011a). The two primary demand sectors are municipal and industrial supply (42 percent) and crop irrigation (39 percent). Together with livestock demand (10 percent), these sectors make up over 90 percent of total current water use in Basin 46 as shown in Figure 3-6.



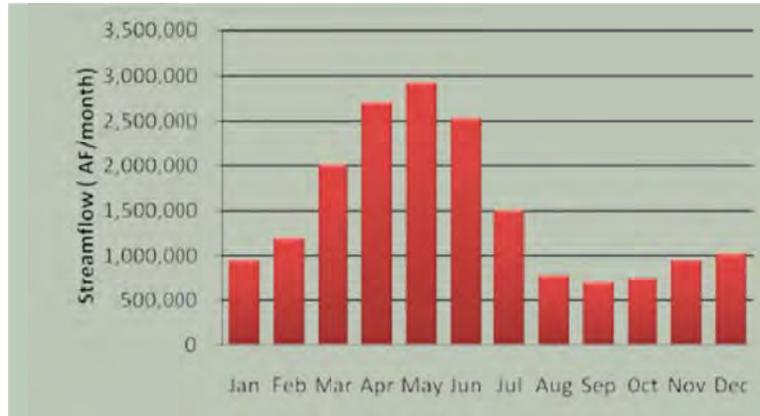
SOURCE: OWRB 2011b

FIGURE 3-6 CURRENT DEMAND BY SOURCE AND SECTOR – LOWER ARKANSAS REGION, BASIN 46

In contrast to Basins 44 and 45, surface sources provide only 65 percent of the water supply for Basin 46. Due to crop-irrigation sector summer demands, water usage in that season is almost four times that of the winter demand.

The Arkansas River is the primary river system associated with Basin 46. As well, the Arkansas River is impounded as a USACE lake, the Robert S. Kerr Reservoir, within Basin 46. Historical streamflow data from 1950 through 2007 was used by the OWRB to determine average monthly streamflows (Figure 3-7) and to estimate future surface-water supplies. The Arkansas River at the bottom of the basin flows greater than 700,000 AF per month throughout the year, and conveys greater than 2 million AF per month during spring months (as shown in Figure 3-7). The primary function of the Robert S. Kerr Reservoir is to

provide water for navigation, hydroelectric power, and recreational purposes. Brushy Lake, John Wells Lake, and Stillwell City Lake are each used to provide water supply but do not have service associated with the McCurtain planning area. The water-supply yield of these lakes is uncertain. Club Lake is used for wildlife-habitat enhancement, but is not known to be used for other water supply. It would be located immediately above underground mining proposed for the McCurtain planning area.



SOURCE: OWRB 2011b

FIGURE 3-7 MEDIAN HISTORICAL STREAMFLOW AT THE BASIN OUTLET – LOWER ARKANSAS REGION, BASIN 46

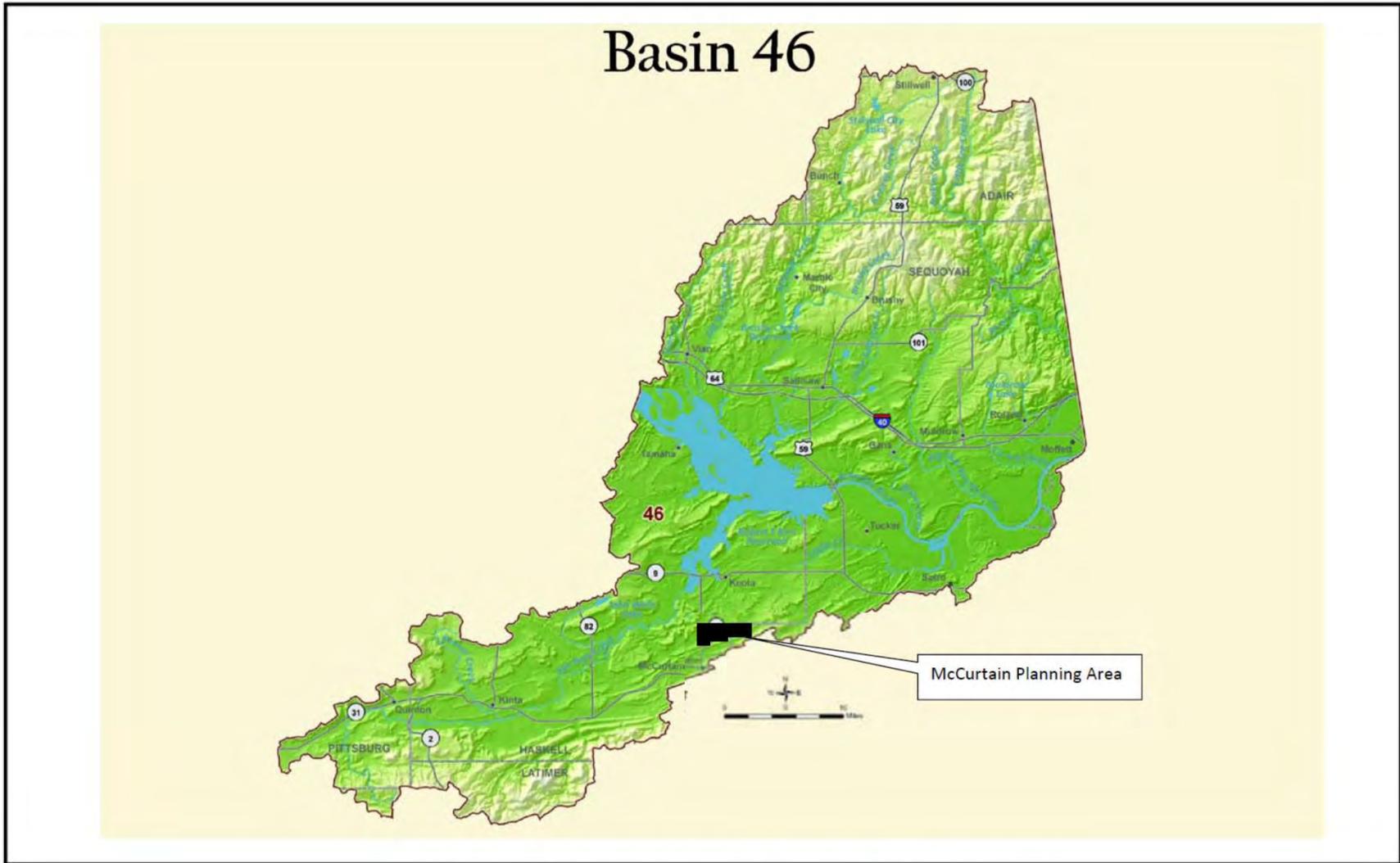
The OWRB has assessed surface water demands through 2060 (50-year planning horizon). Over this time period, water demands are expected to increase by 61 percent, from 20,030 AFY to 32,320 AFY. The breakdown of projected demand over time, by use sector, is shown in Table 3-3.

TABLE 3-3 TOTAL DEMAND BY SECTOR – LOWER ARKANSAS REGION, BASIN 46

Planning Horizon	Crop Irrigation	Livestock	Municipal & Industrial	Oil & Gas	Self Supplied Industrial	Self Supplied Residential	Thermoelectric Power	Total
	AFY							
2010	7,720	2,110	8,500	780	210	710	0	20,030
2020	7,980	2,160	9,360	1,560	210	800	0	22,070
2030	8,240	2,200	10,240	2,460	220	900	0	24,260
2040	8,500	2,250	11,120	3,610	240	1,000	0	26,720
2050	8,700	2,290	12,020	4,980	250	1,100	0	29,340
2060	9,020	2,340	12,930	6,560	270	1,200	0	32,320

SOURCE: OWRB 2011b

Surface water is currently used to meet 65 percent (13,020 AFY) of total demand, whereas 72 percent (23,490 AFY) of 2060 water supplies will be met by surface water. The increase in demand is anticipated to occur primarily in the municipal and industrial sector, as well as the crop-irrigation sector, reflecting current uses. However, oil-and-gas sector water demands are expected to play a greater role in future water uses than is currently the experienced.



Map 3-15: McCurtain Area Watershed Region
(Basin 46)

Source:
Oklahoma Water Resource Board -
Lower Arkansas Watershed Planning Region Report

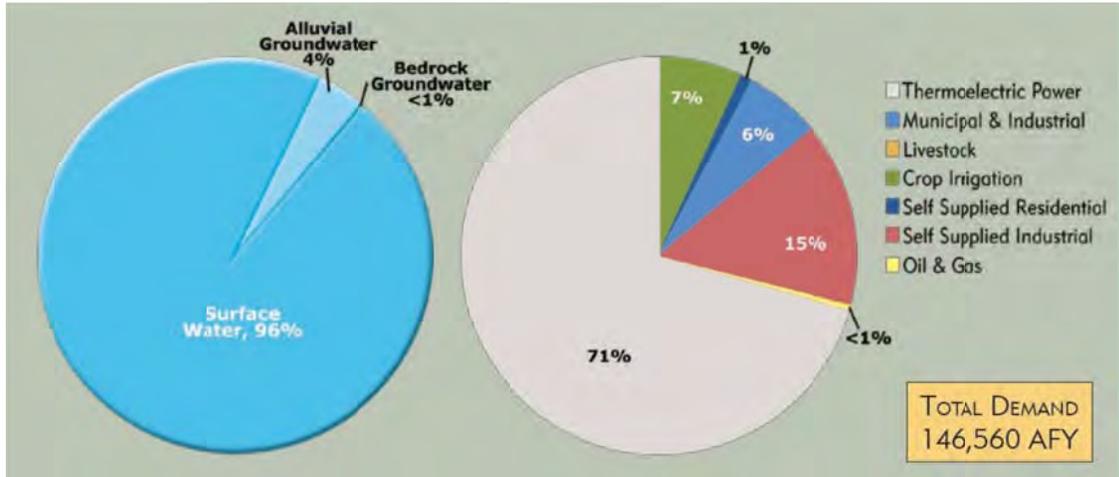


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Basin 47

The Liberty planning area is located in Basin 47 (Map 3-16). Water uses within Basin 47 make up the majority (73 percent, 146,560 AFY) of the total water use in the Lower Arkansas Watershed Planning Region. Most of this demand (71 percent, 103,348 AFY) is from the thermoelectric-power sector. Self-supplied industrial accounts for 15 percent, or 21,984 AFY, of the total water demand in this basin as shown in Figure 3-8.

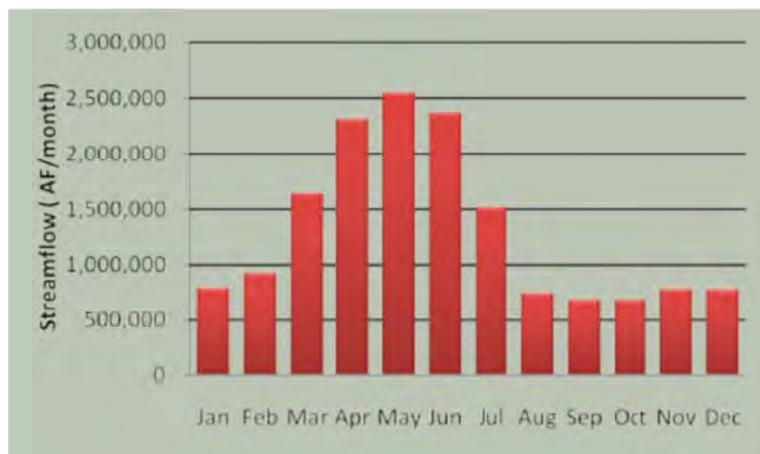


SOURCE: OWRB 2011b

FIGURE 3-8 CURRENT DEMAND BY SOURCE AND SECTOR – LOWER ARKANSAS REGION, BASIN 47

Surface water provides 96 percent of the total demand in the basin. Peak summer demand is approximately 1.4 times the winter water demand.

Measurements of streamflow in the Arkansas River, near its confluence with the Canadian River, were analyzed for the period from 1950 through 2007. The median flow of the Arkansas River at this location is greater than 680,000 AF per month throughout the year and greater than 1.5 million AF per month during the spring months, as shown in Figure 3-9.



SOURCE: OWRB 2011b

FIGURE 3-9 MEDIAN HISTORICAL STREAMFLOW AT THE BASIN OUTLET – LOWER ARKANSAS REGION, BASIN 47

Basin 47 is located upstream from Basin 46 and the Robert S. Kerr Reservoir. Runoff from the Liberty planning area would flow into tributaries of the Canadian River to its confluence with the Arkansas. The major reservoir in Basin 47, the Webbers Falls Reservoir, is operated by the USACE for navigation and power generation on the Arkansas River above the confluence with the Canadian River. As such, the primary reservoir associated with the Liberty planning area would be the Robert S. Kerr Reservoir.

While Basin 47 currently makes up 73 percent of the total water usage in the Lower Arkansas Watershed Planning Region; by 2060, it is projected to increase by 80,870 AFY to 227,430 AFY. Table 3-4 shows the anticipated increase in water demand for Basin 47 by use sector over time.

**TABLE 3-4
TOTAL DEMAND BY SECTOR – LOWER ARKANSAS REGION, BASIN 47**

Planning Horizon	Crop Irrigation	Livestock	Municipal & Industrial	Oil & Gas	Self Supplied Industrial	Self Supplied Residential	Thermoelectric Power	Total
	AFY							
2010	9,940	1,330	9,030	110	22,080	680	103,390	146,560
2020	10,070	1,350	9,590	200	22,100	720	115,350	159,380
2030	10,190	1,360	10,100	330	22,120	760	128,680	173,540
2040	10,310	1,370	10,600	490	22,290	800	143,560	189,420
2050	10,410	1,380	11,110	680	22,840	840	160,160	207,420
2060	10,560	1,390	11,640	910	23,390	870	178,670	227,430

SOURCE: OWRB 2011b

Surface water is used to meet 96 percent of the total demand in the basin currently and surface-water growth is expected to grow by 79,550 AFY by 2060, or almost 97 percent of future demand. The primary increase in demand is expected to occur in thermoelectric-power generation.

Basin 47



Map 3-16: Liberty Area Watershed Region
(Basin 47)

Source:
Oklahoma Water Resource Board -
Lower Arkansas Watershed Planning Region Report

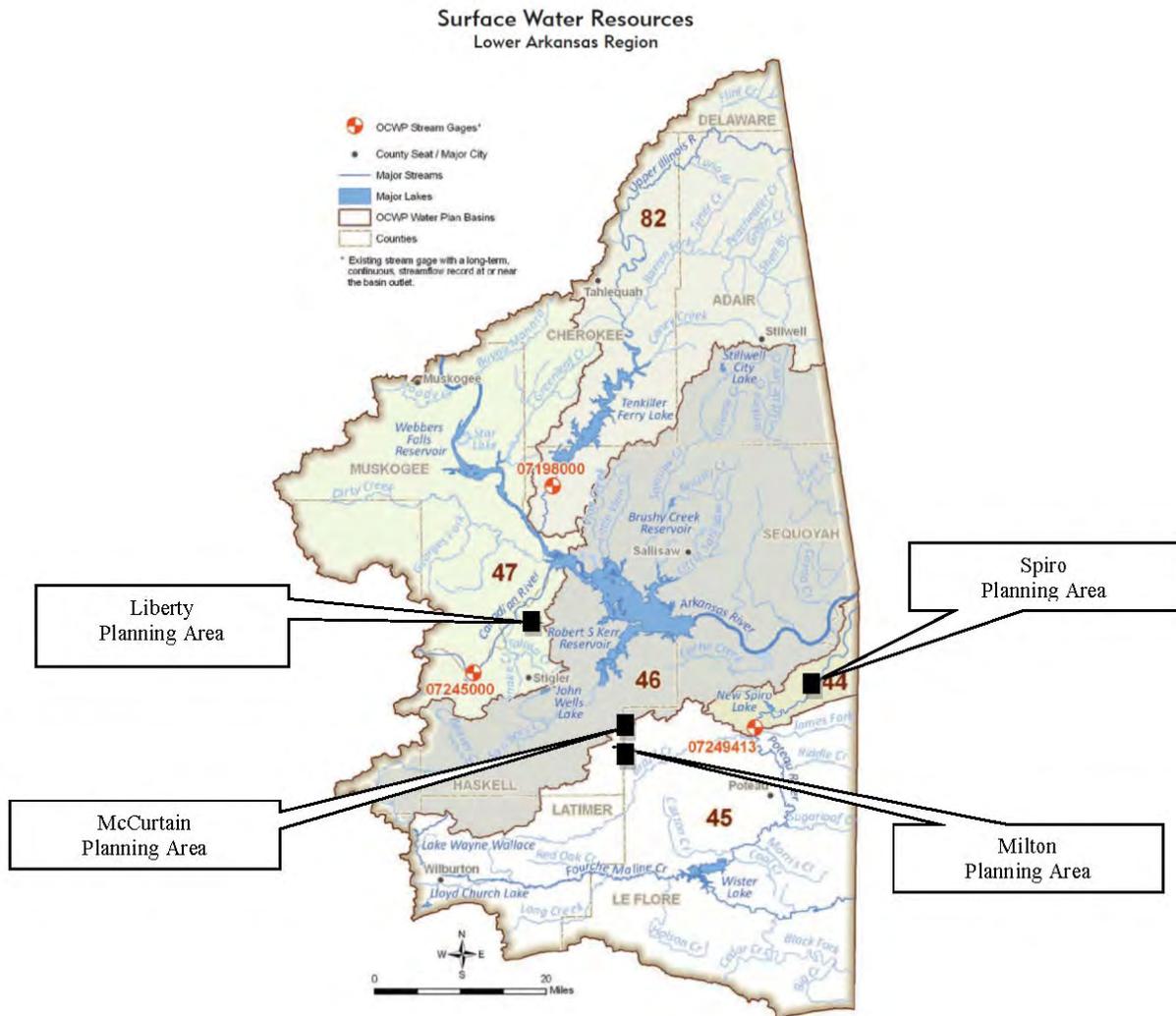


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3.10.2.2 Watersheds

For water quantity and quality purposes, the State of Oklahoma maintains watershed boundaries apart from the USGS Hydrologic Unit Code (HUC) system. Under the Oklahoma system, the planning areas are located within the Lower Arkansas Watershed Planning Region that is made up of five basins, four that are associated with the planning areas, as shown in Figure 3-10.



SOURCE: OWRB 2011b

FIGURE 3-10 SURFACE WATERS – LOWER ARKANSAS REGION

The basins and 8-digit HUCs for the planning areas include:

- Liberty planning area: Basin 47, HUC 11090204
- McCurtain planning area: Basin 46, HUC 11110104 (Northern portion), HUC 11110105 (Southern portion)
- Milton planning area: Basin 45, HUC 11110105
- Spiro planning area: Basin 44, HUC 111101051

The Lower Arkansas Watershed Planning Region includes 4,657 square miles in portions of Adair, Cherokee, Delaware, Haskell, Latimer, LeFlore, McIntosh, Muskogee, Pittsburg, and Sequoyah counties.

For the purposes of water-quantity and water-quality discussions, the Oklahoma basins will be used. HUC information is provided for reference, as it is relevant to discussion of threatened and endangered species critical habitat in later sections.

Major rivers in the Lower Arkansas Watershed Planning Region include the Poteau, Illinois, Canadian, and Arkansas rivers. According to the Oklahoma Comprehensive Water Plan, “Flows in the Canadian and Arkansas rivers are generally abundant with occasional low-flow conditions. Flows in the Illinois and Poteau rivers are reliable but not as large, with periodic no-flow conditions in the Poteau.” (OWRB 2011b)

The Arkansas River and its tributaries occupy Basins 82, 46, and 47 in the Lower Arkansas Region. The Arkansas River is impounded in Basin 46 as the Robert S. Kerr Reservoir. This reservoir and the Arkansas River in these basins are part of the McClellan–Kerr Arkansas Navigation Channel. The Robert S. Kerr Reservoir was constructed in 1970 and provides water for navigation, recreation, and power generation.

Runoff from the Liberty planning area proceeds through tributaries to the Canadian River in Basin 47. The Canadian River then empties into the Robert S. Kerr Reservoir approximately 10 miles northeast of the Liberty planning area.

The Poteau River enters Oklahoma in the southern portion of the Lower Arkansas Watershed Planning Region. The Poteau River and its tributaries are located in Basins 44 and 45. Runoff from the Spiro planning area in Basin 44 empties into the Poteau River, which then enters the Arkansas River downstream of the Robert S. Kerr Reservoir.

Runoff from the Milton planning area makes its way into Brazil Creek in Basin 45 and into the Poteau River in Basin 44.

3.10.2.3 Water Quality

Water quality management in Oklahoma is performed in accordance with the Oklahoma Water Quality Standards (OWQS), a set of rules under the CWA and state statute. The OWQS establishes the beneficial uses for surface waters as well as for certain groundwater resources. Beneficial uses include fish and wildlife propagation, public- and private-water supply, primary or secondary body-contact recreation, agriculture, and aesthetics. The OWRB monitors surface-water quality through the Beneficial Use Monitoring Program. Surface waters that have consistent nonattainment for designated beneficial uses may have a total maximum daily load (TMDL) program. The TMDL sets discharge limits to support in-stream water quality objectives.

Overall, within the streams associated with the planning area, salinity decreases from west to east with salinity in the Canadian River, averaging 480 conductivity per centimeter ($\mu\text{S}/\text{cm}$), and that in the Poteau River averaging 140 $\mu\text{S}/\text{cm}$. Most streams are mesotrophic, with total phosphorous or less than 0.08 parts per million (ppm) and total nitrogen less than 0.70 ppm (OWRB 2011b). Turbidity is typically excellent in the upper Poteau River (14 nephelometric turbidity units [NTU]) and Canadian River (7 NTU), but becomes worse moving east (56 NTU on the lower Poteau River) (OWRB 2011b).

The Canadian River downstream from the Liberty planning area, the San Bois River downstream from the McCurtain planning area, Brazil Creek downstream from the Milton planning area, and the Poteau River adjacent to the Spiro planning area are all listed as 303(d) impaired waters in the ODEQ 2010 Draft Integrated Water Quality Report (ODEQ 2010a). The Canadian River is impaired for Fish Consumption. Adjacent to the Spiro planning area, the Poteau River is slated for development of a TMDL to address non-attainment for fish and wildlife propagation, fish consumption, and public- and private-water supply

between 2018 and 2021. San Bois Creek, which receives runoff from the McCurtain planning area, is also scheduled for development of a TMDL in 2021. San Bois Creek is impaired for primary body-contact recreation, fish and wildlife propagation, and, in some sections, agriculture. Brazil Creek, downstream from the Milton planning area, is non-supporting for primary body-contact and is scheduled for a TMDL for that section up to its confluence with the Poteau River in 2016.

Of the major lakes associated with the planning areas, the Robert S. Kerr Reservoir is associated with runoff from the Liberty and McCurtain planning areas.

The Robert S. Kerr Reservoir has an average turbidity of 78 NTU and an average Secchi disk depth of 26 centimeters. Water clarity is rated as poor. The lake has a trophic state index of 50 and is classified as eutrophic. Conductivity within the reservoir ranges from 57.6 – 1148 $\mu\text{S}/\text{cm}$, depending on sampling site. The lake is overall neutral to slightly alkaline with respect to pH. Total nitrogen ranges from 0.70 to 1.72 ppm while total phosphorous ranges from 0.065 to 0.210 ppm. With an N:P ratio of 8:1, the reservoir is phosphorous limited. The lake water quality is not supporting for the beneficial uses of fish and wildlife propagation (turbidity) and aesthetics (color).

Oklahoma has designated several types of special status waters to provide protection of their beneficial uses. The OWQS Special Provision Watersheds include:

- **Appendix B Areas** contain waters of recreational or ecological significance. Discharges to these water bodies may be limited to protect the resource.
- **Source Water Protection Areas** are designated to protect public drinking-water supplies.
- **High Quality Waters** have water quality exceeding that necessary to support propagation of fishes, shellfish, and wildlife as well as supporting primary contact recreation. New sources are prohibited in these waters.
- **Sensitive Water Supplies** are public- and private-water supplies that are uniquely susceptible to pollution effects. This designation restricts point source discharges and adds an algae-associated chlorophyll, a standard to protect against taste and odor issues.
- **Outstanding Resource Waters** are similar to Appendix B waters in that they recognize waters of exceptional recreational or ecological significance. New point-source discharges are prohibited in these waters.
- **Scenic Rivers** also are protected through restrictions on point source discharges. Scenic rivers also have a limited total phosphorous standard.
- **Nutrient Limited Watersheds** contain a surface waterbody that is adversely affected by nutrient loading.

None of the planning areas are located within an OWQS Special Provision Watershed.

3.11 AIR QUALITY

Beginning with promulgation of the Clean Air Act, standards were established to protect people and the environment from the effects of air pollution. These standards are referred to as the National Ambient Air Quality Standards (NAAQS) and define the maximum allowable concentrations of target, or “criteria”, pollutants. NAAQS has identified six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone,

sulfur dioxide, and particulate matter (less than 10 microns in diameter and fine particulate matter, which is less than 2.5 microns in diameter).

The Oklahoma Department of Environmental Quality (ODEQ), Air Quality Division, has been delegated the authority to develop and enforce air quality regulations and standards in Oklahoma with the exception of tribal lands. Tribal lands are regulated directly by the U.S. Environmental Protection Agency (EPA). BLM actions and Use Authorizations must comply with all applicable local, state, tribal, and federal air quality laws, statutes, regulations, standards, and implementation plans. Other than the laws and regulations listed in Section 2.4.4, there is no specific BLM management direction regarding air quality.

Throughout the State of Oklahoma, 26 ambient air-quality monitoring stations record the concentration of these criteria pollutants. The data are collected and reported on an annual basis by the ODEQ. In 2010, the most recent full year of data, Oklahoma was in attainment with NAAQS for all criteria pollutants. The monitoring ODEQ station nearest the planning areas is near McAlester, Oklahoma. This station is located west of the planning areas. The Arkansas Department of Environmental Quality maintains a monitoring station in Ft. Smith, Arkansas, to the east of the planning area. Table 3-5 summarizes 2010 monitoring data and the criteria pollutant standard.

**TABLE 3-5
2010 MONITORING DATA AND THE CRITERIA POLLUTANT PRIMARY STANDARD**

Criteria Pollutant		NAAQS Standard	ODEQ McAlester Station	Arkansas DEQ Ft. Smith Station
Carbon Monoxide	8-hour	9.0 parts per million	No data	No data
	1-hour	35.0 parts per million	No data	No data
Lead		0.15 µg/m ³	No data	No data
Nitrogen Dioxide	Annual	53 parts per billion	No data	31
	1-hour	100 ppb	No Data	No Data
Ozone 8-hr		0.075 parts per million	0.068 µg/m ³	0.068 µg/m ³
Particle Pollution	PM ₁₀		150 µg/m ³	No data
	PM _{2.5}	Annual	12 µg/m ³	9.8 µg/m ³
		24-hour	35 µg/m ³	No data
Sulfur Dioxide	1-hour	75 parts per billion	No data	No data
	3-hour	0.5 parts per million	No data	No data

SOURCE: ODEQ 2010b, USEPA, 2010.
NOTE: µg/m³ = micrograms per cubic meter

3.12 VEGETATION

Vegetation in the planning areas is influenced by factors such as elevation, topography, soil type, temperature, precipitation, and human influence. BLM is responsible for protection of vegetation affected by mining activities. BLM currently uses the 2008 Integrated Vegetation Management Handbook (H-1740-2) as a tool in managing all types of vegetation encountered within LAAs. BLM also is responsible for the protection and recovery of federal-, state-, and BLM-listed plant species. BLM will manage these species consistent with all federal laws, regulations, and policies.

In accordance with FLPMA and Executive Order 13112, BLM also is responsible to ensure non-native, invasive species do not become established through actions permitted by the BLM. Therefore, any

restoration efforts undertaken, subsequent to land being made available and leased, must ensure that non-native and invasive species are not promulgated.

According to BLM Handbook H-4180-1 regarding Rangeland Health Standards, the BLM addresses the maintenance, restoration, and/or improvement of riparian areas to achieve a healthy and productive ecological condition for maximum long-term benefits. These standards, Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection and Management of Wetlands), result in wetland and riparian area management being of particular concern. Wetland-riparian resource protection stipulations have been developed and are presented as an integral part of the coal resource programs.

All four planning areas are located within the Arkansas Valley Plains, a subset of the Arkansas Valley Ecoregion of Oklahoma, and are underlain by Pennsylvanian-age shale, sandstone, and coal. It was once covered by a mosaic of savanna, woodland, forest, and prairie. Today, its relatively level areas are mostly maintained as pasture or hay meadows, whereas hills and ridges are forested. Poultry farming and rock mining are other important land uses occurring in this ecoregion (Woods et al. 2005).

3.12.1 Historic Game Types

The Liberty planning area is historically classified as the following game types by Duck and Fletcher (1943): Post Oak-Blackjack Oak Forest, Tallgrass Prairie, and Oak-Hickory Forest. The McCurtain and Milton planning areas are historically classified as Tallgrass Prairie and Post Oak-Blackjack Oak Forest game types. The Spiro planning area is historically classified as Tallgrass Prairie, Post Oak-Blackjack Oak Forest, and Bottomland game types (Duck and Fletcher 1943). These game types are discussed further in this section.

3.12.1.1 Post Oak-Blackjack Oak Forest Game Type

The Post Oak-Blackjack Oak Forest Game Type represents the forest-grassland ecotone and contains dominants from both the deciduous formation and the grassland formation. The overstory is largely composed of post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), and black hickory (*Carya texana*). The understory is made up of little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), and other species, depending on the site location. The topography of this type is characteristically rolling to rough (Duck and Fletcher 1943). This game type is represented in all four planning areas.

3.12.1.2 Tallgrass Prairie Game Type

The Tallgrass Prairie Game Type occupies the majority of the best agricultural soils of Oklahoma and is the largest game type in the state. Natural vegetation consists of big bluestem, little bluestem, Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), and silver beardgrass (*Bothriochloa saccharoides*). The topography of this type ranges from flat to gently rolling. The soils of the Tallgrass Prairie Game Type have their origin from shales and clays of the Permian Red Beds and range from light sandy loams to heavier silt loams and clays (Duck and Fletcher 1943). This game type is represented in all four planning areas.

3.12.1.3 Oak-Hickory Forest Game Type

The Oak-Hickory Forest Game Type is located largely in the northeastern portion of the state and includes the highlands referred to as the Ozark Mountains. This type is characterized by vegetation comprised of blackjack oak, post oak, red oak (*Quercus rubra*), pin oak (*Quercus palustris*), black hickory, shellbark hickory (*Carya laciniosa*), pignut hickory (*Carya glabra*), and winged elm (*Ulmus*

alata). The ground cover is composed of a mixture of huckleberry (*Vaccinium pallidum*), coralberry (*Symphoricarpos orbiculatus*), sassafras (*Sassafras albidum*), big bluestem, spicebush (*Lindera benzoin*), bladdernut (*Staphylea trifolia*), hazelnut (*Corylus americana*), mayapple (*Podophyllum peltatum*), bloodroot (*Sanguinaria canadensis*), and summer grape (*Vitis aestivalis*). The topography of the Oak-Hickory Forest Game Type is characterized by a mountainous relief (Duck and Fletcher 1943). This game type is represented in the Liberty planning area.

3.12.1.4 Bottomland Game Type

The Bottomland Game Type includes the first bottom and stream course of all the regular drainages of the state. The surface of this type varies from flat bottomlands to the steep canyon-like valleys. This type differs from other timbered types of the state in that most of the bottom soils are extremely fertile and deep, being alluvial in origin (Duck and Fletcher 1943). This game type is represented in the Spiro planning area.

3.12.2 Land Cover

The dominant land cover classifications within the Liberty planning area are pasture/hay (85.67 percent), deciduous forest (7.32 percent), grassland/herbaceous (1.88 percent), and developed, open space (1.87 percent). The dominant land cover classifications within the McCurtain Area are deciduous forest (51.17 percent), pasture/hay (20.95 percent), grassland/herbaceous (8.68 percent), and developed, open space (6.00 percent). The dominant land cover classifications within the Milton planning area are deciduous forest (76.74 percent), mixed forest (10.71 percent), grassland/herbaceous (5.28 percent), and evergreen forest (2.83 percent). The dominant land cover classifications within the Spiro planning area are pasture/hay (35.70 percent), deciduous forest (33.54 percent), woody wetlands (24.53 percent), and grassland/herbaceous (2.10 percent) (Multi-Resolution Land Characteristics Consortium [MRLC] 2006). These classifications are further discussed in the following subsections. Maps of land cover and aerial photography for each planning area are presented in Map 3-17 through Map 3-24.

3.12.2.1 Pasture/Hay

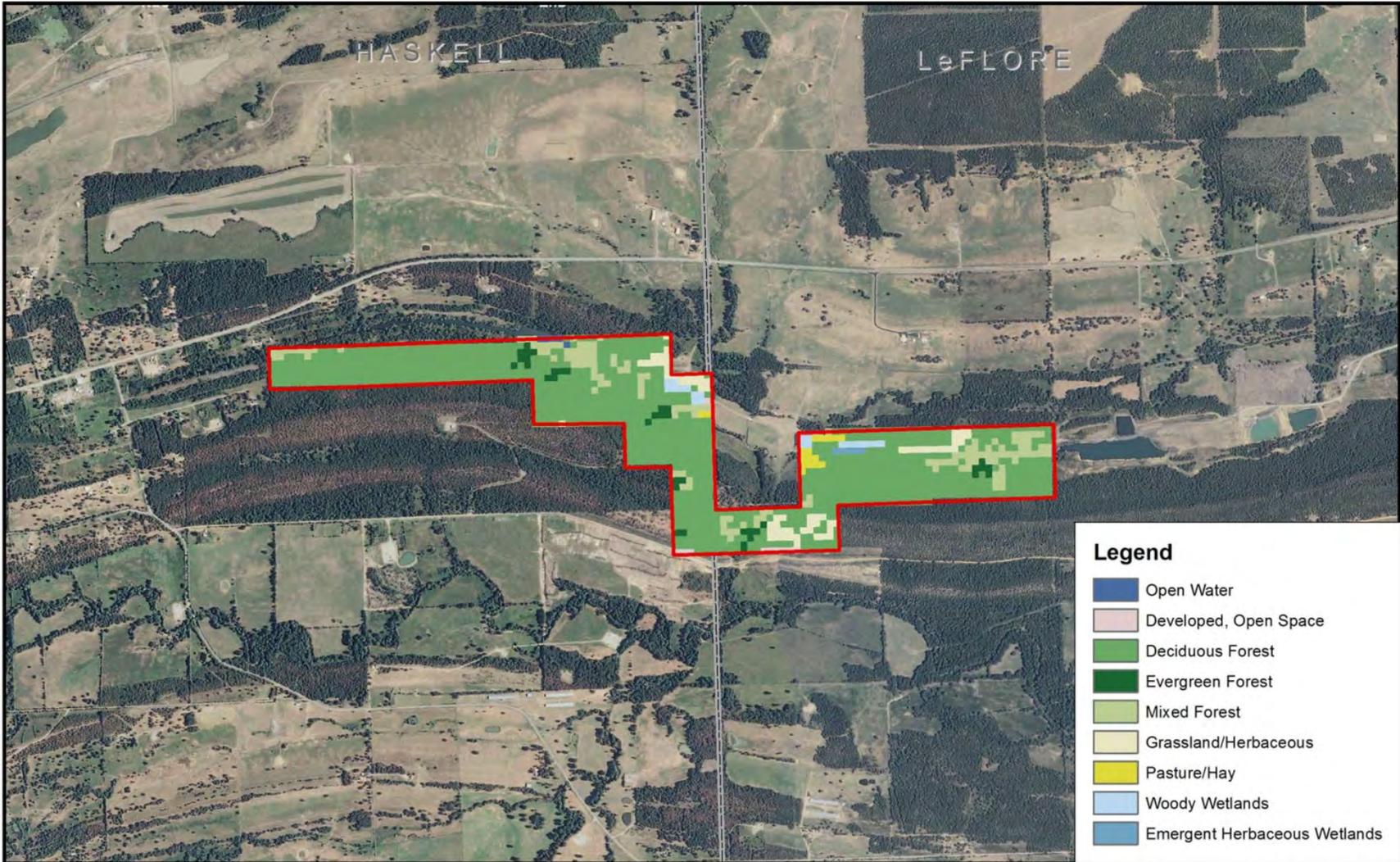
These areas are comprised of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of the total vegetation (MRLC 2006).

3.12.2.2 Deciduous Forest

These areas are dominated by trees generally greater than 5 meters tall and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change (MRLC 2006).

3.12.2.3 Grassland/Herbaceous

These areas are dominated by graminoid or herbaceous vegetation, generally greater than 80 percent of the total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing (MRLC 2006).



- Legend**
- Open Water
 - Developed, Open Space
 - Deciduous Forest
 - Evergreen Forest
 - Mixed Forest
 - Grassland/Herbaceous
 - Pasture/Hay
 - Woody Wetlands
 - Emergent Herbaceous Wetlands

Legend

Milton Planning Area

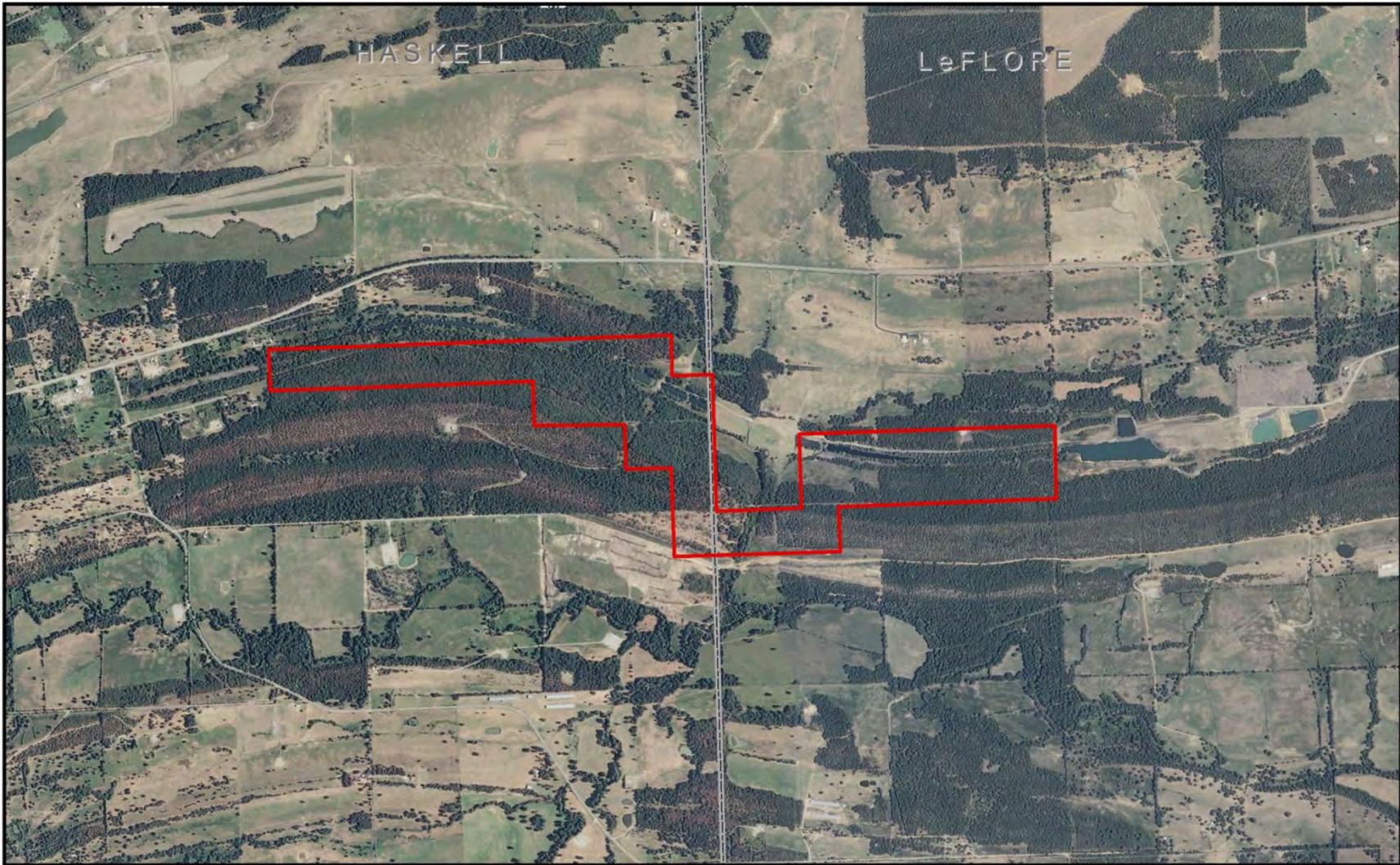
Map 3-17: Milton Area Land Cover

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Source:
2011 BLM
2006 MRLC Land Cover

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Legend

 Milton Planning Area

Map 3-18: Milton Area Aerial Photography



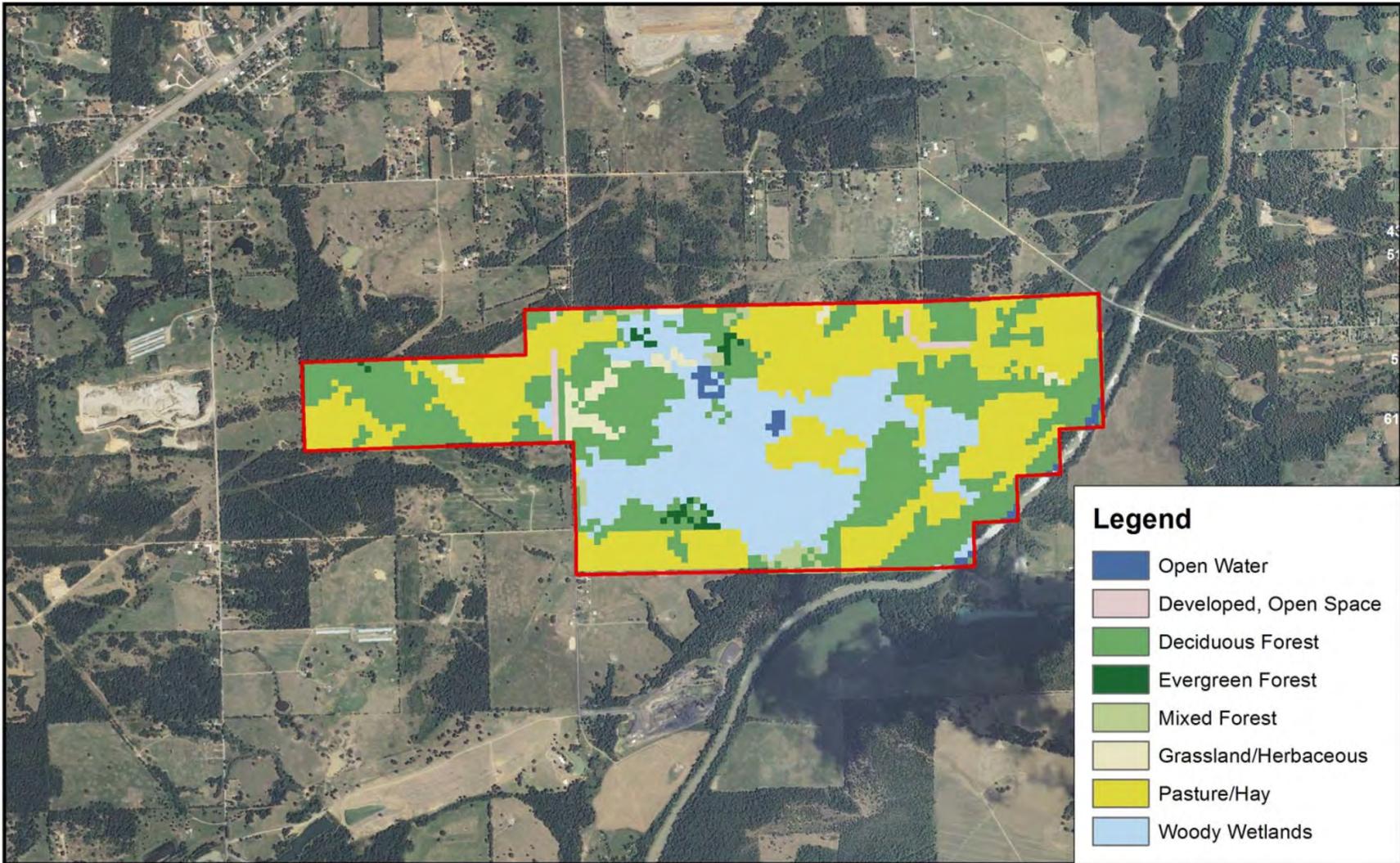
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Source:
2011 BLM
2010 USDA NAIP -
Haskell and LeFlore Counties, Oklahoma



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Legend
 Spiro Planning Area

Legend

- Open Water
- Developed, Open Space
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands

Map 3-19: Spiro Area Land Cover

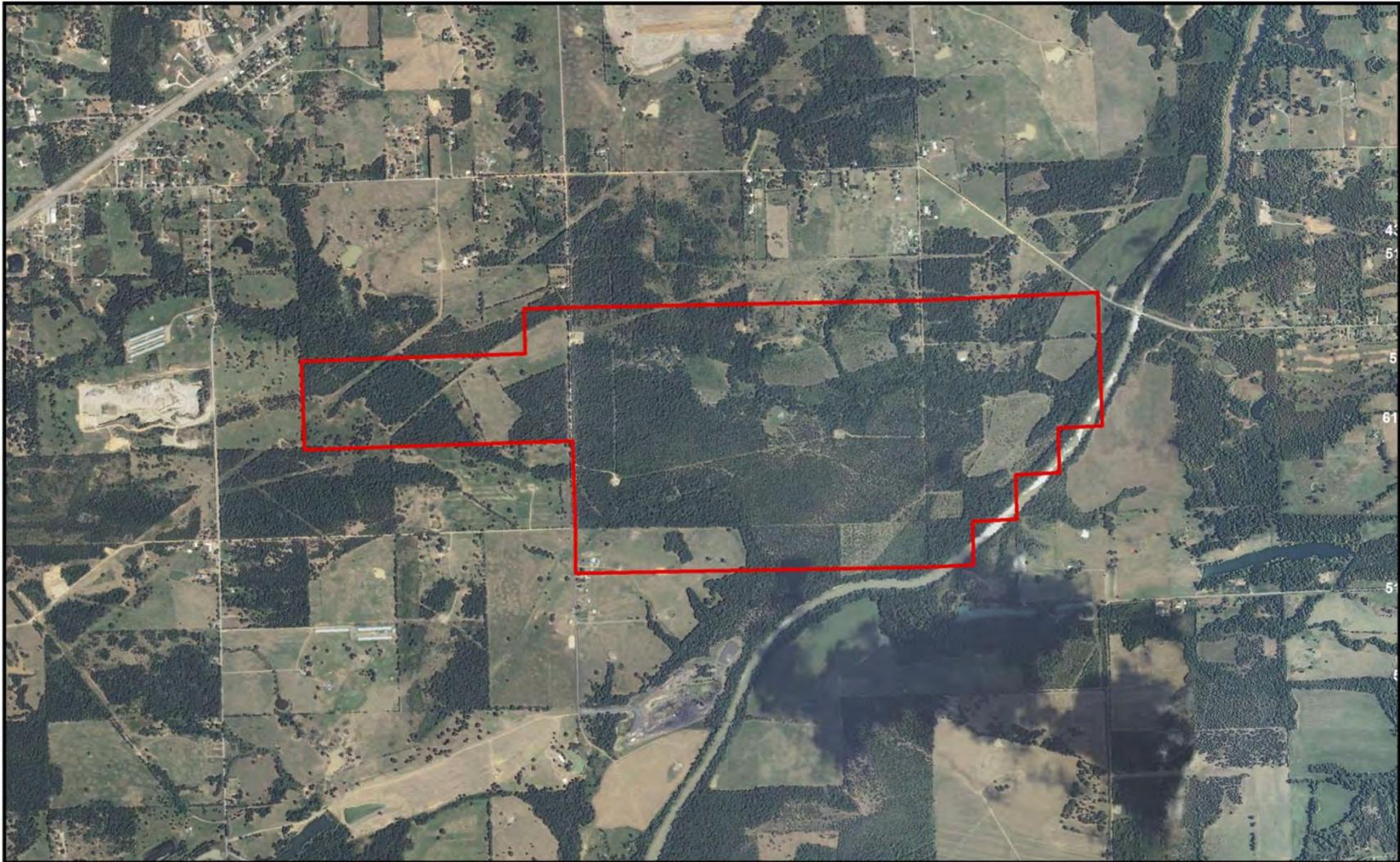
Source:
 2011 BLM
 2006 MRLC Land Cover



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 Spiro Planning Area

Map 3-20: Spiro Area Aerial Photography

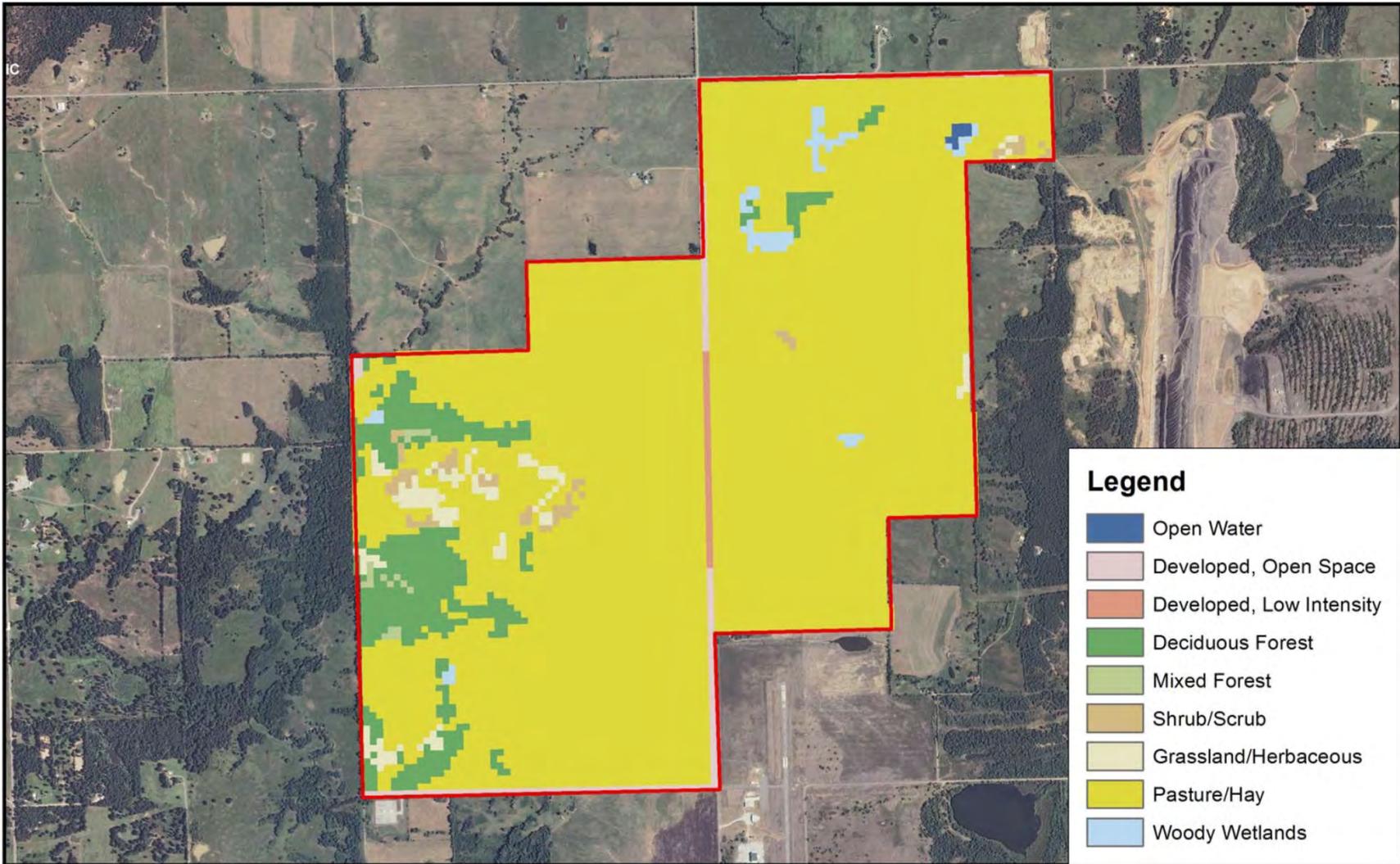
Source:
2011 BLM
2010 USDA NAIP - LeFlore County, Oklahoma



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Legend
 Liberty Planning Area

Map 3-21: Liberty Area Land Cover

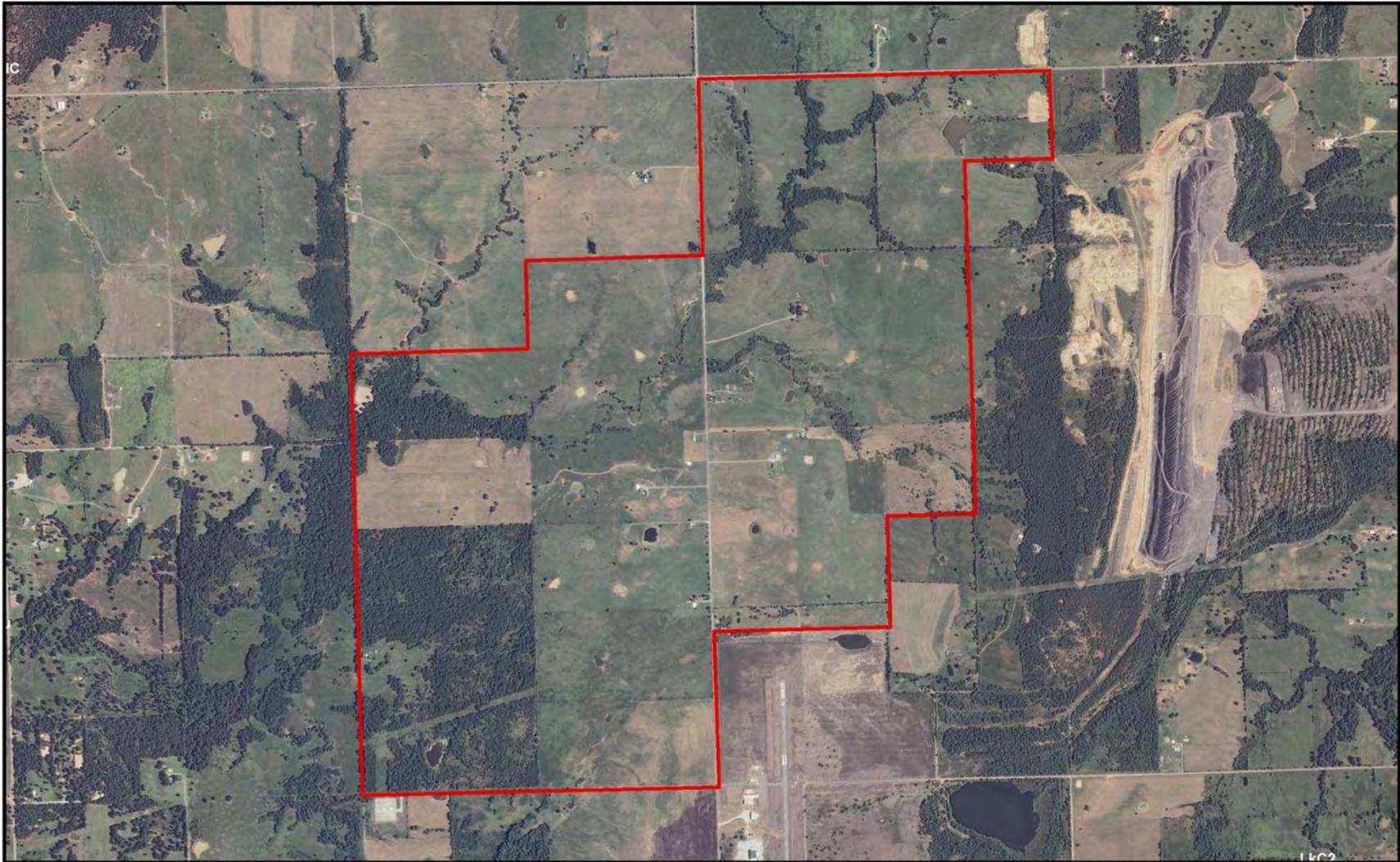
Source:
 2011 BLM
 2006 MRLC Land Cover



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 Liberty Planning Area

Map 3-22: Liberty Area Aerial Photography

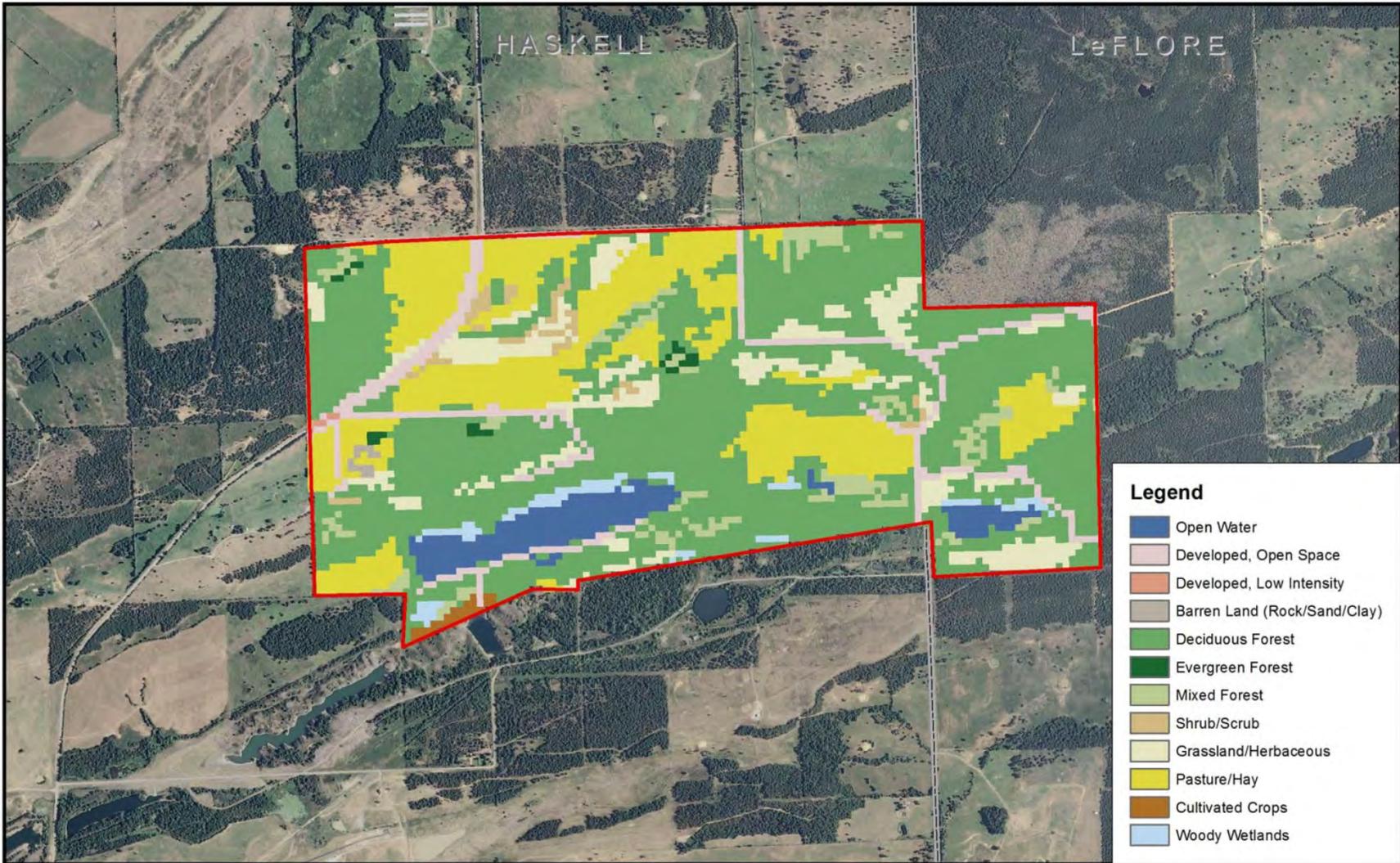
Source:
2011 BLM
2010 USDA NAIP Haskell County, Oklahoma



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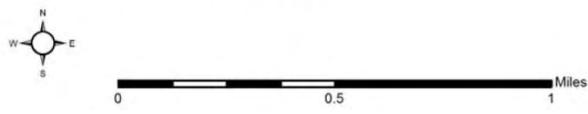


Legend
 McCurtain Planning Area

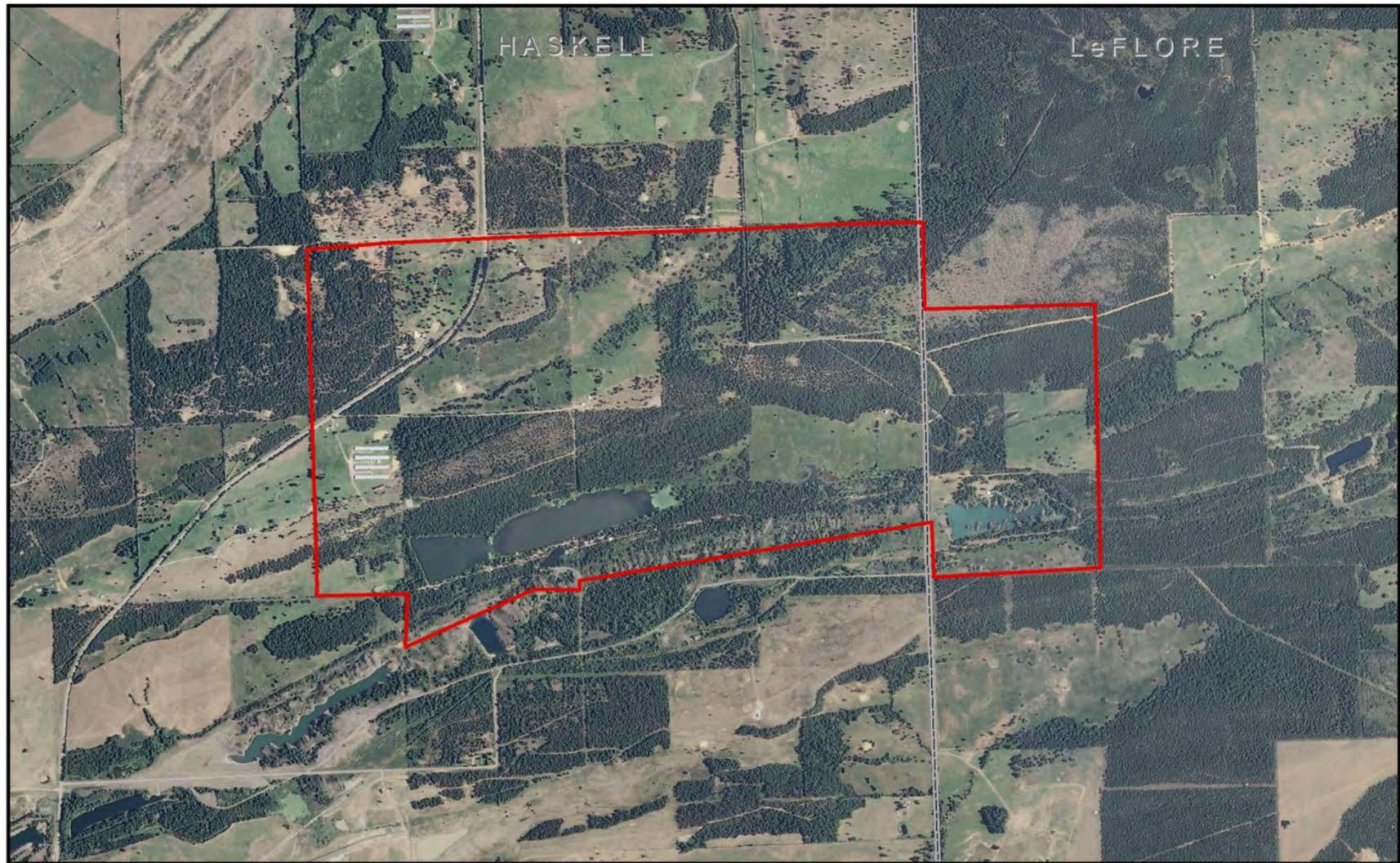
Map 3-23: McCurtain Area Land Cover

Source:
 2011 BLM
 2006 MRLC Land Cover

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Legend

 McCurtain Planning Area

Map 3-24: McCurtain Area Aerial Photography

Source:
 2011 BLM
 2010 USDA NAIP -
 Haskell and LeFlore Counties, Oklahoma



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3.12.2.4 Developed, Open Space

These areas have a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of the total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion-control, or aesthetic purposes (MRLC 2006).

3.12.2.5 Mixed Forest

These areas are dominated by trees generally greater than 5 meters tall and greater than 20 percent of the total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of the total tree cover (MRLC 2006).

3.12.2.6 Evergreen Forest

These areas are dominated by trees generally greater than 5 meters tall and greater than 20 percent of the total vegetation cover. More than 75 percent of the tree species maintain their leaves all year and the canopy is never without green foliage (MRLC 2006).

3.12.2.7 Woody Wetlands

These are areas where forest or shrubland vegetation accounts for greater than 20 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water (MRLC 2006).

3.12.3 Barren Land, Open Water, and Wetlands

According to the MRLC National Land Cover Database 2006, the planning areas are comprised of the following percentage of barren land (rock/sand/clay), open water, and wetlands (woody and emergent herbaceous) (Table 3-6) (MRLC 2006).

**TABLE 3-6
PERCENT OF BARREN LAND, OPEN WATER, AND WETLANDS BY AREA**

Planning Area	Barren Land	Open Water	Wetlands	
			Woody Wetlands	Emergent Wetlands
Milton	0.0	0.38	1.61	0.38
Spiro	0.0	1.12	24.53	0.0
Liberty	0.0	0.12	1.07	0.0
McCurtain	0.22	4.79	1.68	0.0

SOURCE: MRLC 2006

According to National Wetland Inventory (NWI) maps (Map 3-25 through Map 3-28), the Liberty planning area contains 16.46 acres of mapped wetlands, the McCurtain planning area 84.74 acres of mapped wetlands, the Milton planning area 5.73 acres of mapped wetlands, and the Spiro planning area 76.40 acres of mapped wetlands. It is possible that wetlands mapped by NWI do not meet technical criteria for CWA, Section 404 wetlands (i.e., hydric soils, wetland hydrology, and hydrophytic vegetation). Site reconnaissance is necessary to confirm the presence or absence of Section 404 wetlands.

3.13 WILDLIFE

BLM policy and guidance establish that state-listed species or sensitive species must receive the same consideration as federally listed species (BLM Manual 6480). Policies are outlined in a series of BLM

manuals for various wildlife program activities, including BLM Manuals 6500 and 6720. In addition, BLM manages public resources under the concept of Standards and Guidelines (43 CFR 4180).

BLM also has entered into a memorandum of understanding with the USFWS to promote conservation of migratory birds and minimize potential adverse effects of take under the Migratory Bird Treaty Act (MBTA). The goal among the agencies is to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and minimize adverse impacts on migratory birds through collaboration among the cooperating agencies.

According to the 2004 RMP, the BLM's wildlife management program activities in Oklahoma are limited to preparation of environmental analyses, special status species evaluations or clearances, wetland determinations, and development of stipulations for impact avoidance or mitigation in the mineral development and lands initiatives. Special status species are addressed in Section 3.15.

Federal minerals under private surface or federal surface managed by another federal agency or licensed by another federal agency to a state or local agency for surface management purposes are the most common situations encountered in BLM's wildlife management program in Oklahoma. In these situations, BLM's wildlife responsibilities in Oklahoma do not begin until a BLM mineral action is proposed. As such, fish and wildlife resource concerns are addressed through site-specific agency coordination in Oklahoma. Coordination is initiated with the Oklahoma Natural Heritage Inventory and, if necessary, with the USFWS and the Oklahoma Department of Wildlife Conservation (ODWC) regarding each site-specific BLM project in Oklahoma. These agencies are being consulted for this project.

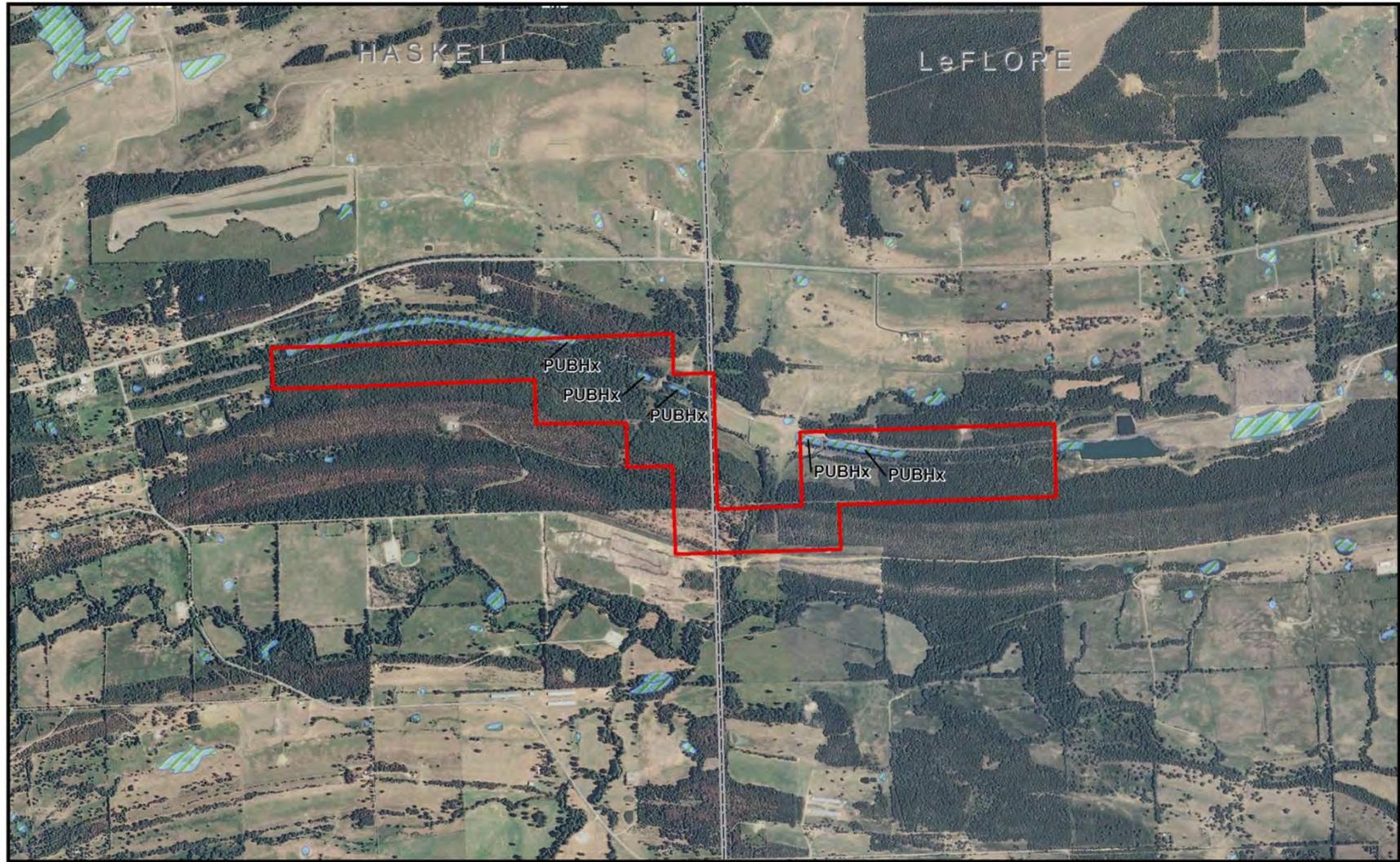
The Oklahoma Biological Survey (OBS) has developed the Biodiversity Information and Data, which is a database of distribution information for certain wildlife found throughout Oklahoma (OBS 2011).

3.13.1 Big Game

Four big game species are legally harvested in Oklahoma. The ODWC regulates the seasons, bag limits, and appropriate licensing for the white-tailed deer (*Odocoileus virginianus*), elk (*Cervus elaphus*), pronghorn antelope (*Antilocapra americana*), and the black bear (*Ursus americanus*) (ODWC 2011a). The white-tailed deer is the most common big game species that occur in the planning areas. No information is available on population estimates for this species specific to each planning area.

3.13.2 Small Game

There are many small game species harvested legally in Oklahoma. The ODWC regulates the seasons, bag limits, and appropriate licensing on small game species, including the wild turkey (*Meleagris gallopavo*), ringed-necked pheasant (*Phasianus colchicus*), Northern bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), fox squirrel (*Sciurus niger*), Virginia rail (*Rallus limicola*), gallinule (*Gallinula martinica*), woodcock (*Scolopax minor*), common snipe (*Gallinago gallinago*), teal (*Anas discors*), cottontail rabbit (*Sylvilagus nuttallii*), raccoon (*Procyon lotor*), badger (rare) (*Melogale* spp.), mink (rare) (*Mustela vison*), opossum (*Didelphus virginiana*), weasel (*Mustela nivalis*), bobcat (*Felis rufus*), and beaver (*Castor canadensis*) (ODWC 2011a). The more common species that would occur in the planning areas are wild turkeys, squirrels, foxes, rabbits, raccoons, muskrats, minks, quail, doves, ducks, and beavers.



Legend

-  Milton Planning Area
-  NWI Wetlands (5.73 ac)

Map 3-25: Milton Area NWI



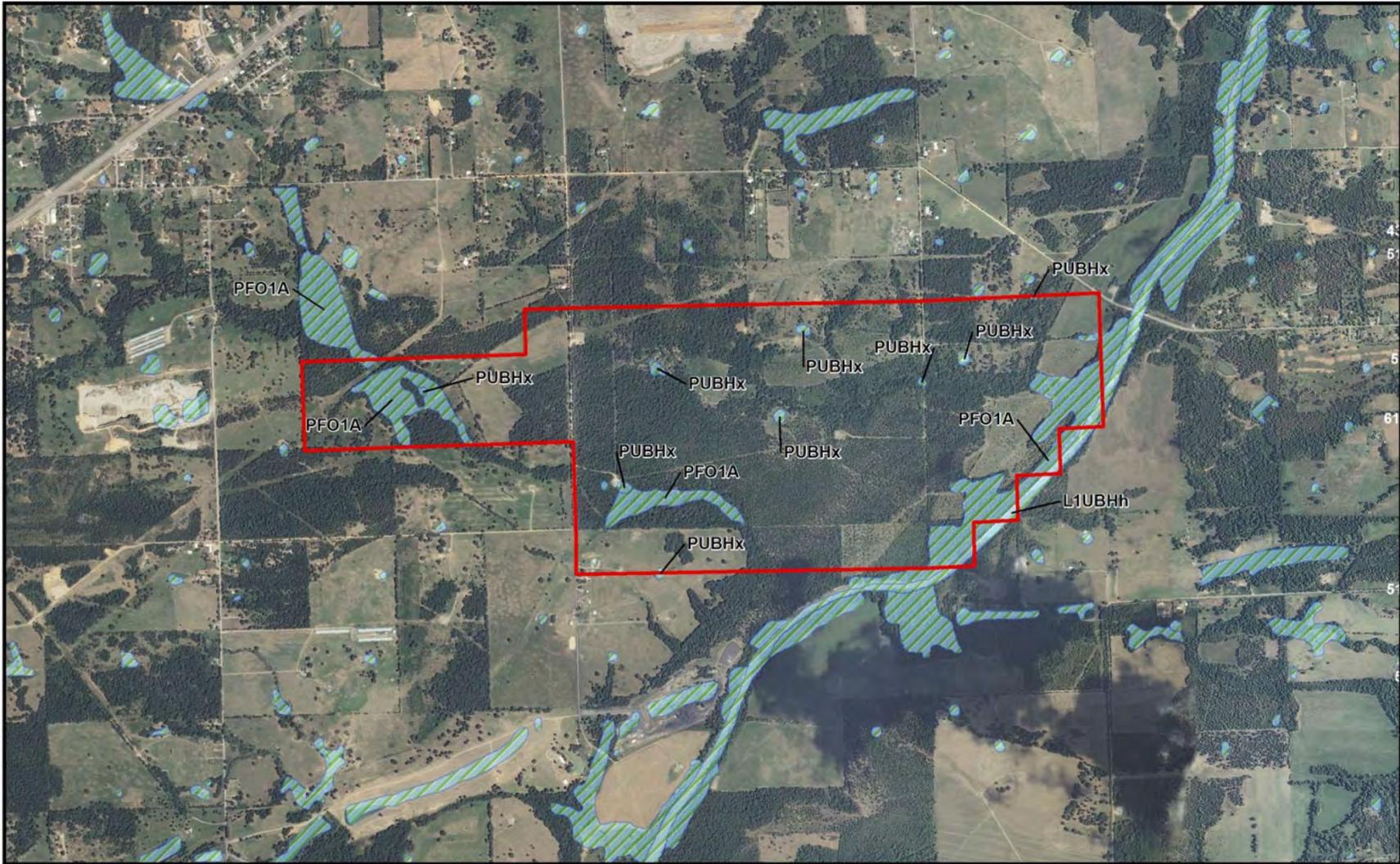
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Source:
 2011 BLM
 US Fish and Wildlife Service - NWI
 McCurtain, OK Quadrangle
 2010 USDA NAIP -
 Haskell and LeFlore Counties, Oklahoma



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Legend

-  Spiro Planning Area
-  NWI Wetlands (76.40 ac)

Map 3-26: Spiro Area NWI

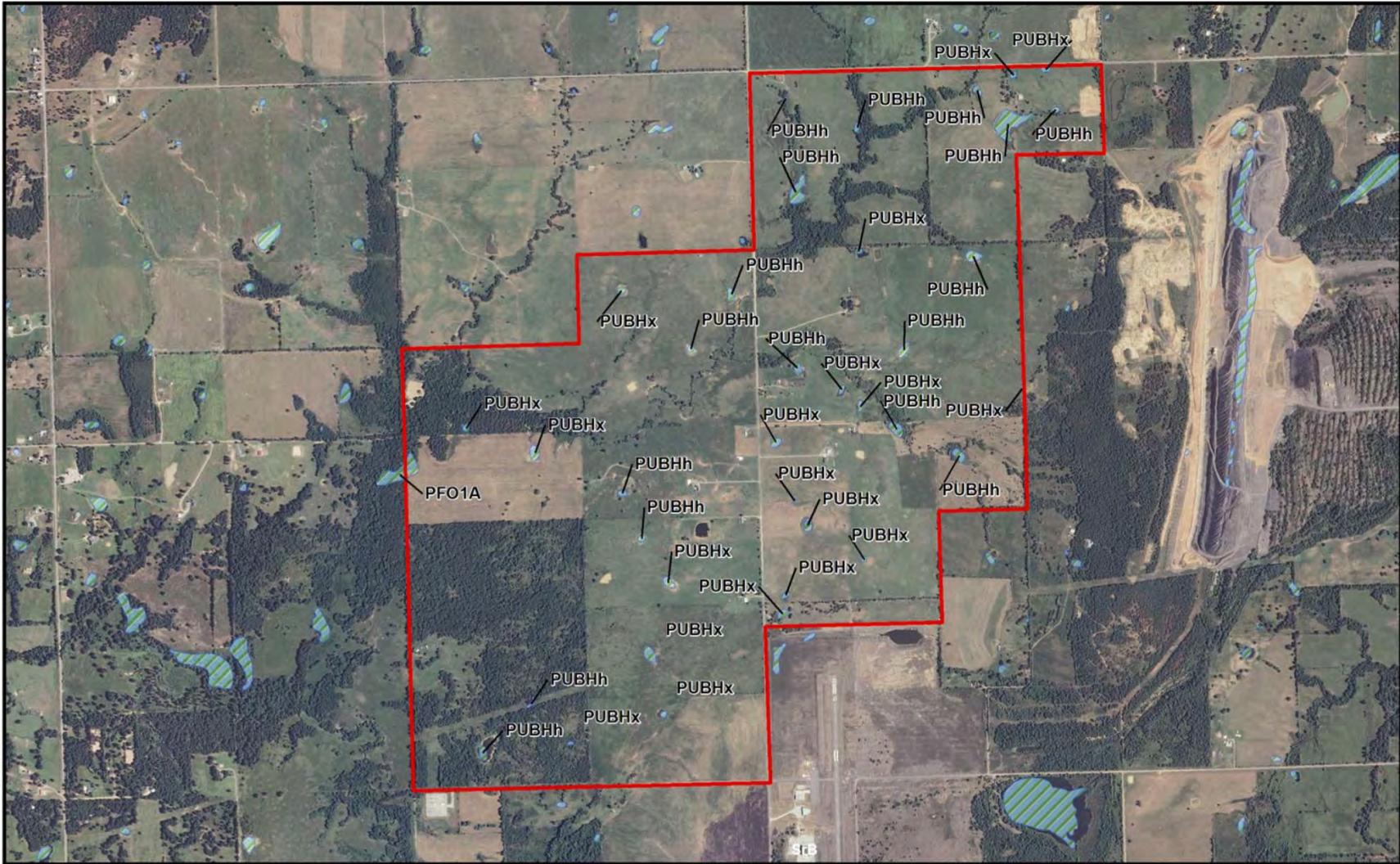


No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 2/11/12.



Source:
 2011 BLM
 US Fish and Wildlife Service - NWI
 Spiro, OK Quadrangle
 2010 USDA NAIP - LeFlore County, Oklahoma

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Legend

- Liberty Planning Area
- NWI Wetlands (16.46 ac)

Map 3-27: Liberty Area NWI

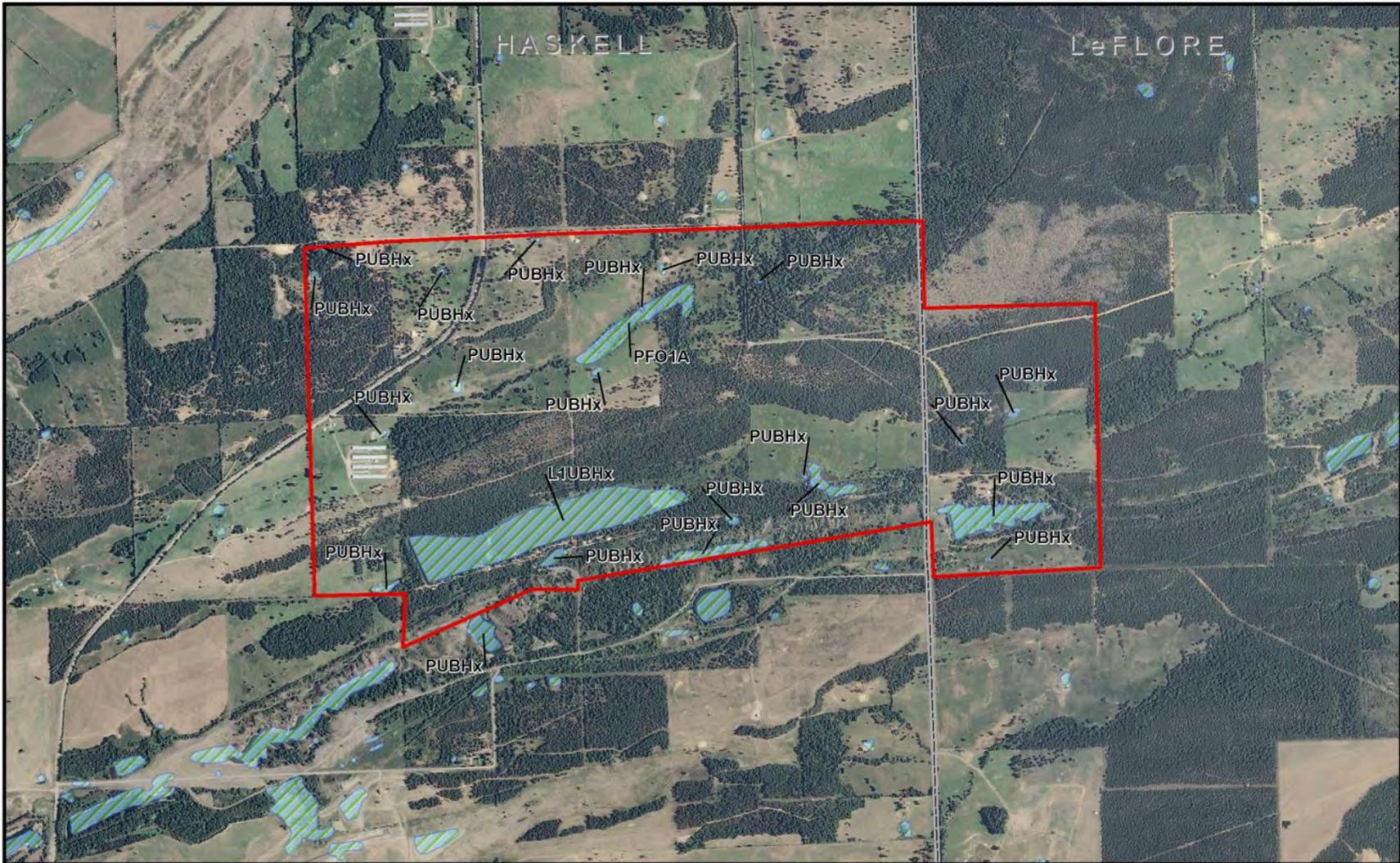


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Source:
 2011 BLM
 US Fish and Wildlife Service - NWI
 Stigler East, OK Quadrangle
 2010 USDA NAIP - Haskell County, Oklahoma

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Legend

-  McCurtain Planning Area
-  NWI Wetlands (84.74 ac)

Map 3-28: McCurtain Area NWI



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Source:
 2011 BLM
 US Fish and Wildlife Service - NWI
 McCurtain, OK Quadrangle
 2010 USDA NAIP -
 Haskell and LeFlore Counties, Oklahoma



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3.13.3 Nongame

Many nongame species likely to occur throughout the planning areas are described below.

3.13.3.1 Amphibians and Reptiles

A variety of turtles, frogs, lizards, skinks, and snakes were reported to be in the counties associated with the planning areas (OBS 2011). Some of the more common turtles reported were the eastern box turtle (*Terrapene carolina*) and spiny softshell turtle (*Apalone spinifera*). Some of the more common frogs and toads were the cricket frog (*Acris crepitans*), American toad (*Bufo americanus*), western narrow-mouthed toad (*Gastrophryne olivacea*), and the green tree frog (*Litoria caerulea*). Some of the more common skinks included the five-lined skink (*Eumeces fasciatus*) and the ground skink (*Scincella lateralis*). Common lizards included the fence lizard (*Sceloporus undulatus*) and the collared lizard (*Crotaphytus collaris*). Some of the more common snakes included the western diamondback rattlesnake (*Crotalus atrox*), copperhead (*Agkistrodon contortrix*), cottonmouth (*Agkistrodon piscivorus*), common garter snake (*Thamnophis sirtalis*), black rat snake (*Elaphe obsoleta*), and coachwhip (*Masticophis flagellum*). Frogs, toads, and turtles are found primarily near sources of water and snakes and lizards are found predominantly in the grasslands and scrub-shrub habitats (OBS 2011).

3.13.3.2 Birds

A variety of bird species were reported to be in the counties associated with the planning areas, according to the USGS North American Breeding Bird Survey, active survey Route: 67057 (OK-057) (USDI USGS 2011) and the OBS (OBS 2011). Some of the more common species reported in the area were the great blue heron (*Ardea herodias*), turkey vulture (*Cathartes aura*), barred owl (*Strix varia*), great crested flycatcher (*Myiarchus crinitus*), belted kingfisher (*Ceryle alcyon*), gray catbird (*Dumetella carolinensis*), yellow warbler (*Dendroica petechia*), house sparrow (*Passer domesticus*), eastern meadowlark (*Sturnella magna*), field sparrow (*Spizella pusilla*), mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*), red-shouldered hawk (*Buteo lineatus*), killdeer (*Charadrius vociferus*), American crow (*Corvus brachyrhynchos*), chipping sparrow (*Spizella passerina*), red-winged blackbird (*Agelaius phoeniceus*), and common grackle (*Quiscalus quiscula*) (USDI USGS 2011; OBS 2011). These birds are predominantly attracted to water resources, open fields, and woodland habitats in the planning areas.

3.13.3.3 Mammals

A variety of mammal species were reported to be in the counties associated with the planning areas (OBS 2011). Common rodent species reported were the plains pocket gopher (*Geomys bursarius*), fox squirrel (*Sciurus niger*), beaver (*Castor canadensis*), hispid cotton rat (*Sigmodon hispidus*), brush mouse (*Cricetidae boylii*), and the eastern chipmunk (*Tamias striatus*). Rabbit species reported included the eastern cottontail (*Sylvilagus floridanus*) and swamp rabbit (*Sylvilagus aquaticus*). Other common mammals reported included the striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), red bat (*Lasiurus borealis*), and raccoon (*Procyon lotor*). Common predators included the coyote (*Canis latrans*) and the bobcat (*Lynx rufus*) (OBS 2011).

3.13.4 Exotic Mammal Species

No exotic mammal species have been reported in available sources to inhabit the planning areas. According to the Oklahoma Department of Agriculture, “Feral swine population density continues to rise throughout all 77 counties of Oklahoma” (ODA 2012). Feral hogs are likely present in most of the planning areas that contain forest. No species-specific survey for feral hogs was performed nor were there observations of feral hog presence during the field review.

3.14 WILDLIFE MANAGEMENT AREAS

According to information provided by BLM, the Sequoyah National Wildlife Refuge and McClellan-Kerr Wildlife Management Area (WMA) are located approximately 8 miles from the Liberty planning area boundary. The Ouachita WMA, located in LeFlore County, is located approximately 18 miles from the Milton planning area. Based on this information, no WMAs or national wildlife refuges are expected to be affected by activities in the proposed planning areas.

3.15 SPECIAL STATUS SPECIES

The ESA prohibits any person from the “take” (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, relocate, or collect or attempt to engage in any such conduct) of federally listed threatened or endangered species. Habitat modification or degradation that results in death or injury to federally protected species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering is also prohibited. Administration and enforcement of the ESA are the responsibility of the USFWS. The USFWS Environmental Conservation Online System Endangered Species Program lists for Haskell and LeFlore counties were reviewed (USFWS 2011a), as well as the USFWS critical habitat map, to identify designated critical habitat for species potentially occurring within or near the planning areas (USFWS 2011b). Additionally, the ODWC list of state-protected species was researched (ODWC 2011b). This review identified eight federally listed species and one state-listed species known to (or believed to) occur in Haskell and LeFlore counties (Table 3-7). No USFWS-designated critical habitat for listed species was identified for Haskell and LeFlore counties.

**TABLE 3-7
FEDERALLY AND STATE-LISTED THREATENED AND
ENDANGERED SPECIES FOR HASKELL AND LEFLORE COUNTIES**

Common Name	Scientific Name	Federal Status	State Status	County
INSECTS				
American burying beetle	<i>Nicrophorus americanus</i>	Endangered	–	Haskell, LeFlore
BIRDS				
Piping plover	<i>Charadrius melodus</i>	Threatened	–	Haskell, LeFlore
Interior least tern	<i>Sterna antillarum</i>	Endangered	–	Haskell, LeFlore
MAMMALS				
Indiana bat	<i>Myotis sodalist</i>	Endangered	–	LeFlore
FISH				
Leopard darter	<i>Percina pantherina</i>	Threatened	–	LeFlore
Blackside darter	<i>Percina maculata</i>	–	Threatened	LeFlore
MUSSELS				
Winged mapleleaf	<i>Quadrula fragosa</i>	Endangered	–	LeFlore
Ouachita rock pocketbook	<i>Arkansia wheeleri</i>	Endangered	–	LeFlore
Scaleshell	<i>Leptodea leptodon</i>	Endangered	–	LeFlore
SOURCE: USFWS 2011b				

BLM has a legal mandate to conserve and manage threatened or endangered species and their associated critical habitats and has a policy to conserve all special status species. Decision-making should be consistent with BLM’s mandate to recover listed species and with objectives and recommended actions in approved species recovery plans, conservation agreements and strategies, memorandums of

understanding, and applicable biological opinions for threatened and endangered species (BLM Land Use Planning Handbook H1601-1, Appendix C, Page 4).

BLM has entered into a cooperative memorandum of agreement with the U.S. Forest Service, National Oceanic and Atmospheric Association's Marine Fisheries Service, and USFWS to improve Section 7 consultations under the ESA. The goal of the memorandum of agreement is to improve the efficiency and effectiveness of project and programmatic level Section 7 consultation processes and enhance conservation of listed species while delivering appropriate goods and services provided by lands and resources managed by the signatory agencies.

According to the 1994 RMP, the BLM's special status species management program activities in Oklahoma are limited to preparation of environmental analyses and special status species evaluations or clearances and development of stipulations and conditions of approval for impact avoidance or mitigation in the mineral development and lands initiatives.

The 1994 RMP includes CLS-4 for protection of the American burying beetle, a federally listed endangered species, prohibiting surface-disturbing activities that will result in unacceptable impacts on the beetle. The stipulation is specifically attached to leases in Haskell and LeFlore counties. As such, this stipulation would apply to the LAAs. CLS-4, found in the 1994 RMP, contains conservation measures that have become invalid based upon new information and protocol set forth by the USFWS. The BLM is required to ensure compliance with the ESA, as amended, and engage in consultation with USFWS for all authorized activities. Therefore, as part of the current planning effort, the CLS-4 must be revised to comply with the current protocol set forth by USFWS. The revised stipulation for the American burying beetle protection will be:

- CLS-4: American burying beetle protection. The lessee will not conduct surface disturbing activities which could result in impacts to the American burying beetle, a federal listed endangered species until approval is obtained by designated permitting entity. The lessee will be required to follow current American burying beetle protocol as outlined by the USFWS. This protocol and additional information can be located at the USFWS Oklahoma Ecological Services Office website at: (www.fws.gov/southwest/es/Oklahoma/).
- All American burying beetle protocol and ESA coordination/consultation will be cooperatively accomplished with the USFWS. This stipulation will be attached to federal coal leases that occur in areas designated by the USFWS Information, Planning, and Conservation System (IPaC) website (<http://ecos.fws.gov/ipac/>) as possibly containing American burying beetles.

Federal minerals located under private surface lands or federal surface lands managed by another federal agency or permitted by another federal or state agency for surface-management purposes are the most common situations encountered in BLM's coal management program in Oklahoma. In these situations, BLM's responsibilities in Oklahoma do not begin until a BLM mineral action is proposed. As such, special status species resource concerns are addressed through site-specific agency coordination in Oklahoma. Coordination is initiated with the Oklahoma Natural Heritage Inventory and, if necessary, with the USFWS and the ODWC regarding each site-specific BLM project in Oklahoma. These agencies are being consulted for this current project.

The ESA, MBTA, Bald and Golden Eagle Protection Act, BLM policies regarding protection of special status species, and information received from the USFWS, ODWC, and the Oklahoma Natural Heritage Inventory influence the development and application of stipulations.

3.15.1 Special Status Plant Species

No special status plant species were identified for Haskell and LeFlore counties.

3.15.2 Special Status Wildlife Species

Eight federally listed species and one state-listed species are known (or believed) to occur in Haskell and LeFlore counties.

The American burying beetle (*Nicrophorus americanus*) is black with reddish-orange spots. Mature individuals are about 1 to 1.5 inches long. The species requires small animal carrion for reproduction and is found in a variety of terrestrial habitats, especially forest-grassland ecotones and savannas. American burying beetles reproduce in the spring and summer (May through August). The American burying beetle is a federally listed endangered species for Haskell and LeFlore counties.

The piping plover (*Charadrius melodus*) is a migratory shorebird that generally occupies drier portions of broad sandy expanses along rivers and reservoirs with sparse vegetation. While sparse clumps of grass or herbaceous vegetation are important, encroachment of woody vegetation is detrimental to plover habitat. The piping plover is a federally listed threatened species for Haskell and LeFlore counties.

The interior least tern (*Sterna antillarum*) inhabits sparsely vegetated sand and gravel bars with adjacent open reaches of river, broad sandy areas, or salt plains. Least terns occupy Oklahoma during the summer months but generally leave by early September to winter along the coast of Central and South America. The Liberty, Spiro, and part of the McCurtain planning areas are located within a federally listed aquatic dependent species (HUC 11) watershed for the interior least tern (USFWS 2011c). The interior least tern is a federally listed endangered species for Haskell and LeFlore counties.

The Indiana bat (*Myotis sodalis*) hibernates in karst features such as caves, sinkholes, springs, and along losing streams. During the summer, they typically roost in small colonies under bridges, in old buildings, under tree bark, or in hollow trees. Indiana bats forage above small- to medium-sized streams, preferably lined with large, overhanging trees. The Indiana bat is a federally listed endangered species for LeFlore County.

The leopard darter (*Percina pantherina*) has 11 to 14 large, dark spots on its sides and rarely exceeds 3 inches in length. They are found in intermediate to larger streams. Spawning occurs on gravel substrates; however, the dominant riffle substrate may be gravel, rubble, boulder, or bedrock. None of the planning areas are located within a federally listed aquatic species (HUC 11) watershed for the leopard darter (USFWS 2010). The leopard darter is a federally listed threatened species for LeFlore County.

The blackside darter (*Percina maculata*) has green and gray sides with 6 to 8 large oblong dark blotches and grows to a maximum length of 3.5 inches. These darters inhabit shallow pools with moderate currents in cool, gravel-bottom, medium-sized streams. The blackside darter is a state-listed threatened species for LeFlore County.

The winged mapleleaf (*Quadrula fragosa*) is a mussel that grows up to 4 inches long. Mapleleaf mussels are found in riffles with clean gravel, sand, or rubble bottoms and in clear, high quality water. Recent occurrence records for the species are documented from the Kiamichi and/or Little River(s) (Galbraith et al. 2008). A portion of the Kiamichi River watershed is located in southern LeFlore County. None of the planning areas are located within a federally listed aquatic species (HUC 11) watershed for the winged mapleleaf (USFWS 2010). The winged mapleleaf is a federally listed endangered species for LeFlore County.

The Ouachita Rock pocketbook (*Arkansia wheeleri*) inhabits pools, backwaters, and side channels of certain rivers and large creeks in or near the southern slope of the Ouachita Uplift. They occupy stable substrates containing gravel, sand, and other materials and always occur within large mussel beds containing a diversity of mussel species. Recent occurrence records for the species are documented from the Kiamichi and Little rivers (Galbraith et al. 2008). A portion of the Kiamichi River watershed is located in southern LeFlore County. None of the planning areas are located within a federally listed aquatic species (HUC 11) watershed for the Ouachita Rock pocketbook (USFWS 2010). The Ouachita Rock pocketbook is a federally listed endangered species for LeFlore County.

The scaleshell (*Leptodea leptodon*) is a relatively small mussel that is approximately 1 to 4 inches in length. This species occupies medium-sized and large rivers with stable channels and good water quality. Recent occurrence records for the species are documented from the Kiamichi and/or Little River(s) (Galbraith et al. 2008). A portion of the Kiamichi River watershed is located in southern LeFlore County. None of the planning areas are located within a federally listed aquatic species (HUC 11) watershed for the scaleshell mussel (USFWS 2010). The scaleshell mussel is a federally listed endangered species for LeFlore County.

3.16 NOXIOUS WEEDS AND NON-NATIVE SPECIES

According to the NRCS (USDA NRCS 2011) Plants Database, three species are listed on the Noxious Weeds List for the state of Oklahoma. These species are musk thistle (*Carduus nutans*), Scotch thistle (*Onopordum acanthium*), and Canada thistle (*Cirsium arvense*) (USDA NRCS 2011).

Non-native species also occur within and in the vicinity of the planning areas. Most non-native plant species are not problematic and some are considered beneficial. Crested wheatgrass is an introduced, non-native species that is typically easy to establish and commonly recommended for forage production and soil stabilization in arid regions (USDA NRCS 2011). Other non-natives, such as cheatgrass (*Bromus tectorum*), Sericea lespedeza (*Lespedeza cuneata*), and Johnsongrass (*Sorghum halepense*) have become severe weeds that often out-compete native grasses and forbs. Where these species replace significant proportions of native plant communities, they may modify vegetation structure, fire regimes, hydrology, soil erosion rates, and forage production. These changes can have significant effects on wildlife populations (USDA NRCS 2011).

3.17 HAZARDOUS MATERIALS

There are several guidance documents for BLM in addition to the guidelines provided in Section 2.4.4. BLM's hazardous materials management is generally accomplished by incorporation of site-specific mitigation measures for each BLM authorized action or approval. These mitigation measures are informed by BLM guidance documents including BLM Manual H-1703-1, CERCLA Handbook, which provides guidance to BLM employees regarding hazardous substance releases, and BLM Manual MS-1703 which provides a framework for hazardous materials management.

Based on the ODEQ database of active municipal landfills, large-quantity hazardous-waste generators, Superfund sites, hazardous-waste treatment, storage, and disposal facilities and voluntary cleanup sites, none is located in the four planning areas.

On a larger scale, within LeFlore County, the Heatherly Mining Landfill and the Rab Valley Wood Preserving sites were identified.

The Heatherly Mining Landfill, located 3 miles north of Panama, Oklahoma, has a No Further Remedial Action Planned status. This site is an Abandoned Mine Lands Comprehensive Environmental Response, Compensation, and Liability Information System site, EPA ID number OKD987095023.

Rab Valley Wood Preserving is working under an agreement for voluntary cleanup with the ODEQ (EPA 2012). Rab Valley Wood Preserving, EPA ID number OKD987068749, occupies approximately 30 acres in Panama, Oklahoma. According to the ODEQ: “The former wood preserving facility, which operated from the 1930s to 1976, consisted of a liquid recycling pond, a firewater pond, and four unlined surface-water impoundments containing wood treating liquids and sludge. Historical operations conducted at the site included pole manufacturing, wood treatment, and shipping”(ODEQ 2002).

Within Haskell County, there were no Superfund or Comprehensive Environmental Response, Compensation, and Liability Information System sites active in the EPA database (EPA 2012).

During the scoping process, the Bokoshe Mining Landfill in LeFlore County also was identified as a public hazardous waste concern. The Bokoshe Mine is a former coal mine in which fly ash slurry has been used for reclamation of the former pit. Concern has been expressed that the mine is no longer a reclamation project but a disposal landfill. The potential for other mines to be converted to fly ash disposal areas was a significant public concern identified during scoping.

3.18 NOISE

Noise, in its simplest definition, is unwanted sound. It can be said that one person’s noise is another’s music, which sets in place the basis of environmental noise concerns. Although high noise levels may cause hearing loss, the levels typically found in environmental or community noise assessments are well below a hazardous level. Community noise ordinances and environmental noise complaints typically center on annoyance instead of potential hearing loss.

Sound, whether wanted or unwanted, liked or disliked, and safe or hazardous, may be defined as a disturbance of particles in air, or any other medium, which is in contact with a vibrating source. If the medium is air, rapid changes in atmospheric pressure are propagated outward in all directions in alternating waves of expansion and compression until they encounter some surface. If the surface it encounters is a living creature’s ear, it will convert the changes in air pressure into patterns of nerve impulses that are transmitted to the brain, where they are recognized as sounds unique to the specific pattern of the original vibrations. It is at this moment in time that the sound is determined to be wanted or unwanted, depending solely on the receptor’s attitude toward it.

Certain sounds with high intensity (loudness) are considered unwanted to most individuals; these may include household appliances, heavy industrial machinery, ground- and air-transportation vehicles, etc. Other sounds may be considered unwanted to only very few individuals or at certain times of the day; these may include pets, neighbors, small appliances, etc. These noises may be very faint but still able to generate significant disturbance to some individuals. Therefore, other than very intense sounds, no one noise will invoke the same response from everyone.

Two key parameters that describe the nature of pressure fluctuations in a medium are frequency and wavelength. Frequency and wavelength are related to each other through the speed of sound, which dictates the direction of sound travel and the time that it arrives at a listener’s ears. Frequency describes the number of cycles of pressure variation per second or the number of expansion and contraction (back and forth) motions of the pressure waves. Frequency is measured in hertz (Hz). Sounds composed of a single frequency are rare in nature and are called pure tones. Pure tones typically exist in musical instruments or electronically synthesized sounds. When pure tones exist in the environment, they have a tendency to be more annoying to people than other typical sounds. Typical sounds that we are accustomed to are composed of many different frequencies that allow us to distinguish what produced the sound, even if it is barely audible.

The human ear can hear frequencies between 20 and 20,000 Hz; although we are most sensitive to sounds with frequencies between 500 and 4,000 Hz. The dominant energy components of human speech fall within the 500 to 2,000 Hz range, with vowels in the low end and consonants in the higher end of the speech range.

The range of acoustic pressures we respond to covers a magnitude of 1 to 1 million, from the threshold of just able to hear to the threshold of pain. This vast range of sound pressures and the fact we must double the pressure to barely sense a change, the logarithmic scale was adopted for describing sounds. The basic unit of sound level is the decibel (dB). Because sound is represented by a logarithmic scale, sound levels cannot be simply added but must use logarithmic mathematics. Therefore, if two identical 60 dB sources are present, then the combined sound level will be 63 dB instead of 120 dB. The larger the difference between the two sound levels, the closer the combined sound level will be to the higher one (i.e., 70 and 60 dB will still be 70 dB).

Combining all of the various frequencies is called “weighting.” The weighting system that reflects the human hearing system is the “A” scale. The “A” scale is less sensitive at very low frequencies (less than 500 Hz) and extremely high (greater than 4,000 Hz) than at the mid-range frequencies. Sound levels reported using the “A” scale is identified as dB(A). Noise levels are typically measured with a sound level meter that incorporates a filter and reports the sound level in dB(A).

Measurements made and reported as dB(A) will represent the environmental noise at a given time period; however, environmental noise varies continuously and will encompass many sources of noise from near and distant sources. Table 3-8 provides some common noise sources. When averaged over time, background noise tends to create a relatively stable sound level with no distinct source being identified. A single identifiable descriptor called the equivalent sound level (L_{eq}) is used. L_{eq} is the energy mean A-weighted sound level during a measured time interval. It represents an equivalent constant sound level to represent the fluctuating level measured. The L_{eq} must be used within a specified period.

**TABLE 3-8
NOISE LEVELS OF COMMON SOURCES**

Sound Source	dB(A)
Air-raid siren at 50 feet (threshold of pain)	120
Maximum levels in audience at rock concert	110
On platform by passing subway train	100
On sidewalk by passing heavy truck or bus	90
On sidewalk by typical highway	80
On sidewalk by passing automobiles with mufflers	70
Typical urban area background or busy office	60
Typical suburban area background	50
Quiet suburban area at night	40
Typical rural area at night	30
Isolated broadcast studio	20
Audiometric (hearing testing) booth	10
Threshold of hearing without hearing damage	0

A special term to represent the noise over a 24-hour period is the L_{DN} , a day-night average. Noise is generally more annoying and intrusive at night so the L_{DN} adds 10 dB to sound levels between 10:00 pm and 7:00 am (some noise ordinances may use a different time scale) prior to adding the levels. Table 3-9 provides a summary of the effects of noise on people based on a federal study.

Some land uses will be classified as being noise-sensitive. Noise-sensitive receptors are land uses associated as indoor and outdoor activities that may be subject to stress or significant interference from noise. Noise-sensitive receptors may include private residences, educational facilities, libraries, hotels and motels, hospitals, and/or nursing homes. The primary noise sources within the planning areas currently include noise from adjacent mining operations, as well as highway and local roadway traffic.

**TABLE 3-9
EFFECTS OF NOISE ON PEOPLE**

L_{DN}	Hearing Loss	Percent Annoyance	Average Community Reaction	General Community Attitude Towards Area
>75	May begin to occur	37	Very Severe	Noise is likely to be the most important of all adverse aspects of the community.
70	Will not likely occur	22	Severe	Noise is one of the most important adverse reactions of the community.
65	Will not occur	12	Significant	Noise is one of the important adverse reactions of the community.
60	Will not occur	7	Moderate	Noise may be considered an adverse aspect of the community.
<55	Will not occur	3	Slight	Noise considered no more important than various other environmental factors.

SOURCE: Federal Interagency Committee on Noise 1992

3.19 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA) stipulates that federal agencies give due consideration to historic properties (e.g., resources eligible for the NRHP) as federal undertakings such as federal projects or federally funded or licensed projects are planned and implemented. Regulations for *Protection of Historic Properties* (36 CFR Part 800) define the process for demonstrating such consideration by consulting with the State Historic Preservation Office (SHPO), the federal Advisory Council on Historic Preservation (ACHP), American Indian tribes, and other interested organizations and individuals.

Because the planning areas are on privately owned land and not on BLM-administered public land, federal regulation such as the Archaeological Resources Protection Act and the Native American Graves Protection and Repatriation Act (NAGPRA) are not applicable. However, the American Indian Religious Freedom Act (AIRFA) would apply. AIRFA is a joint resolution of Congress, expressing as policy that the United States will respect and protect the right of American Indian tribes to the free exercise of their traditional religions. Under AIRFA, agencies should consult with tribes about anything that might affect their religious practices. The agency does not have to accede to a tribe's wishes, but it has to determine what the wishes are and consider them (King 1998).

NEPA also applies as federal agencies must take into account the effects of federal undertakings on the environment (including cultural resources). As the BLM is the federal agency responsible for leasing federally owned coal, the four proposed federal coal lease actions constitute a federal undertaking. Provisions of Section 110 of the NHPA and the ACHP regulations are the basis for the BLM to tailor the NEPA procedures to historic preservation needs.

BLM also has issued policy in the form of manuals, including Manual 8100 – Cultural Resource Management, Manual 8110 – Identifying Cultural Resources, Manual 8120 – Protecting Cultural Resources, Manual 8130 – Utilizing Cultural Resources for Public Benefit, and Manual 8160 – Native

American Coordination and Consultation. In addition, specific policy for addressing cultural resources in RMPs has been issued as Information Bulletin 2002-101. The bulletin defines policy for identifying cultural resources, defining management goals, allocating uses of cultural resources, and defining management actions to support the plan goals.

3.19.1 Cultural Historical Context

Human groups have occupied Oklahoma for at least 11,000 years. The early groups adapted to environmental conditions that have changed significantly since the end of the Pleistocene epoch, ca. 10,000 years before present (B.P.). Whereas the climate of eastern Oklahoma today is generally characterized by hot, humid summers and cool, dry winters (Albert and Wyckoff 1984:17), the regional climate during the Holocene epoch (post-10,000 B.P.) has varied from warm and dry (ca. 9000 to 4000 B.P.), through a period of generally greater effective moisture (ca. 4000 to 1000 B.P.), to warm and wet conditions (ca. 1000 B.P. to present) (Albert and Wyckoff 1984:39-42). Major droughts interrupted the more recent end of this sequence at 250, 400, 800, and 2000 years B.P. (Albert and Wyckoff 1984: 42). Climatic fluctuations altered the pattern of natural vegetation from grassland and oak savanna to forests of oak, hickory, and pine, as well as mosaics of woodlands and prairies (Albert and Wyckoff 1984:38-39). The distributions of animals mirrored these vegetative changes, an outcome that was important to the prehistoric groups that used these lands, plants, animals, and minerals.

3.19.1.1 Paleoindian Period (10,000 to 7000 B.P.)

The Paleoindian Period is the earliest substantiated cultural period in the region. During this period, groups of hunters pursued mammoth, bison, and other megafauna using spears tipped with distinctive projectile points such as Clovis, Folsom, Agate Basin, Dalton, Frederick, and Scottsbluff (Gettys 1984). Much debate has centered around the chronological placement of the Dalton complex; however, recent research indicated this complex is not contemporaneous with early Archaic corner-notched or side-notched point assemblages and is better placed in the late Pleistocene, very early Holocene, or on the boundary of the two (Ballenger 2001; Goodyear 1982). Several sites also have exhibited evidence of reliance on a wide variety of plant and animal species (Hofman and Graham 1998:118, 120). For example, use by smaller mammals such as deer, squirrel, raccoon, and turkey, as well as riverine resources (e.g., turtles and fish) have been documented at sites around the Ozark Mountains and within the Mississippi River valley during the Late Paleoindian Period (Ballenger 2001). Hickory nuts and acorns also were collected in upland settings (McMillan and Klippel 1981). Few Paleoindian sites have been excavated in Oklahoma, and in situ sites of the Clovis complex have not been found in eastern Oklahoma. Private artifact collections from below the Lake Eufaula Dam suggest intensive use of high-quality cherts from eastern Oklahoma by Paleoindian peoples (Kraft and Lail 1998). Folsom points have been reported from the Arkansas River bed in Tulsa County, below the dam at Eufaula Lake, and from southwest Missouri and northeast Arkansas; however, these finds were always encountered in isolated, redeposited contexts (Neal and Benefield 2001; Wyckoff and Rippey 1998:17). The Dalton complex has been recorded at several sites and from surface finds in eastern Oklahoma (Ballenger 2001; Kay 1998; Neal and Benefield 2001; Wyckoff 1984; Wyckoff and Rippey 1998).

3.19.1.2 Archaic Period (7000 B.P. to A.D. [*anno domini*] 300)

The Archaic Period represents a time of changing environmental conditions that required modifications of the big-game-hunting lifestyle. Archaic groups broadened their resource base by fishing, gathering plants, and hunting both large- and small-game animals (e.g., white-tailed deer, elk, turkey, and raccoon). Archaic components are recognized by a diversified tool kit (ground-stone artifacts, smaller side- and corner-notched projectile points, bone artifacts, beads, and fishing hooks and weights) and features (firepits, burned rock middens, storage cists, and architecture). Despite a relatively sizable number of sites in eastern Oklahoma that have been assigned to the Archaic Period, cultural sequences and similarities

across the area are still poorly known (Wyckoff 1984: 127). The Archaic stage is divided into three periods that reflect changing environmental conditions and human responses to those conditions: Early Archaic (9500 to 6000 B.P.), Middle Archaic (4000 to 2000 B.P.), and Late Archaic (4000 to 2000 B.P.). Each of these periods is divided further into complexes, phases, aspects, and foci that represent regional adaptations of different groups to unique habitats (Wyckoff 1984: 145).

Identifying definitive Early Archaic components has been difficult due to a lack of stratigraphic separation of the cultural materials (Wyckoff 1984:134). Sites with Middle Archaic components are more common than Early Archaic sites in eastern Oklahoma. However, this period is still poorly documented in the region either because of emigration in response to harsher conditions during the Altithermal or climate changes that resulted in deep burial or erosion of sites of this period (Neal and Drass 1998:39). Sabo et al. (1988:48) note that there is a substantial increase in the number of projectile-point styles during the Middle Archaic period, possibly because of regional variability. Sites with Late Archaic components are characterized by greater exploitation of aquatic resources, intensification of plant-food processing, projectile-point-technological changes, regional and long-distance trade, and possibly horticultural activities (Kay 1998:194-195; Sabo et al. 1988:64; Wyckoff 1984).

3.19.1.3 Woodland Period (A.D. 300 to 1000)

The Woodland Period heralds a significant shift in subsistence and settlement for eastern Oklahoma, from hunting and gathering cultures to more sedentary adaptations. The hallmarks of this period are technological innovations such as pottery, the bow and arrow, and horticulture. The principal Woodland manifestation in southeast Oklahoma is the Fourche Maline phase (ca. A.D. 300-1000), which appears to have been a cultural continuation of the Late Archaic Wister phase (1500 B.P. to A.D. 300), as well as an antecedent to the Mississippian-influenced Caddoan culture during the Late Prehistoric Period (Sabo et al. 1988:80). Fourche Maline is distinguished by pottery, expanding stemmed and corner-notched projectile points, black and greasy-soil middens, and double-bitted axes (Galm 1984). Sites with these attributes are concentrated along the Poteau River and its major tributaries (including the phase's namesake, the Fourche Maline) in Wister Valley; however, they also have been traced to the Sans Bois drainage of the Arkansas River Valley (Picarella 1998).

3.19.1.4 Late Prehistoric Period (A.D. 1000 to 1600)

The Late Prehistoric Period is represented by new forms of social integration associated with the Mississippian or Caddoan traditions (defined locally as the Northern Caddoan, Arkansas Valley Caddoan, or the Arkansas River Caddoan subarea [Bell 1984a; Brown 1984; Brown et al. 1978; Neal and Benefield 2001:42; Rohrbaugh 1984; Sabo et al. 1988:103; Wyckoff 1980]). The Caddoan tradition is evidenced by local and regional mound centers, mixed farming, and hierarchical treatment of the dead.

Harlan Phase (ca. A.D. 1000 to 1250)

The Harlan Phase, whose origins are to be found in the Fourche Maline phase, represents a noteworthy advance in cultural complexity. Named after the Harlan Site (34CK6) in Cherokee County, Harlan phase sites are scattered along the Arkansas River Valley and its tributaries in eastern Oklahoma (Bell 1984a). It is distinguished by two site types: sites with mounds and sites without mounds. The mound sites served as local or regional community centers, surrounded by small satellite communities and farmsteads (Bell 1984a: 228). These sites were part of a trade and exchange network controlled by a religious and political authority. Subsistence was based on agriculture, hunting, fishing, and plant gathering. The mound sites include mortuary structures with human burials and panoplies of grave goods. Harlan phase sites are characterized by varied assemblages of artifacts, including chipped stone, ground stone, bone, pottery, stone pipes, stone beads, copper, shell, and wood.

Spiro Phase (ca. A.D. 1250 to 1450)

The Spiro Phase represents the peak of social complexity and cultural elaboration in the Arkansas Valley of eastern Oklahoma (Brown 1984). Spiro phase sites are found in the floodplains and valleys of the Arkansas River and its principal tributaries. It is distinguished by three basic site types: ceremonial centers (with public buildings and platform mounds), permanent residential sites of varying sizes (hamlets, farmsteads, and villages), and various temporary camps and specialized collecting stations (Brown 1984: 282). Subsistence patterns remain unchanged, focusing on agriculture, and augmented by hunting, fishing, and gathering. Only a small fraction of the population controlled and possessed high-value goods that were shaped into, or embellished with, decorative motifs. A religious belief system was evidenced in mortuary practices, ritual destruction of important buildings, and ritual activity at mound centers (Sabo et al. 1998:109-113; Story et al. 1990:341).

Fort Coffee Phase (A.D. 1450 to 1600)

The Fort Coffee Phase is represented by a decline in ceremonialism and social hierarchy, and this change may have been relatively abrupt (Rogers 2006:25). No new mound centers were constructed, and the remaining mound centers were no longer used for elaborate mortuary ritual. A decline in long-distance trade for high-value items with Eastern cultures also is evidenced in the lack of ceremonial artifacts. A shift toward Plains-oriented lifeways is apparent in the presence of bison bone tools, as well as the possible periodic abandonment of settlements for bison hunting expeditions to the west (Sabo et al. 1988:112). Rogers (2006) argues that the interactions with the Plains Village groups were just as important for the transfer of knowledge as for the transfer of materials. Trade apparently continued between the Arkansas Valley inhabitants and the Red River Caddoan region to the south, which is evidenced by the presence of Caddoan pottery types in archaeological assemblages of this time period (Rogers 2006:24). Populations during the Fort Coffee phase maintained local interactions between sites in spite of the lack of regional social hierarchies as evidenced in the relative consistency in material assemblages (Rogers 2006:25). Base camps became more common and it is likely that smaller temporary camps and work sites also characterize the Fort Coffee phase (Wyckoff 1980). Rohrbaugh (1982; 2012) suggests the Fort Coffee phase is ancestral to the Kichai and the Norteño foci of north Texas. Introduction of Old World disease has been considered an important phenomenon that should not be overlooked for the major changes in the Fort Coffee phase, as well as the archaeological discontinuity between this phase and the historically known groups in the region (Rogers 2006:25).

3.19.1.5 Protohistoric (or Contact Period)

The Protohistoric (or Contact) Period refers to the period when limited European visits occurred in Oklahoma, typically by explorers, trappers, or traders (Hofman et al. 1989:91). At the time of European contact, the principal indigenous group was known as the Wichita, a “number of autonomous but culturally similar tribes and subtribes...” including the Taovaya, Tawakoni, Iscani, Wichita proper, Waco, and Kitsai (Newcomb 2001: 548). The Wichita lived in large concentrated villages, often surrounded by earthwork fortifications (Bell 1984b: 366). Houses were small circular, oval-shaped, or large circular structures that may have served as a community center. The villages were surrounded by small refuse mounds and cache or storage pits. Food was obtained through hunting, fishing, gathering, and plant cultivation. The basic toolkits consisted of a variety of stone, bone, shell, and clay tools and implements (Bell 1984b: 371). The Wichita traded horses, slaves, furs, hides, animal products, possibly honey and tobacco, and other native products for firearms, glass beads, ornaments, or metal tools with the Spanish and French explorers and traders, who were traveling up the Arkansas River in search of gold and furs.

Two Spaniards, Francisco Vásquez de Coronado from the west and Hernando De Soto from the east, entered the area known as present-day Oklahoma in 1541 (Maloney 1998). The arrival of these men, and other Europeans and Americans who followed, altered slowly but irrevocably the lifeways of indigenous

groups. Other Spanish explorers followed, principally searching for gold. In 1682, the territory drained by the Mississippi was claimed by Robert Cavalier, Sieur de la Salle, as part of the French Empire in North America. By 1700, French traders were established in Oklahoma and had developed trading relationships with Wichita groups in the Arkansas Valley (Gibson 1984:19; Morris et al. 1986: Map 13; Odell 2002). The Arkansas Valley also functioned as a hunting ground for the Caddo and the Quapaw; however, the Caddo were in the process of emigrating toward the Red River largely due to the constant raiding by the Osage from the north (Gettys 1995:11; Miller 1977:23). In 1719, the French explorer Jean Baptiste Bénard de la Harpe explored the southeastern part of the state. La Harpe returned in 1721, ascending the Arkansas River and exploring the eastern part of the state. Increasingly greater numbers of French traders and trappers followed, finding their way into more remote parts of Oklahoma by way of small boats. France transferred their lands west of the Mississippi, known as the Province of Louisiana, to Spain in 1763. The Choctaw, encouraged by Spanish officials, began to settle on the Ouachita and Lower Red rivers of southeastern Oklahoma as early as the 1760s and 1770s to escape the encroachment of European settlers streaming into their homelands along the Mississippi-Alabama border region. By the late 1770s, hundreds of new Choctaw settlers were raiding Caddo and Wichita villages, stealing horses, cattle, and food. The Caddo and Wichita responded with counter raids. The situation became so desperate that by the 1790s, the Caddo and Wichita pleaded with the Spanish Governor at Natchitoches for relief while the Choctaw petitioned to resettle in Spanish Texas (La Vere 2000:26-29). Napoleon Bonaparte reacquired the province in 1803 for France but sold it to the United States in May 1804.

3.19.1.6 Historic Period

The Historic Period (A.D. 1800 to 1961) began with American exploration into the area almost immediately after the Louisiana Province was transferred from France to the United States. The first permanent white settlement in Oklahoma, a trading post established by the Chouteau brothers, was made in 1802. In 1817, Fort Smith was established at the mouth of the Poteau River, on the eastern border of Oklahoma. Other military posts were established soon thereafter: Fort Gibson on the east bank of the Grand River and Fort Towson a few miles from the mouth of the Kiamichi River in 1824. The first steamboat ascended the Arkansas River to Fort Smith in 1820. Establishment of these forts resulted in major influxes of American homesteaders, settlements, trade, and military road construction into eastern Oklahoma (Gibson 1984:29; Morris et al. 1986:37).

Major native demographic changes also were occurring in the 1800s in eastern Oklahoma. Significant population pressures from European-American settlements along the eastern margins of the continent and the introduction of Old World diseases resulted in a wave of population movement and mass death that altered the settlement patterns and interactions among the native population to the west. This process was accelerated by the United States government policy of Native American removal. Between 1820 and 1907, Oklahoma was indicated as Indian Territory on maps of the United States, and, during this period, it served the nation as an Indian resettlement zone for tribes from various parts of the country. In May 1830, Congress passed the Indian Removal Act, which resulted in immense repercussions for all native groups in the United States. By 1838, most of Indian Territory was assigned to five Indian nations from the east (Cherokee, Choctaw, Chickasaw, Creek, and Seminole (Gibson 1984:31). Lands south of the Arkansas and Canadian rivers in Oklahoma were ceded by the United States in 1825 to the Choctaws residing in Arkansas (Morris et al. 1986: Map 19). In 1830, the Choctaws ceded all their land east of the Mississippi to the United States (Morris et al. 1986: Map 23). Post-removal settlement patterns and tribal land tenure resulted in two separate Choctaw classes that were already evident in racial/class divisions prior to removal to Indian Territory (Faiman-Silva 1997:51-53).

Although Oklahoma was peripheral to the main actions of the Civil War (1860 to 1865), minor skirmishes and battles did take place. Confederate outposts were established early on during the war, but federal

forces invaded the state in 1862 and the tides of war ebbed and flowed across the state for the next three years. The Indian tribes were caught between the warring groups.

Recovering from the generally disastrous consequences of the war, the various tribes renewed their treaties with the U.S. government and re-established themselves over the next 10 years. New provisions in the treaties required the tribes to give up land because of their association with the Confederacy, to open their land to railroads, and to adopt their former slaves as full citizens (known as the Freedmen) (Morris et al. 1986: Map 33). The pre-Civil War immigration of European-Americans paled in comparison to the late nineteenth century. Many European-Americans sought refuge in Indian Territory to avoid debts in the United States (Debo 1934:184). The Missouri, Kansas, and Texas Railway Company began building in Indian Territory in 1870, crossing the Choctaw Nation. One reason for the construction of the railroad lines was the rapidly developing mineral and timber industries in Indian Territory. Coal deposits were found in the Choctaw and Cherokee Nations and skilled coal miners emigrated from Europe. By 1907, more than 8,000 immigrant workers were living in Indian Territory and most brought their families and became permanent settlers (Gibson 1984:114-115).

Congress passed the Dawes Allotment Act in 1887. In 1893, this law was applied to the Cherokee, Choctaw, Chickasaw, Creek, and Seminole Nations in Indian Territory. Tribal ownership of the land ceased, and each Indian citizen was required to accept an allotment of land. Each Choctaw received about 320 acres, and each Choctaw Freedmen was allotted 40 acres (Gibson 1984:118). Congress also passed the Curtis Act in 1898 that ended tribal government in Indian Territory. This Act provided for the survey and incorporation of towns and voting rights to townsmen. It established free public schools and abolished tribal courts. Thus, all persons residing in Indian Territory were subject to federal law and the laws of Arkansas (Gibson 1984:119). The Dawes Act and the Curtis Act paved the way for Indian Territory and Oklahoma Territory to become part of the United States. These two territories were combined, and the state of Oklahoma was admitted into the Union in 1907. Despite these immense setbacks, Choctaw communities persisted. In small rural enclaves, the Choctaw were often clustered around a Christian church where they could raise a few crops and cattle (Kidwell 2007:206).

The Great Depression of the 1930s was difficult for many Oklahoma communities. Numerous images from eastern Oklahoma attest to the damage done to the land and soils by poor farming practices, and hundreds of Choctaw, along with other Oklahomans, migrated to California, Washington, and Oregon in search of better jobs and a better living (Conley 2005:204). Several small towns and communities in Oklahoma have a history of flourishing until the onset of the Great Depression. Post offices in many of these communities were discontinued in the 1950s due to the shrinking population. Near the planning areas, towns such as Stigler (originally named Newman), McCurtain (originally named Panther), and Spiro have persisted despite economic difficulties.

3.19.2 Site Inventory

3.19.2.1 Milton Planning Area

One resource listed in the Oklahoma Landmarks Inventory by the Oklahoma SHPO is located within the Milton planning area. This resource is Unidentified Strip Mine Site #49 (ID#5153) and was recorded in 1990. This resource consists of a series of three long, narrow strip ponds, each 300 feet long and 90 feet wide. The strip pits parallel an abandoned railroad ROW. The total area of the site is approximately 20 acres. This resource was recommended for further research to determine eligibility for listing to the NRHP. A second resource listed in the Oklahoma Landmarks Inventory by the Oklahoma SHPO may be located within the Milton planning area. This resource is the Fort Smith and Western Railroad Trestle Structure (ID#5184). This structure is described as a wooden railroad trestle on the Fort Smith and Western Railroad (later known as the Fort Smith and Van Buren Railroad), is approximately 100 feet long

and 40 feet high, and was considered important in the development of the Oklahoma coal industry. This resource was also recommended for further research to determine eligibility for listing to the NRHP.

None of the resources listed on the NRHP within Haskell and LeFlore counties is within the Milton planning area and no effects are anticipated by the proposed activities. Documentation and photographs for any structures more than 45 years old should be submitted to the Oklahoma SHPO on their Historic Preservation Resource Identification Forms. If there are no structures in the Milton planning area, a letter to that effect should be forwarded to the SHPO. Similar documentation should be provided to the SHPO for historic properties or remains relating to twentieth century mining operations within the Milton planning area, such as the Unidentified Strip Mine Sites #49 and the Fort Smith and Western Railroad Trestle Structure.

The archaeological site files at the OAS office were reviewed on December 15, 2011, and no archaeological sites are recorded within the Milton planning area. In addition, no structures were identified on the 1898 General Land Office (GLO) township maps and the 1911 USGS 1:125,000 topographic map (Sallisaw, Oklahoma). However, one structure was identified on the 1900 USGS 1:125,000 topographic map (Sallisaw, Indian Territory). Based on the topographic and hydrological setting of the Milton planning area as well as the historic map data, archaeological materials are considered likely to be present. An archaeological survey will be required by either BLM or OSM prior to mining activities. This Phase I (BLM Class III) survey would be required under the requirements of Section 106 of the NHPA and consultation with relevant American Indian tribes will occur.

3.19.2.2 Spiro Planning Area

Of the resources located within LeFlore County listed on the NRHP or the Oklahoma Landmarks Inventory, none is within the Spiro planning area and are not anticipated to be affected by the proposed activities associated with the Proposed Action. Documentation and photographs for any structures more than 45 years old should be submitted on Historic Preservation Resource Identification Forms and submitted to the SHPO. If there are no structures in the Spiro planning area, a letter to that effect should be forwarded to the SHPO. Similar documentation should be provided to the SHPO for historic properties or remains relating to twentieth century mining operations within the Spiro planning area.

The archaeological site files at the OAS office were reviewed on December 15, 2011. Three archaeological sites are recorded that could be located within the Spiro planning area: 34LF88, 34LF100, 34LF135. The exact locations of these sites are vague and information is limited to the nearest quarter-section. It also is possible two additional archaeological sites (34LF105 and 34LF140) are located within the Spiro planning area; however, the information available for these two sites is limited and the exact locations of these sites are unknown. No structures were identified on the 1898 GLO township maps within the Spiro planning area. One structure was identified on the 1900 USGS 1:125,000 topographic map (Sallisaw, Indian Territory). No structures were identified on the 1911 USGS 1:125,000 topographic map (Sallisaw, Oklahoma). Based on the topographic and hydrological setting of the Spiro planning area as well as the historic map data and previously recorded archaeological site data, archaeological materials are considered likely to be present within the planning area.

Since underground mining is proposed within the Spiro planning area and the ground surface would not be impacted by mining or reclamation activities, no archaeological survey would be required by either BLM or OSM prior to mining activities. However, if the ground surface will be impacted within the Spiro planning area, then a Phase I (BLM Class III) survey would be conducted under the requirements of Section 106 of the NHPA.

3.19.2.3 Liberty Planning Area

Of the resources located within Haskell County listed by the Oklahoma SHPO in the Oklahoma Landmarks Inventory or the NRHP, none are within the Liberty planning area and are not anticipated to be affected by proposed activities associated with the Proposed Action. Documentation and photographs for any structures more than 45 years old should be submitted on Historic Preservation Resource Identification Forms and submitted to the SHPO. If no structures are located in the Liberty planning area, a letter to that effect should be forwarded to the SHPO. Similar documentation should be provided to the SHPO for historic properties or remains relating to twentieth century mining operations within the Liberty planning area.

During the scoping phase of this project, comments regarding cultural resources were received from the public pertaining to 240 acres owned by the Green family, which is apparently within the Liberty planning area. These comments indicate three different locations appear to contain undisturbed prehistoric and historic archaeological sites, as well as an historic-age structure believed to be known as the second post office in Haskell County, and a graveyard. The exact locations of these cultural resources are unavailable at this time. The archaeological sites files at the OAS office were reviewed on December 15, 2011, and no archaeological sites are recorded within the Liberty planning area. A review of the 1898 GLO township maps revealed four structures located within the Liberty planning area. No structures are depicted within the Liberty planning area on the 1900 USGS 1:125,000 topographic map (Sansbois, Indian Territory); however, six structures are depicted on the 1911 USGS 1:125,000 topographic map (Sansbois, Oklahoma). Based on the topographic and hydrological setting of the Liberty planning area, as well as historic map data and public comments, archaeological materials are considered likely to be present. An archaeological survey will be required by either BLM or OSM prior to mining activities. This Phase I (BLM Class III) survey should be conducted under Section 106 of the NHPA.

3.19.2.4 McCurtain Planning Area

Two resources listed in the Oklahoma Landmarks Inventory by the Oklahoma SHPO are located within the boundaries of the McCurtain planning area. These resources are part of several historic-age strip mines that encompass the Evans Coal Company District and are Strip Mine Site #1 (ID#5142) and Strip Mine Site #3 (ID#5144). The Evans Coal Company District was recorded in 1990 as a 4-mile-long strip mining area and represents a form of coal strip mining that was especially prevalent in Oklahoma after 1930. Strip Mine Site #1 consists of a nonreclaimed 160-acre strip pit approximately 1 mile long and 0.25-mile wide paralleled by a 100-foot-wide overburden deposit. Strip Mine Site #3 consists of a partially reclaimed strip pit that extends from the northeast corner of Section 14 to the southwest in a 0.25-mile wide strip and is dominated by a 100-foot-wide dump pile.

These resources, along with the Evans Coal Company District, were recommended for further research to determine eligibility for listing on the NRHP. Of the resources located within Haskell and LeFlore counties listed on the NRHP, none are within the McCurtain planning area and are not anticipated to be affected by the proposed activities associated with the Proposed Action. Documentation and photographs for any structures more than 45 years old should be submitted on Historic Preservation Resource Identification Forms and submitted to the SHPO. If there are no structures in the McCurtain planning area, a letter to that effect should be forwarded to the SHPO. Similar documentation should be provided to the SHPO for historic properties or remains relating to twentieth century mining operations within the McCurtain planning area, such as Strip Mine Site #1 and Strip Mine Site #2 of the Evans Coal Company District.

The archaeological site files at the OAS office were reviewed on December 15, 2011. No archaeological sites are recorded as occurring within the McCurtain planning area. A review of the 1898 GLO township maps revealed two structures located within the McCurtain planning area. Five structures were identified

on the 1900 USGS 1:125,000 topographic map (Sallisaw, Indian Territory), and three structures were identified on the 1911 USGS 1:125,000 topographic map (Sallisaw, Oklahoma). Two of the structures identified on the 1900 topographic map also are identified at the same location on the 1911 topographic map. Based on the topographic and hydrological setting of the McCurtain planning area, as well as the historic map data, archaeological materials are considered likely to be present. It is anticipated an archaeological survey would be required by either BLM or OSM prior to mining activities. This Phase I (BLM Class III) survey would be conducted under the requirements of Section 106 of the NHPA and consultation with relevant American Indian tribes will occur.

3.19.3 American Indian Religious Concerns

No site-specific traditional cultural properties or other areas of traditional religious and cultural importance have yet been identified. Consultation with American Indian tribes will take place once Section 106 compliance is initiated. In the event that lease development practices are found in the future to have an adverse effect on traditional cultural properties or cultural resources, the BLM, in consultation with the affected tribe(s), will take action to mitigate or negate those effects.

3.19.4 National Historic Trails

The planning areas are near two trail features: the Trail of Tears National Historic Trail (NHT) and the proposed Butterfield Overland Trail NHT (Map 3-29). No portion of either trail lie within any of the planning areas, but their viewshed may be modified from the proposed coal mining operations (further described in Section 3.22). The location and features of these National Trails have been established by the National Park Service and no additional identification efforts to assess locations, significance, effects or mitigation as part of the current leasing activities.

3.19.4.1 Trail of Tears National Historic Trail

Designated in 1987, the Trail of Tears NHT was established to maintain the memory of the Cherokee people who were removed forcefully from their homelands in the southeast United States to present-day Oklahoma. There are interpretive sites located along the trail route and signage along major highways.

3.19.4.2 Proposed Butterfield-Overland Trail National Historic Trail

A proposal to designate the Butterfield-Overland Trail as an NHT is under review. The trail was a stagecoach route connecting Memphis, Tennessee, and St. Louis, Missouri, to San Francisco, California, between 1857 and 1861. It provided a route for mail delivery between the southeast United States and California.

3.20 PALEONTOLOGICAL RESOURCES

Paleontological resources are of scientific interest and may require protection. The management of paleontological resources is directed under FLPMA and NEPA. FLPMA states that it is the policy of the United States that the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values. Paleontological resources are natural resources with scientific value under FLPMA. NEPA mandates that federal agencies prepare a detailed statement of “major federal actions significantly affecting the quality of the human environment.”

The new authority for the management, preservation, and protection of paleontological resources on public lands, including Department of the Interior agencies is the Paleontological Resources Preservation subtitle of the Omnibus Public Land Management Act of 2009 (16 USC470aaa et seq.), also known by its

popular name, the Paleontological Resources Preservation Act (PRPA). In accordance with the PRPA, paleontological resources on federal land must be managed and protected using scientific principles and expertise.

BLM has developed objectives for paleontological resources (BLM Manual H-8270-1, *General Procedural Guidance for Paleontological Resource Management*) to provide protection of the resources. It is the policy of BLM to manage paleontological resources for these values and to mitigate adverse impacts on them. Recent mitigation measure policy is included in IM 2009-011, Assessment and Mitigation of Potential Impacts to Paleontological Resources.

The BLM has implemented the Potential Fossil Yield Classification (PFYC) system to aide resource managers in determining which geologic units are likely to contain significant paleontological resources. Currently the PFYC has not yet been developed for the state of Oklahoma, but it is anticipated it will be created in 2013.

According to the 1994 RMP, the BLM paleontological resource management program within Oklahoma includes the requirement that the BLM be notified should paleontological resources of relative rarity and scientific importance (i.e., vertebrates) be encountered during the conduct of BLM-approved operations.

Relevant geologic sections for paleontological resources are the Pennsylvanian-age McAlester Sandstone Formation (Stigler or Lower McAlester Coal) and the Hartshorne Sandstone Formation (Upper Hartshorne Coal and Lower Hartshorne Coal). These geologic formations are often combined in mapping and the two geologic units are shown as undifferentiated on geologic maps of eastern Oklahoma. A few fragmentary plant and invertebrate fossils are known from the formation. Fossil discoveries in the McAlester Formation include complete *Trigonocarpus* seeds, arthropod trackways, tetrapod trackways, insect resting traces, and raindrop impressions. Recent (2002) discoveries of invertebrate ichnofauna or arthropod tracks, resting traces, and feeding trails are reported from the base of the Keota Sandstone Member of the McAlester Formation in Haskell County. These finds are *Tonganoxichnus buildexensis* (Mangano et al. 1997); *Paleohelcura tridactyla* (Gilmore), *Diplichnites gouldi*, *Diplodichnus biformis*, *Treptichnus bifurcus*, *Gordia* sp., *Helminthoida* sp., *Pseudobradypus* (Matthew), and *Notalacerta* (Butts). This is the first record of *Pseudobradypus* in western North America, and the second of *Notalacerta* (Lerner et al. 2002). Both ichnotaxa also are known from the Pennsylvanian of eastern North America.

An intensive paleontological inventory has not been conducted for the planning areas. However, a paleontological inventory and potential migration of paleontological resources would be required prior to development. Abundant plant fossils are likely to occur in shales and sandstones proximal to the Stigler and Hartshorne coal seams. Preserved trunks of *Calamites* (sphenophytes) and *Cordaites*, as well as other plant fossils, occur in the McAlester Formation. No concentrations of vertebrate fossils or bone beds are known to occur in the area.

3.21 RECREATION

The planning areas include a variety of recreational opportunities (Map 3-29). None of these recreational features occur within a planning area, but their viewshed may be modified from the proposed coal mining operations (further described in Section 3.22). These recreation features include Robert S. Kerr Reservoir and Sequoyah National Wildlife Refuge, the Trail of Tears National Historic Trail (NHT), and the proposed Butterfield Overland Trail NHT.

3.21.1 Robert S. Kerr Reservoir

This reservoir lies on the Arkansas River near the confluence of the Canadian River and has over 250 miles of shoreline. Recreation opportunities associated with the reservoir include boating, picnicking, camping, hiking, swimming, and hunting on the 10,790 acres managed by the USACE.

3.21.2 Sequoyah National Wildlife Refuge

The Sequoyah National Wildlife Refuge is located at the confluence of the Arkansas and Canadian rivers. Recreational uses include hunting, fishing, bird watching, hiking, and auto touring. The 6-mile-long auto-tour route provides views of wetland, wooded, and agricultural landscapes along with a multitude of wildlife viewing opportunities.

3.22 VISUAL RESOURCES

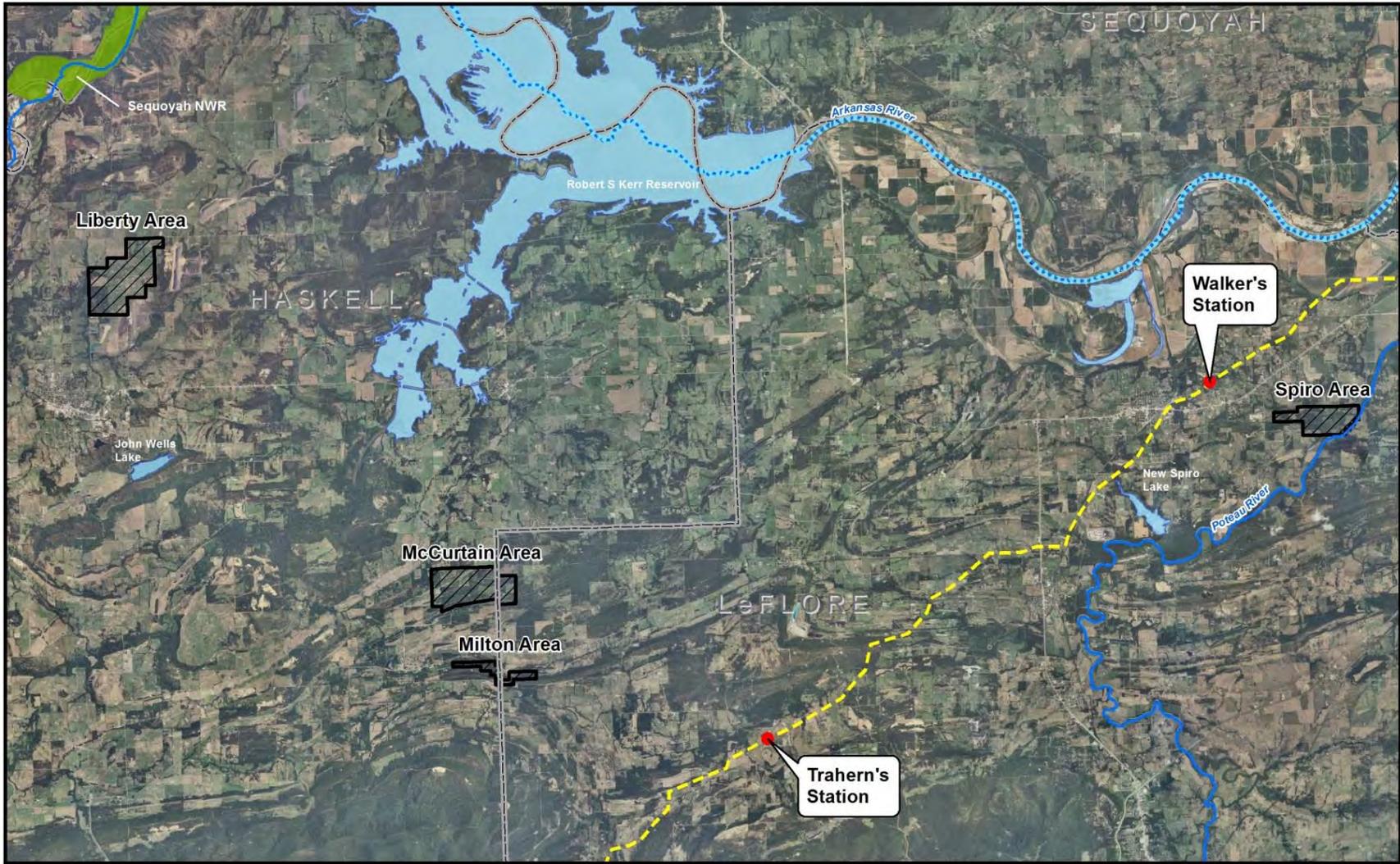
Even though the lands within the planning areas are not public lands administered by the BLM, the principles outlined in BLM Manual Section 8400 would still apply. This manual was established to manage scenic resource according to NEPA and FLPMA direction.

- NEPA Section 101 (b) states that measures should be taken to “...assure for all Americans...aesthetically pleasing surroundings...”
- FLPMA Section 102 (a) (8) states that “...public lands will be managed in a manner that will protect the quality of the scenic (visual) values of these lands.”

To accomplish this goal: (1) an inventory of scenic values needs to be prepared, (2) management objectives assigned to all lands administered by the BLM, and (3) visual design considerations should be incorporated into all surface-disturbing activities.

BLM IM No. 98-164 provided additional guidance on the implementation of visual resource management (VRM). It stated that “(1) when VRM is addressed during the RMP process, and VRM management decisions are made, the implementation of those decisions is mandated just as they are for any other resource allocation decisions. The implementation of those decisions is not at the discretion of the field manager, and (2) the current BLM VRM Manuals and Handbooks dictate how we conduct VRM business.” The BLM VRM system includes four VRM class objectives to describe the amount of change that is acceptable within each management objective.

- **Class I** – The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II** – The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract attention of, the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the landscape.
- **Class III** – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

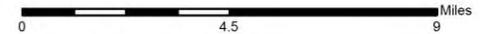


Legend

- Butterfield Overland Trail Stations NHT
- Butterfield Overland Trail NHT (Proposed)
- ⋯ Trail of Tears Water Route NHT
- Sequoyah NWR
- County
- BLM Planning Area



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 9/21/12.



Source:
 2011 BLM
 2010 USDA NAIP ArcGIS Map Service
 2012 National Park Service Butterfield Trail EA OK/TX Map

Map 3-29: Area Recreation

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- **Class IV** –The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

According to a BLM Visual Resource Inventory conducted in 1979 within the planning area, all lands described in this report would occur in VRM Class IV.

3.22.1 Introduction and Methodology

Although the surface lands in the planning areas are not administered by the BLM, the scenic values of these lands should be evaluated according to the BLM's Visual Resource Inventory Manual (USDI BLM 1986). The system includes an inventory of scenic values based on the following factors: (1) diversity of landscape elements that define and characterize landscapes in a given planning area (scenic quality), (2) public concern for the landscapes that make up a planning area (sensitivity levels), and (3) landscape visibility from public viewing locations (distance zones). A visual resource inventory for southeast Oklahoma was conducted by the BLM in 1979 in context with the BLM VRM 6300 Manual, the precursor to the current BLM VRM 8400 Manual.

3.22.2 Baseline Conditions

The analysis area for visual resources is located in the Arkansas Valley and Ouachita Mountain sections of the Ouachita physiographic province (Fenneman 1931). The Arkansas Valley section is a peneplain with a series of elevated ridges that provide topographic relief. In contrast, the Ouachita Mountain section contains moderately steep, mountainous terrain with dense oak/pine and oak/hickory vegetation. Agriculture is the predominant land use within the analysis area with wood lots interspersed between these parcel and along stream corridors. The landscape contains marks of past and current mining operations including linear lakes formed by historic strip mines.

3.22.2.1 Milton Planning Area

The Milton planning area is located on the border of Haskell and LeFlore counties south of the McCurtain planning area. The proposed mining area runs along the top of a ridge that rises approximately 100 feet above the surrounding terrain and is covered with dense hardwood vegetation. A strong butte edge is formed at the edge of the ridge due to the change in vegetation from deciduous trees to pastureland that further defines the ridge. Previous mining activities have created linear ponds that repeat the same slightly undulating lines found in the ridgelines. Due to the elevated nature of the area, this landscape would have moderate visual sensitivity because of views from State Route 31 toward the Sans Bois Mountains. Views of the mining operations likely would occur from State Highway 31, State Route 26, the town of McCurtain, and dispersed residences. Locations that may have more distant views of the proposed activities associated with the Proposed Action include Robert S. Kerr Reservoir, U.S. Highway 59, U.S. Highway 270, State Route 9, and the proposed Butterfield-Overland Trail NHT. Views from Wister Lake State Park (and associated waterfowl refuge) would be completely screened by the San Bois and Sulphur Springs mountains. The Southeast Oklahoma Visual Resource Inventory from 1979 identified lands within the Milton planning area to have a scenic quality rating of Class B, low sensitivity within the foreground/midleground distance zone, and designated management of the area as VRM Class IV.

3.22.2.2 Spiro Planning Area

The Spiro planning area is located in Le Flore County with its eastern boundary along the Poteau River. Scenery in this area is defined by a mix of lowland, wetland vegetation and upland, hardwood trees through an area with little topographic relief. Agricultural development, including pasturelands, has created a patchwork within the mostly wooded landscape. The level terrain and dense vegetation limits the visibility of the landscape, which reduces the visual sensitivity of this area to a low level. Potential views of the planning area are likely from U.S. Highway 271, State Route 9A, dispersed residences, the Poteau River, and the proposed Butterfield-Overland Trail NHT. More distant views of the project may be possible from Robert S. Kerr Reservoir, Trail of Tears NHT, U.S. Highway 59, State Highway 9, State Highway 31, and State Highway 112. Underground mining techniques proposed for this area would reduce the visibility of associated landscape modifications. The Southeast Oklahoma Visual Resource Inventory from 1979 identified lands within the Spiro planning area to have a scenic quality rating of Class C, low sensitivity within the foreground/midground and seldom seen distance zones, and designated management of the area as VRM Class IV.

3.22.2.3 Liberty Planning Area

The Liberty planning area is located in Haskell County northwest of the McCurtain and Milton planning areas. The landscape scenery within these planning areas is dominated by residential and agricultural development, primarily pasturelands, with limited wooded areas occurring along the western edge of the Liberty planning area. A few streams cross through this landscape and create undulating lines of trees along the narrow riparian corridors. Due to the numerous residences located within both the Liberty planning area and LAA, the visual sensitivity of this landscape would be considered moderate. Views of the mining operations would occur from the dispersed residences in and around the area, and potentially from the town of Stigler and State Highway 9. More distant viewers, including Robert S. Kerr Reservoir, Sequoyah National Wildlife Refuge, Trail of Tears NHT, State Highway 82, State Highway 31, State Highway 2, and State Highway 26, may have limited views of the Liberty planning area. The Southeast Oklahoma Visual Resource Inventory from 1979 identified lands within the Liberty planning area to have a scenic quality rating of Class C, low sensitivity within the foreground/midground and seldom seen distance zones, and designated management of the area as VRM Class IV.

3.22.2.4 McCurtain Planning Area

The McCurtain planning area is located along the border of Haskell and LeFlore counties. Scenery within this area is defined by the agricultural fields and meadows surrounded by hardwood vegetation on low-lying hillsides. The patterns formed by these different vegetation cover types provide variety in color and texture within the landscape. A minor ridge crosses through the center of this area and is covered by dense hardwood vegetation. Existing and past coal mining operations have modified the character of the southern portion of the planning area. These previous industrial modifications have reduced the visual sensitivity of this site to a low level. Potential views of this area are afforded by State Highway 26 (which crosses through the LM area), State Highway 31, dispersed residences, and the town of McCurtain. More distant viewers, including Robert S. Kerr Reservoir, State Highway 9, State Route 82, U.S. Highway 59, may have limited views of activities proposed at the planning area. The proposed use of underground mining techniques would reduce the visibility of landscape modifications in this coal lease area. The Southeast Oklahoma Visual Resource Inventory from 1979 identified lands within the McCurtain planning area to have a scenic quality rating of Class B, low sensitivity within the foreground/midground and seldom seen distance zones, and designated management of the area as VRM Class IV.

3.23 SOCIAL AND ECONOMIC CONDITIONS

BLM is required by statute and executive order to consider social science information when preparing a land use plan. The BLM also is required to consider multiple use and sustained yield to meet the needs of present and future generations. These needs include environmental protection in relation to human occupancy and other uses that may conflict or create conflicting demands. Social and economic information is important for understanding the social context within which decisions will be made and ascertaining how these decisions would affect communities and individuals in and near the planning areas, as well as concerned groups and individuals at the regional and national level. Social science information and analysis may be useful at various stages throughout the planning process, including scoping and issue identification; assessment of past, current, and future conditions; and identification of impacts and mitigation. Impact analysis should assess the social and economic consequences of implementing the various alternatives identified in the planning process.

BLM decisions associated with the planning areas have the potential to affect social and economic conditions of communities and individuals, negatively or positively. The intent of BLM's management of federal mineral estate is to affect positively the social and economic condition in the planning area. For example, mineral leases granted by BLM allow development of federal mineral estate, which serves a need of the American public (in the case of energy minerals) and benefits the economy. However, management restrictions are placed on the operator (e.g., to protect sensitive environmental resources) that may affect the extent to which the operator can achieve its fiscal goals and the revenue, royalties, jobs, etc. produced.

As required by FLPMA, NEPA, and Executive Order 12898, social science information is required to make informed, legal planning decisions. Additional statutory requirements further define the planning environment and prescribe the extent of BLM's authority and policies that define resource management planning and use. As the human population continues to increase and social values continue to evolve, resource conflicts are expected to increase. More importantly, the American public is increasingly aware of the importance of land to its well-being and is demanding a larger voice in resource management decisions. Given these realities, the planning process can represent a constant balancing act between competing interests. The intent of this section is to understand this framework so that BLM's RMPA planning process and decisions consider and provide social and economic benefit to the extent practicable and allowable to affected communities and individuals.

The BLM will continue to make environmental justice a mandatory critical element for consideration in all planning and NEPA documents. The BLM is required to manage the public lands based on multiple use and sustained yield and to meet the needs of present and future generations. At the state level, no additional guidance exists for socioeconomics.

3.23.1 Analysis Area

Socioeconomic resources include populations, economies (including employment and earnings), housing, public services, and social attitudes and values. For this assessment, the socioeconomic analysis area was defined as the potential area of influence of the four planning areas within their respective counties in Oklahoma. The Liberty planning area is located within Haskell County and the Spiro planning area is located in LeFlore County. Both McCurtain and Milton planning areas straddle Haskell and LeFlore counties (Map 1-1 Planning Areas). These counties are 2 of 77 counties in the state of Oklahoma. Haskell County encompasses 577 square miles of land area and LeFlore County encompasses 1,589, representing approximately 3.2 percent of the 68,595-square-mile land area in the state of Oklahoma (U.S. Census Bureau 2011a).

The 2010 census population in the two-county area of 63,153 (50,384 in LeFlore County and 12,769 in Haskell County) represents approximately 1.7 percent of the population of the state (U.S. Census Bureau 2011a). The most populous place in the analysis area is the city of Poteau, located in LeFlore County, with a total population of 8,520 per the 2010 Census. Other places in LeFlore County include the City of Heavener and the towns of Arkoma, Bokoshe, Cameron, Cowlington, Fanshawe, Fort Coffee, Howe, LeFlore, Panama, Pocola, Rock Island, Shady Point, Spiro, Talihina, and Wister. The City of Stigler, with a population of 2,685, is the most populous place in Haskell County; other places in this county include the towns of Keota, Kinta, McCurtain, Tamaha, and Whitefield (U.S. Census Bureau 2011b).

Economic and social development in the analysis area is influenced by its history as part of the Choctaw Nation Indian Territory. Coal mining and the forestry industry ruled as economic staples in the early 1900s, attracting workers and railroads to Haskell and LeFlore counties. Agriculture drove the early twentieth century economy in the area (Oklahoma Historical Society 2012). Today, the area retains its rural nature; draws on its rich history, mineral resources, forests, ranch land, and recreational opportunities; and is supported by government, agriculture, manufacturing, mining, and tourism industries (Oklahoma Southeast 2012). Within the analysis area, Haskell County is the least densely populated with 22.1 persons per square mile, followed by LeFlore County with 31.7 persons per square mile. This is less than the statewide average of 54.7 persons per square mile and nationwide average of 87.4 persons per square mile (U.S. Census Bureau 2011a).

3.23.2 Demographics

Selected demographic data from the 2010 U.S. Census for the two counties that comprise the analysis area are presented in Table 3-10. Statistics for Oklahoma and the United States are included for comparative purposes. Haskell County, with a population of 12,769, is approximately four times less populous than LeFlore County, which has a population of 50,384. Gender distribution between the two counties is almost evenly split, which follows the state and national gender distribution, with more males than females in LeFlore County and slightly more females than males in Haskell County. The age distribution in both Haskell and LeFlore counties is generally similar, with the number of persons under 20 roughly the same as that of the state and national averages. Haskell and LeFlore counties also are similar in that they have somewhat older populations when compared to the state and national average. In Haskell County, 17.6 percent of the population is age 65 and older, and LeFlore County is 15.2 percent. The Oklahoma average for age 65 and older is 13.5 percent, and the national average is 13.0 percent. The median age in Haskell County is slightly higher than that of LeFlore County and the state and nation (U.S. Census Bureau 2011a).

The distribution of race within the counties does not differ dramatically when compared to that of either the State of Oklahoma or the nation. The percentage of Whites within the two counties is similar to that of the state as a whole, with the percentage slightly higher in LeFlore County. Both counties have lower percentages of Blacks/African Americans than that of the state and nation, but the percentages of American Indians/Alaska Natives are higher than both averages. Asian populations in both counties are smaller than the state or national populations. Both counties have a somewhat lower population of persons of all races of Hispanic or Latino origin than that of Oklahoma (8.9 percent), and significantly lower than the national percentage (16.3 percent) (U.S. Census Bureau 2011a).

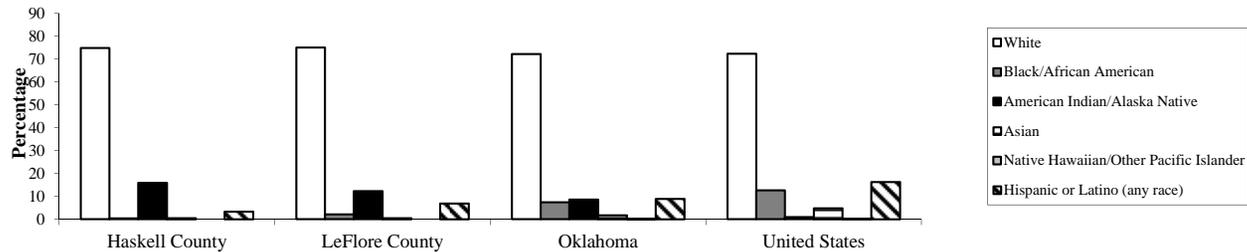
3.23.3 Employment and Earnings

As shown in Table 3-11, there is a higher percentage of farm employment in Haskell and LeFlore counties as compared to the state and Nation. Haskell County has the larger amount of farm employment at 14.0 percent, and LeFlore County's farm employment was 10.4 percent. In 2009, farm earnings were greatest in LeFlore County (at \$6.5 million), whereas \$1.8 million was earned in Haskell County (U.S. Bureau of Economic Analysis 2011a and 2011b). While private employment is greater than government

**TABLE 3-10
SELECTED CENSUS 2010 DEMOGRAPHIC INFORMATION**

	Haskell County		LeFlore County		Oklahoma		United States	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Gender								
Male	6,346	49.7	25,296	50.2	1,856,977	49.5	151,781,326	49.2
Female	6,423	50.3	25,088	49.8	1,894,374	50.5	156,964,212	50.8
Age								
Under 20 years	3,550	27.8	13,913	27.6	1,041,610	27.8	83,267,556	27.0
20 to 64 years	6,977	54.6	28,830	57.2	2,203,027	58.7	185,209,998	60.0
65 and older	2,242	17.6	7,641	15.2	506,714	13.5	40,267,984	13.0
Median age	39.9	N/A	38.6	N/A	36.2	N/A	37.2	N/A
Race and Ethnicity¹								
White	9,560	74.9	37,827	75.1	2,706,845	72.2	223,553,265	72.4
Black or African American	56	0.4	1,034	2.1	277,644	7.4	38,929,319	12.6
American Indian/Alaska Native	2,029	15.9	6,180	12.3	321,687	8.6	2,932,248	0.9
Asian	68	0.5	265	0.5	65,076	1.7	14,674,252	4.8
Native Hawaiian/Other Pacific Islander	2	0.0	24	0.0	4,369	0.1	540,013	0.2
Hispanic or Latino (or similar origin) ²	426	3.3	3,454	6.9	322,007	8.9	50,477,594	16.3
Total Population	12,769		50,384		3,751,351		308,745,538	
Persons per Square Mile	22.1		31.7		54.7		87.4	

Graphical Representation of Race Distribution



SOURCE: U.S. Census Bureau 2011a

NOTES:

¹ The selected census categories listed under Race and Ethnicity are a subset of reported race categories available from the 2010 Census. As such, the percent of population listed in the table will not sum to 100 percent.

² People of Hispanic or Latino origin may be of any race. People of Hispanic or Latino origin, include those who indicate their origin as Mexican, Puerto Rican, Cuban, and “another Hispanic, Latino, or Spanish origin”. (U.S. Census Bureau 2011c).N/A = Not applicable

**TABLE 3-11
2009 EMPLOYMENT BY INDUSTRY**

	Haskell County		LeFlore County		Oklahoma		United States	
	No. of Jobs	Percent of Total	No. of Jobs	Percent of Total	No. of Jobs	Percent of Total	No. of Jobs	Percent of Total
Farm employment	937	14.0	2,067	10.4	89,062	4.1	2,632,000	1.5
Nonfarm employment	5,745	86.0	17,727	89.6	2,060,794	95.9	171,177,200	98.5
Private employment	4,824	72.2	13,177	66.6	1,684,774	78.4	146,528,200	84.3
Forestry, fishing, related activities, and other	D	D	217	1.1	8,792	0.4	836,300	0.5
Mining	563	8.4	861	4.3	117,825	5.5	1,358,500	0.8
Utilities	43	0.6	148	0.7	11,925	0.6	600,200	0.3
Construction	475	7.1	1,334	6.7	121,820	5.7	9,505,000	5.5
Manufacturing	80	1.2	2,043	10.3	138,761	6.5	12,393,700	7.1
Wholesale trade	137	2.1	289	1.5	62,196	2.9	6,161,900	3.5
Retail trade	645	9.7	2,052	10.4	212,340	9.9	17,702,100	10.2
Transportation and warehousing	133	2.0	525	2.7	58,584	2.7	5,499,300	3.2
Information	45	0.7	85	0.4	31,936	1.5	3,359,300	1.9
Finance and insurance	D	D	613	3.1	92,805	4.3	9,432,000	5.4
Real estate rental and leasing	D	D	421	2.1	71,153	3.3	7,534,100	4.3
Professional and technical services	146	2.2	D	D	102,245	4.8	11,828,800	6.8
Management of companies and enterprises	0	0.0	D	D	14,659	0.7	1,962,600	1.1
Administrative and waste services	222	3.3	628	3.2	124,886	5.8	9,939,300	5.7
Educational services	L	L	D	D	25,679	1.2	3,923,400	2.3
Health care and social assistance	1,469	22.0	D	D	204,756	9.5	18,782,100	10.8
Arts, entertainment, and recreation	D	D	79	0.4	29,882	1.4	3,822,000	2.2
Accommodation and food services	D	D	816	4.1	138,336	6.4	12,005,100	6.9
Other services	362	5.4	1,159	5.9	116,194	5.4	9,882,500	5.7
Government and government enterprises	921	13.8	4,550	23.0	376,020	17.5	24,649,000	14.2
Federal, civilian	58	0.9	193	1.0	46,575	2.2	2,879,000	1.7
Military	54	0.8	218	1.1	37,856	1.8	2,092,000	1.2
State and local	809	12.1	4,139	20.9	291,589	13.6	19,678,000	11.3

**TABLE 3-11
2009 EMPLOYMENT BY INDUSTRY**

	Haskell County		LeFlore County		Oklahoma		United States	
	No. of Jobs	Percent of Total	No. of Jobs	Percent of Total	No. of Jobs	Percent of Total	No. of Jobs	Percent of Total
State	84	1.3	821	4.1	86,827	4.0	5,277,000	3.0
Local	725	10.9	3,318	16.8	204,762	9.5	14,401,000	8.3

SOURCE: U.S. Bureau of Economic Analysis 2011b.

NOTES:

¹ The estimates of employment for 2001-2006 are based on 2002 North American Industry Classification System. The estimates for 2007 forward are based on the 2007 North American Industry Classification System.

(D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

(L) Less than 10 jobs, but the estimates for this item are included in the totals.

and government enterprises employment, there are a fewer percentage of jobs in the private sector in the two-county analysis area as compared to the state and the nation. Together, approximately 21 percent of all jobs were government jobs, with 90 percent of these in state and local government (refer to Table 3-11). For Haskell County, the 2009 earnings from the government industry sector were approximately \$41.0 million, and of these, \$34.1 million were state and local earnings. The LeFlore County 2009 earnings were \$192.4 million, with \$166.4 attributed to the state and local category (U.S. Bureau of Economic Analysis 2011a and 2011b).

Where data for 2009 are reported, the largest private employment sector in Haskell and LeFlore counties is retail trade, accounting for approximately 20 percent of all jobs and approximately \$63 million in industry earnings in the area (U.S. Bureau of Economic Analysis 2011a and 2011b). However, the economic activities in the two counties vary substantially. In Haskell County, the health care and social assistance sector accounted for the largest number of jobs (9.7 percent) (Table 3-11) and provided nearly \$13.3 million in personal income (U.S. Bureau of Economic Analysis 2011a and 2011b). LeFlore County has the most diversified economic base, with the State and Local Government (at 20.9 percent), Retail Trade (at 10.4 percent), and Manufacturing (at 10.3 percent) sectors, all accounting for more than 41.6 percent of all jobs (Table 3-11) (U.S. Bureau of Economic Analysis 2011b).

As shown in Table 3-12, average earnings in the analysis area are less than state and national averages. From 2007 to 2009, the per capita personal income increased 2.7 percent in Haskell County and 5.0 percent in LeFlore County, while the increase in the state was 3.8 percent. The United States only increased by 0.4 percent in the same time period. Unemployment in the counties included in the analysis area was higher than the state unemployment rate for all three years, and, with the exception of Haskell County, was higher than the national average. LeFlore County unemployment peaked in 2009 at 10.1 percent (U.S. Bureau of Economic Analysis 2011b and U.S. Department of Labor 2011).

Based on the U.S. Census Bureau 2006 to 2010 estimates, LeFlore County had a higher poverty rate than the state or nation at 20.7 percent (Table 3-12). The Haskell County poverty rate for the same period was lower than LeFlore County, the state, and the nation at 12.3 percent (U.S. Census Bureau 2011a).

**TABLE 3-12
GENERAL INCOME, UNEMPLOYMENT, AND POVERTY CHARACTERISTICS**

	Haskell County	LeFlore County	Oklahoma	United States
Income				
Per capita personal income (2007)	\$27,542	\$25,462	\$34,539	\$39,461
Per capita personal income (2008)	\$29,195	\$26,666	\$36,911	\$40,674
Per capita personal income (2009)	\$28,272	\$26,725	\$35,837	\$39,635
Median household income (2009)	\$35,140	\$35,080	\$41,716	\$50,221
Unemployment (Not Seasonally Adjusted)				
Unemployment rate (2008)	3.7%	5.2%	3.7%	5.8%
Unemployment rate (2009)	8.0%	10.1%	6.6%	9.3%
Unemployment rate (2010)	7.9%	10.0%	7.1%	9.6%
Poverty				
Number of persons below poverty level (2006-2010)	1,483	9,972	577,247	40,917,513
Poverty rate among individuals (2006-2010)	12.3%	20.7%	16.2%	13.8%
SOURCES: Per capita personal income: U.S. Bureau of Economic Analysis 2011c; Unemployment Rates: U.S. Department of Labor 2011; U.S. Census Bureau 2011a (American Community Survey 2006-2010 estimates)				

3.23.4 Minority and Low-Income Populations

The identification of minority and low-income populations is relevant for this analysis because *Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and American Indian tribes. The BLM has developed a set of policies and provides guidance regarding the integration of social science and environmental justice analysis in the planning process. The agency determines if its proposed actions will adversely and disproportionately impact minority populations, low-income communities, and Tribes, as directed in Executive Order No. 12898. Likewise, the BLM will promote and provide opportunities for full involvement of minority populations, low-income communities, and tribes in BLM decisions that affect their lives, livelihoods, and health (USDI BLM 2012c).

The following information is to be regarded as baseline identification of those minority and/or low-income populations that potentially could be adversely affected by resource management decisions made by BLM. For purposes of this analysis, minority populations and low-income populations are defined as follows:

- Minority populations are persons of Hispanic or Latino origin of any race; Blacks/African American; American Indian/Alaska Natives; Asians; Native Hawaiian and Other Pacific Islander (without double-counting persons of Hispanic/Latino origin who also are contained in the latter groups).
- Low-income populations are persons living below the poverty level. The U.S. Census Bureau uses a set of income thresholds that vary by family size and composition to determine a family or person's poverty status. If a family's total income is less than that family's threshold, then that family, and every individual in it, is considered in poverty. A summary of the 48 thresholds provides a general sense of the "poverty line" or "poverty level," but is not used to compute poverty data. Based on this, the poverty level for a family of four in 2010 having two children under the age of 18 was \$22,113 (U.S. Census Bureau 2011d).

The U.S. Census Bureau reports income and poverty estimates from a number of household surveys and statistical programs. Based on availability of poverty data for census populations within Haskell and LeFlore counties, this comparative study will use American Community Survey 2006 to 2010 estimates (U.S. Census Bureau 2011a and U.S. Census Bureau 2011b). For this analysis, census cities and towns are identified as containing disproportionately high percentages of minority and/or low-income populations if either of two criteria are met: (1) the percentage of persons in minority/low-income populations in the represented census geography exceeds the average for the comparison population (Oklahoma), which is 26.7 percent for minority and 16.2 percent for low income; or (2) the minority and/or low-income population exceeds 50.0 percent, indicating that in that area, minorities constitute a majority of the population. The results of this comparison analysis, shown in Table 3-13, are that nearly all communities within the analysis area are considered disproportionately low income and about one-third of all communities in the analysis area are considered minority. Based on 2006 to 2010 population estimates, LeFlore County has the highest proportion of minority and low-income populations at 20.2 percent. Within LeFlore County, the town of Fort Coffee has the greatest proportion of minority population at 72.6 percent. The city of Heavener has the second highest proportion of minority population at 51.0 percent and the greatest proportion of low-income population in LeFlore County area at 38.4 percent. No city or town in Haskell County exceeds the 50 percent criteria in either minority or low-income populations, but the town of Keota has the highest poverty rate in the analysis area at 43.3 percent (U.S. Census Bureau 2011a and U.S. Census Bureau 2011b).

**TABLE 3-13
MINORITY AND LOW INCOME POPULATIONS
(COMPARISON POPULATION FOR OKLAHOMA)**

Geographic Area	Minority Population = 26.7 Percent			Low-Income Population = 16.2 Percent		
	Total ¹ (Percent)	Greater than 50 Percent	Greater than 26.7 Percent	Poverty Rate ² Percent	Poverty Rate Greater than 50 Percent	Poverty Rate Greater than 16.2 Percent
Haskell County	20.2	No	No	12.3	No	No
Keota	20.7	No	No	43.3	No	Yes
Kinta	11.8	No	No	22.4	No	Yes
McCurtain	27.1	No	Yes	32.5	No	Yes
Stigler	20.6	No	No	18.0	No	Yes
Tamaha	15.9	No	No	24.8	No	Yes
Whitefield	14.1	No	No	14.0	No	No
LeFlore County	21.7	No	No	20.7	No	Yes
Arkoma	11.3	No	No	28.1	No	Yes
Bokoshe	19.7	No	No	25.8	No	Yes
Cameron	19.2	No	No	26.2	No	Yes
Cowlington	13.5	No	No	14.3	No	No
Fanshawe	21.7	No	No	34.2	No	Yes
Fort Coffee	72.6	Yes	Yes	27.1	No	Yes
Heavener	51.0	Yes	Yes	38.4	No	Yes
Howe	21.9	No	No	28.2	No	Yes
LeFlore	41.6	No	Yes	32.9	No	Yes
Panama	18.6	No	No	26.7	No	Yes
Pocola	12.8	No	No	16.2	No	No
Poteau	23.4	No	No	22.1	No	Yes
Rock Island	12.2	No	No	17.1	No	Yes
Shady Point	15.2	No	No	10.9	No	No
Spiro	19.2	No	No	18.5	No	Yes
Talihina	45.4	No	Yes	22.0	No	Yes
Wister	21.5	No	No	24.5	No	Yes

SOURCE: U.S. Census Bureau 2011a and U.S. Census Bureau 2011b

NOTES:

¹ The total minority population includes individuals of Hispanic/Latino origin, but those (Hispanic/Latino) that are also Black/African Americans, American Indian/Alaska Natives, Asians, and Native Hawaiian/Other Pacific Islanders are not included in the total in order to avoid double counting. U.S. Census Bureau 2011c

² Poverty rate among individuals is based on poverty status from 2006-2010 American Community Survey estimates.

3.23.5 Housing

As shown in Table 3-14, both Haskell and LeFlore counties have experienced lower rates of increase in housing units from 2000 to 2010 in comparison to the state increase in the total number of housing units. The Oklahoma increase has been lower than the national level. Of the two counties, Haskell has experienced the higher growth, with an 8.2 percent increase in housing units over the decade, followed by

LeFlore County with a 6.5 percent increase. Home ownership rates between 2005 and 2009 in Haskell County (77.1 percent) and LeFlore County (73.1 percent) exceed those of the state (67.9 percent), and the nation (66.9 percent) (U.S. Census Bureau 2011a).

**TABLE 3-14
HOUSING CHARACTERISTICS**

Housing Characteristics	Haskell County	LeFlore County	Oklahoma	United States
Total Housing Units 2000	5,573	20,142	1,514,400	115,904,641
Total Housing Units 2010	6,028	21,448	1,664,378	131,704,730
Percent Change 2000 to 2010	8.2%	6.5%	9.9%	13.6%

SOURCES: U.S. Census Bureau 2011a and U.S. Census Bureau 2011e (2000 data)

3.23.6 Social and Economic Contributions of the Coal Mining Industry in Oklahoma

Oklahoma coal production is heavily isolated on the eastern side of the state within the northeast Oklahoma shelf and Arkoma Basin. Much of the production is located in persistent poverty counties where the employment opportunities are of particular importance. While active coalfields are confined to a handful of Oklahoma counties, the economic impacts may be felt more broadly as producers purchase supplies and support materials from vendors throughout the state. Much of the production occurs in LeFlore County, but Haskell, Rogers, and Nowata counties all have active fields, along with Craig and Okmulgee counties (Oklahoma State University [OSU] 2010, U.S. Energy Information Administration 2012).

In 2010, Oklahoma had 10 active coal mines in the state and produced just over 1.0 million short tons of coal (U.S. Energy Information Administration 2012). For reference, one short ton is equal to 2,000 pounds. This production estimate is down from 2007, when production came in at 1.6 million tons (OSU 2010). Oklahoma's production in 2009 was 956 thousand short tons, which was 0.1 percent of U.S. production. In 2010, Haskell County had two active mines and produced 141 thousand short tons of coal, and LeFlore County had three active mines, producing 600 thousand short tons of coal. The Oklahoma average market sales price of coal was \$56.45 per short ton in 2009, as compared to the U.S. average of \$33.24 per short ton. Coal- and natural-gas-fired power plants dominate electric-power production in Oklahoma, although nearly all of the state's coal is supplied by railcar from Wyoming (U.S. Energy Information Administration 2012).

U.S. coal mine employment was 86,195 in 2010, a 1.8 percent-drop from the 2009 level of 87,755 mine employees. The state had an average of 217 employees associated with mining in 2010, which was a 16.5 percent drop from 260 employees in 2009 (U.S. Energy Information Administration 2012). In 2007, the state had 212 people employed, on average per month (OSU 2010).

Until recent years, the major consumption of Oklahoma coal had been by out-of-state utilities. Major in-state use of Oklahoma coal has been by the cement and lime industry and utilities. According to the ODM, there is potential for Oklahoma's coal resources to provide a basis for economic growth; only the apex of coal resources has been exploited. Large bituminous and metallurgical deposits remain to be produced, but will require large capital investments by sophisticated mining companies. In 2010, coal was the energy source for 64 percent of the electricity generated in Oklahoma (ODM 2012). Depending on the evolution of the coal market, coal-burning technologies, and U.S. energy policy, the Oklahoma coal industry could yet become an even more significant contributor to state economic activity. However, to facilitate this development, the industry likely needs to maintain a base of Oklahoma coal consumers sufficient to generate capital flows required to fund the needed investment (OSU 2010).

In 2010, OSU released an *Economic Impact of the Oklahoma Coal Industry* study that assessed the impacts of expenditures to Oklahoma vendors and all wages and salary distributed to Oklahoma workers from the Oklahoma coal mining industry. Four of the state's largest producers of coal participated in the study, including FCMC and GCI (OSU 2010). Based on 2007 coal production data, FCMC produced the largest amount of coal in the state, followed by GCI (OSU 2010).

In total, the four producers included in the OSU study directly purchased just over \$45 million worth of Oklahoma-produced goods and services in 2007. These four firms alone support over \$138 million in Oklahoma economic activity, corresponding to 1,081 full-time equivalent jobs and \$38 million in Oklahoma income. FCMC's portion of this amounts to approximately \$7 million in Oklahoma economic activity and corresponds to 66 full-time equivalent jobs and over \$2 million in Oklahoma income. GCI's portion was approximately \$5 million in Oklahoma economic activity, corresponding to 43 full-time equivalent jobs and over \$1 million in Oklahoma income (OSU 2010).

State economic activity is likewise supported as employees of Oklahoma coal producers spend a portion of their income within the state. The impacts are the induced effects associated with Oklahoma generated income. When the induced effects are included, the four companies total support amounts to almost \$144 in Oklahoma economic activity, corresponding to 1,133 full-time equivalent jobs and over \$41 million in Oklahoma income. Of this total, FCMCs' portion includes approximately \$65 million in Oklahoma economic activity and corresponds to a total 496 full-time equivalent jobs and almost \$16 million in Oklahoma income. GCI's portion includes approximately \$35 million in Oklahoma economic activity, and corresponds to 364 full-time equivalent jobs and over \$13 million in Oklahoma economic activity (OSU 2010).

According to the OSU study, the Oklahoma coal industry is a significant contributor to economic activity in an area of the state where it is much needed. When the economic impacts are extended to all coal producers in the state, analyzing patterns of spending within Oklahoma revealed that coal industry purchases of Oklahoma goods and services, through the multiplier process, account for more than \$146 million in economic activity, generate \$42 million in Oklahoma income, and support 1,153 full-time equivalent jobs. These figures likely understate significantly the role of coal in the Oklahoma economy. The coal industry is uniquely local with relatively little of the resulting economic activity leaking beyond the state. Coal is recovered from Oklahoma lands using equipment, explosives, and labor originating in the state. The majority of the coal is then consumed by Oklahoma companies as input to their individual production process, being transported to its point of consumption by Oklahoma truckers in vehicles maintained and serviced by Oklahoma mechanics before being burned in cement production facilities and utilities who in-turn deliver services to Oklahoma residents. Overall, a high percentage of the economic activity resulting from the commodity production, delivery, consumption, and output production remain in the state (OSU 2010).

3.23.7 Social Attitudes and Values

In the analysis area, there is a long-standing relationship between coal mining and the local economy and lifestyle. Commercial coal mining began in Oklahoma in 1873 with the removal of bituminous coal from underground mines in eastern Oklahoma. Surface mining began in 1915. The coal industry has experienced production cycles. Since 1969, the Oklahoma coal industry has had as few as eight active mines and as many as 60. Oklahoma coal production has declined from its peak of 5.73 million tons in 1981, to a low of 979 thousand short tons in 2010 (ODM 2012).

While there is considerable value placed on the economic contributions from and strong social ties of communities and individuals to coal mining, many of the comments received noted the value of reclamation and the conversion/return of abandoned mine lands to productive uses (e.g., pasture, wildlife habitat, fisheries, etc.).

There also were some negative attitudes about the social and economic impacts of mining, with concern that land values decline and future growth is impaired as a result of mining. These attitudes, expressed during scoping, were principally in reference to those lands adjacent to the subject planning areas.

Other comments, not necessarily correlated with social or economic concerns but nonetheless reflective of attitudes and values, pertained to other resources such as air quality, water quality and quantity, noise, wildlife and habitat, public health and safety, and landowner rights and compensation. In general, these comments reflect the value for these resources and concern for their protection.

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4.0 ENVIRONMENTAL EFFECTS

4.1 INTRODUCTION

This chapter describes the potential effects on the environment of implementing any of the management alternatives described in Chapter 2.0, in association with potential coal leasing and development (e.g., development, production, reclamation). This chapter begins with a summary of methods used to assess impacts and then describes the potential impacts that could result from implementing the management alternatives.

Using the information regarding the existing condition of the environment (refer to Chapter 3.0) and a description of typical coal mining activities proposed at the four planning areas, the types of impacts that the alternatives could have on the resources and resource uses were identified and quantified only to the extent practical for this RMPA and EA. It should be noted that no ground-disturbing activities would directly result from the alternatives addressed in this document. Although the issuance of a lease grants rights could result in surface-disturbing activities, further site- and project-specific environmental evaluation is required prior to final approval of the activities.

Impacts are defined as modifications to the environment, as it presently exists, that are brought about by an outside action. Impacts can be beneficial or adverse, and result from the action directly or indirectly. Impacts can be permanent, long-lasting (long term), or temporary (short term). In the case of this analysis, long-term impacts are defined as those that substantially would remain for the life of the project and beyond (approximately 10 years or more). Short-term impacts are defined as those changes to the environment during development or construction activities that generally would revert to preconstruction conditions (except tree growth) at or within a few years of the end of construction. Short-term impacts may range from 1 to 3 years in duration. Impacts can vary in significance from no change to a full modification or elimination of the environmental condition. Throughout this analysis, emphasis was placed on lease stipulations that could be applied to areas sensitive to potential mining activities in order to mitigate impacts.

4.1.1 Types of Impacts

The analysis includes three types of effects (refer to 40 CFR 1508.7 and 1508.8). Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and occur at a later time or are farther removed in distance, but are still reasonably foreseeable. Direct and indirect effects caused by the action are discussed in Section 4.2. Cumulative effects, discussed in Section 4.3, result from incremental impacts of action when added to other past, present, or reasonably foreseeable future actions (RFFAs) regardless of what person or agency (federal or nonfederal) undertakes those actions. Reasonably foreseeable future actions consist of projects, actions, or developments, including the results of the Reasonably Foreseeable Coal Development Analysis for Four Coal Lease Applications: Haskell and LeFlore Counties, Oklahoma (USDI BLM 2013), that can be projected, with a reasonable degree of confidence, to occur within a defined period and that will impact the same, or portions of the same, resource. A discussion of reasonably foreseeable future actions is presented in Section 4.3.

To determine the vulnerability of resources to impacts, resources were evaluated in terms of the following general criteria:

- **Resource significance** – a measure of formal concern for a resource through legal protection or by designation of special status
- **Resource sensitivity** – the probable response of a particular resource to project-related activities

- **Resource quality** – a measure of rarity, intrinsic worth, or distinctiveness, including local value and importance of a resource
- **Resource quantity** – a measure of resource abundance and the amount of the resource potentially affected

4.1.2 Mitigation Planning

The impact assessment presented in this chapter considers the design features of the Proposed Action (i.e., standard operating procedures, stipulations, and best management practices incorporated into the Proposed Action) and the rules, regulations, guidelines that generally would apply to the proposed activities. Further site-specific environmental evaluation and mitigation planning would be required at the time the mine permit applications are submitted.

4.2 DIRECT AND INDIRECT EFFECTS

The potential impacts of the three management alternatives considered are described in this section, beginning with the no-action alternative (Alternative A) followed by the two action alternatives, alternatives B and C.

Although BLM does not have direct management responsibilities on surface management of these parcels, BLM is required to ensure that federal rules and regulations are complied with relative to any permitted federal activities. While subsequent development and reclamation is regulated by law (refer to Chapter 2.0), it is the responsibility of the landowner to work and reach agreement with the lessee/operator regarding treatment of the surface.

4.2.1 No-Action Alternative (Alternative A)

If no action were taken, leasing and subsequent development would be precluded. No action as an alternative serves as a baseline condition for evaluating the environmental consequences of the action alternatives.

4.2.1.1 Land and Realty

If no action were taken, there would be no surface-disturbing activities and existing uses would be maintained.

4.2.1.2 Access and Transportation

If no action were taken, there would be no surface-disturbing activities and existing uses would be maintained.

4.2.1.3 Energy and Mineral Resources

Coal

If no action were taken, no adverse impacts on coal resources would result beyond the previously described baseline conditions. The estimated coal resource within the four planning areas would not be available to be recovered and would remain available for potential future mining.

Other Energy Resources

If no action were taken, no adverse or beneficial impacts on oil and gas or coalbed methane gas resources would result beyond the previously described baseline conditions. Recovery of neither coalbed methane nor oil and gas activity within the planning areas would be expected to be affected by the absence or presence of coal mining.

Mineral Resources

If no action were taken, no adverse or beneficial impacts on the production of mineral resources would result beyond the previously described baseline conditions. Mineral resources currently produced within the planning area include clay, shale, limestone, dimensional building stone, sand, and gravel. Similar to the coalbed methane and oil and gas activity within the planning areas, mineral resource production would not be expected to be affected by the absence or presence of coal mining.

4.2.1.4 Soils

If no action were taken, no adverse impacts would result. Soils would remain as described in the discussion of baseline conditions in Section 3. However, taking no action would result in a lost potential for a beneficial impact from surface improvements and improved future use following reclamation activities, especially in those areas of abandoned mine lands.

4.2.1.5 Water Resources

If no action is taken, no adverse or beneficial impacts are expected on the quality or quantity of groundwater. With respect to this project, baseline groundwater conditions would persist as described in Section 3.

4.2.1.6 Climate and Air Quality

If no action were taken, the environment would remain as it presently exists. No leasing and, therefore, no subsequent development, would take place in the four planning areas. Air pollutant emissions or fugitive dust from development activities or equipment associated with the Proposed Action would not occur. The No-Action Alternative would result in the continuation of the current land and resource uses in the planning areas. Air quality in the airshed and climate conditions would remain as described in the baseline conditions (Section 3.3). Similarly, under Alternative A, no GHG emissions above current levels would occur as no additional coal development or mining activities would take place.

4.2.1.7 Vegetation

If no action were taken, adverse impacts on vegetation would not occur beyond the baseline conditions as described in Chapter 3.0. However, this alternative would result in a loss of opportunity for potential environmental and/or land use enhancements through reclamation in areas that have been mined previously and not properly reclaimed or reclaimed in a way that does not meet the needs of current landowners.

According to the USDA, NRCS Plants Database, three species are listed on the Noxious Weeds List for the State of Oklahoma. These species include the musk thistle (*Carduus nutans*), Scotch thistle (*Onopordum acanthium*), and Canada thistle (*Cirsium arvense*) (USDA NRCS 2011). It is unknown if any of these three species inhabit the planning areas.

4.2.1.8 Wildlife

If no action were taken, adverse impacts on wildlife would not occur beyond the baseline conditions as described in Chapter 3.0. However, this action alternative represents loss of opportunity for potential environmental enhancements through reclamation in areas that have been mined previously and not properly reclaimed.

4.2.1.9 Wildlife Management Areas

If no action were taken, adverse impacts on WMAs would not occur. However, implementation of Alternatives B and C also would not be expected to affect WMAs.

4.2.1.10 Special Status Species

If no action were taken, adverse impacts on special status species would not occur beyond the baseline conditions as described in Chapter 3.0.

4.2.1.11 Cultural Resources

If no action were taken, there would be no ground-disturbing mining activities to cause adverse impacts on cultural resources (known or unknown). Archaeological sites would not be threatened, nor would the sites be investigated further through mitigation data recovery studies.

If no action were taken, there would be no effect, either positive or negative, on potential areas of traditional religious and cultural importance as no leasing would occur.

4.2.1.12 Paleontological Resources

If no action were taken, there would be no ground-disturbing mining activities to cause adverse impacts on paleontological resources.

4.2.1.13 Recreation

If no action were taken, the recreation areas (as identified in Section 3.22) would not be adversely impacted.

4.2.1.14 Visual Resources

If no action were taken, there would be no change to the existing character of the Milton, Liberty, and McCurtain planning areas. However, taking no action would result in a lost opportunity for potential environmental enhancements through reclamation in previously mined areas adjacent to the Spiro planning area. These improvements would improve the visual character of this area.

4.2.1.15 Social and Economic Conditions

If no action were taken, the areas would not be available for leasing and therefore, would not be able to be leased and mined. No action at each of the areas would have similar direct and indirect socioeconomic effects. In the elimination or reduction of mining operations, royalties as well as taxes would not be realized on the potential coal yield in Haskell and LeFlore counties.

Common to all areas, job losses and expenditure reductions would have additional effects upon related industries. Socioeconomic modeling would be required to more accurately quantify associated secondary (indirect and induced) impacts on employment and income (modeling of secondary socioeconomic

impacts is beyond the level of analysis needed for the estimated environmental consequences of the alternatives evaluated in this EA).

The mining companies represented as current operators in the area and potential lessees draw employees from a regional area including Muskogee, McIntosh, Pittsburg, Latimer, LeFlore, Sequoyah, and Haskell counties in Oklahoma and Sebastian, Scott, and Crawford counties in Arkansas (Cooper 2012). As a result, loss of direct and indirect employment likely would be dispersed throughout the region. Consequently, it is not anticipated that adverse effects would be experienced disproportionately by environmental justice populations at any of the Areas.

Milton Area

Under Alternative A, direct adverse socioeconomic effects would occur from the eventual closing of the nearby Milton Mine. These actions would result in loss of approximately 80 jobs at the MSC Milton Mine. Currently, the average wage at the Milton Mine is \$70,000 (including benefits). The combined total of wages and benefits expenditures is \$5,600,000 annually (based on current, noninflationary estimates) (Cooper 2012).

Spiro Area

Under Alternative A, direct adverse socioeconomic effects would occur from the eventual closing of the nearby Spiro Mine. These actions would result in loss of approximately 80 jobs at the GCI Spiro Mine. Currently, the average wage at the Spiro Mine is \$85,000 (including benefits). The combined total of wages and benefits expenditures is \$6,800,000 annually (based on current, noninflationary estimates) (Cooper 2012).

Liberty Area

Under Alternative A, direct adverse socioeconomic effects would occur from the closing of the Liberty Mine. These actions would result in loss of approximately 125 jobs would be directly affected by closing of the FCMC Liberty Mine. Currently, the average wage at the Liberty Mine is \$70,000 (including benefits). The combined total of wages and benefits expenditures is \$8,750,000 annually (based on current, noninflationary estimates) (Cooper 2012).

In the Liberty Area, cattle grazing leases had been indicated during the Scoping process to be of concern. Under the Alternative A, these leases would not be affected on either the short or long term.

McCurtain Area

Under Alternative A, direct adverse socioeconomic effects would occur from a shortened life of the McCurtain mine by approximately 6 years. At the end of the mine life, approximately 300 jobs would be directly affected by closing of the FCMC McCurtain Mine, including mining personnel as well as transportation, processing, and administration staff (Cooper 2012). Currently, the average wage at the McCurtain Mine is \$70,000 (including benefits). The combined total of wages and benefits expenditures is \$21,000,000 annually (based on current, noninflationary estimates) (Cooper 2012).

4.2.2 Maximum Coal Development (Alternative B)

4.2.2.1 Land and Realty

In areas where surface disturbing activities would occur, there would be direct and indirect, short-term impacts on existing uses in the four planning areas. In locations where surface mining would occur,

mining would progress in a series of long, narrow pits. Overburden would be removed to reach the coal seam. Once the coal is removed, the overburden would be replaced. In general, the excavation of the successive pits would backfill the previously excavated adjacent pits. After the pits are backfilled, topsoil would be redistributed and permanent vegetation would be established on the disturbed areas. Over the long-term, reclamation also might provide opportunities for environmental enhancements in certain areas where mining previously occurred. For areas proposed to have underground mining, the surface-mining operations would be limited to excavating a portal to access the underground mining area. As a result of underground mining, the land above could subside during these activities due to the removal of material below the surface. During the mining process, these lands would not be productive for other uses until reclamation was completed. Indirect impacts on lands and realty (e.g., visual impact) for each of the four planning areas are described in Section 4.2.2.14.

Milton Planning Area

The primary land uses in the Milton planning area are abandoned strip mines and undeveloped woodlots. Since the area adjacent to County Road E1209/55C would not be mined, there would be no direct impacts anticipated on this road. If woodland areas were cleared to conduct surface mining activities, the reclamation of these areas would require a longer period to return to their pre-mining condition.

Spiro Planning Area

Land uses within the Spiro planning area are primarily pastureland, agricultural fields, and undeveloped woodlots. Even though underground mining is proposed for this planning area, due to the potential land subsidence during mining activities, these land uses would have a short-term impact since they would not be productive until mining was completed. If woodland areas were disturbed because of land subsidence, the reclamation of these areas would require a longer period of time to return to their pre-mining condition than pasturelands. Due to the existing ROW grants associated with the existing transmission lines, mining operations may be limited and truncated in this portion of the planning area.

Liberty Planning Area

The primary land uses in the Liberty planning area are residences, agricultural fields, and small undeveloped woodlots. No mining activities would occur within 300 feet of the 11 residences located within the planning area, so no direct impacts would be anticipated. Pastureland and agricultural fields would be affected during the mining activities and would not be productive until reclamation has been completed. If woodlands areas were cleared, these areas would require more time to meet their pre-mining condition. Due to the existing ROW grants associated with the existing transmission line, mining operations may be limited and truncated to avoid land use conflicts in these areas.

McCurtain Planning Area

Land uses within the McCurtain planning area are primarily pasturelands, agricultural fields, and undeveloped woodlots. Since underground mining activities are proposed, surface disturbances would be limited to the portal where access would occur for underground mining. There are residences and agricultural buildings located in the planning area. Damage to the structures due to potential subsidence from the underground mining activities should be avoided. State Highway 26 crosses through the planning area and underground-mining activities would need to avoid crossing the highway as potential land subsidence would directly affect the use of the highway. If woodland areas were disturbed because of land subsidence, the reclamation of these areas would require a longer period of time to return to their pre-mining condition than pasturelands.

4.2.2.2 Access and Transportation

Impacts on public access to the planning areas could result from the mining operations. While it is unlikely that highways and major roads would be directly impacted, some county and local roads could be removed temporarily from public use or rerouted temporarily during mining operations. This could result in increased travel time and possibly adverse road conditions. If these roads were affected, the mining company would have to coordinate road closures and/or rerouting with the appropriate county authorities. Agreements with the counties during the permitting phase would stipulate road construction standards to reconstruct roads that have been removed during mining operations.

As a result of proposed mining activities, there would be two types of transportation occurring: (1) worker commuting traffic, which would be primarily automobiles and (2) materials transportation, including heavy trucks and tractor-trailer rigs. It is anticipated the increase in traffic would be modest, remaining within the roadway capacity. Since the highways and major roads in the area are important transportation corridors that carry light- and heavy-duty vehicles, the addition of heavy vehicles from the mining operations would not considerably increase traffic flow on these roads. Therefore, any increase in the risk of traffic accidents would be minor and proportional to the overall increase in traffic. In summary, leasing and subsequent development of the proposed mining operations would not cause major effects on highway traffic and safety conditions in the vicinity of the planning areas.

Milton Planning Area

As a result of avoiding the area directly adjacent to County Road E1290/55C, there may be additional traffic associated with the mining operations, but this road would be maintained through mining activities. State Highway 31, which provides access to McCurtain, would have additional traffic as result of mining activities but would not increase traffic flow to a level beyond the capacity of this highway.

Spiro Planning Area

As no major roads cross through this planning area, the impacts on transportation would be limited to county roads that would be mined through. Agreements with LeFlore County would stipulate required reconstruction standards. Additional traffic on highways located outside of this mining area would not cause adverse change to highway traffic and safety conditions on these roads.

Liberty Planning Area

The area adjacent to County Road N4450 has been identified as an avoidance area for mining operations; thus, impacts on this road would result only from increased traffic flow. If any roads forming the boundary of this planning area were impacted as a resulting of mining activities, they would be reconstructed in accordance with Haskell County standards.

McCurtain Planning Area

State Highway 26 crosses through this planning area and would be avoided during underground mining activities due to the risk of land subsidence that potentially could cause closure of this road. County roads located within the mining area would likely be mined through and would be reconstructed in accordance with Haskell and/or LeFlore County standards (as appropriate).

4.2.2.3 Energy and Mineral Resources

Coal

Alternative B allows for the maximum recovery of coal resources, excluding areas determined to be unsuitable. This depletion of subsurface coal resources is considered a permanent impact. As provided in Section 3.6, the estimated coal resources are approximately 3.6 million tons within the McCurtain planning area, 567,000 tons within the Milton planning area, 4.5 million tons within the Spiro planning area, and 1.4 million tons within the Liberty planning area (USDI BLM 2013). This alternative would be expected to allow for the greatest recovery of coal resources, thus leaving the least amount of coal for potential future mining. However, following completion of mining and reclamation activities, noticeable impacts would not be anticipated.

Other Energy Resources

If Alternative B is selected, no adverse or beneficial impacts on oil and gas resources would result beyond the baseline conditions previously described in Section 3. Coal deposits to be mined are not stratigraphically co-located with oil or natural gas deposits, so the recovery of these other energy resources within the planning areas would not be expected to be affected by the absence or presence of coal mining in the planning areas. The two coalbed-methane wells located within the McCurtain planning area would have an adverse impact on coal production by reducing the amount of produced coal. Surficial coal mining at McCurtain would have an adverse impact on coalbed-methane production in the same area by reducing coalbed-methane production.

Mineral Resources

Mineral resources currently produced within the planning areas include clay, shale, limestone, dimensional building stone, sand, and gravel. If Alternative B is selected, no adverse or beneficial impacts on the production of mineral resources would result beyond the previously described baseline conditions. Surface-mining activities would remove the overburden above the coalbed, thus disturbing the natural stratigraphy. However, the mining of these mineral resources would not be expected to be co-located with the coal-mining activities, thus mineral resource production would not be expected to be affected by the absence or presence of coal mining.

4.2.2.4 Soils

Direct impacts on soils due to construction and mining activities primarily are due to the loss or erosion of soil and decreases in soil productivity. The potential for erosion increases when soil and surface vegetation is disturbed, such as during surficial mining. Soil productivity can suffer due to compaction (reduction in soil aeration, infiltration capacity, and root penetration ability), erosion, loss of beneficial microorganisms in the soil, or by mixing topsoil with poorer quality soils. These potential impacts ultimately have a detrimental impact on the soil resources.

These potential long-term impacts on soil would be mitigated by implementing a reclamation plan to be developed during the permitting phase. Generally, site reclamation measures would include recontouring of the surface, restoration of site drainage, erosion and sedimentation controls, stabilization of process solutions, topsoil replacement, and re-establishment of vegetation. Such reclamation efforts would be intended to return the land to productive use compatible with the pre-mining use.

The potential effects of leasing on prime and unique farmlands are anticipated to be similar for the surface-mining planning areas and no effects would be seen at the subsurface-mining planning areas as described in the sections below.

Milton and Liberty Planning Areas

Mining in the Milton and Liberty planning areas would be expected to be surficial and to progress in a series of long, narrow pits wherein the soil and overburden would be removed to access the coal below. Soils would be disturbed for the construction of haul roads and staging areas. Areas where soil is not removed also could be affected and compacted by traffic. Following the completion of mining, the pits would be backfilled and the topsoil would be redistributed. Permanent vegetation would be re-established. Impacts on soil usage would be expected to be direct, but adverse effects would be expected to be temporary during mining activities. Following the replacement of soils and reclamation activities, the potential for beneficial use of the areas could be improved, such as by improved surface topography, drainage controls, and clearing of undesired vegetation.

For prime or unique farmlands, before overburden excavation, topsoil would be removed and stockpiled separate from other soils. Often, topsoil is removed ahead and redistributed over the active pit behind. After the pits are backfilled, topsoil would be redistributed and permanent vegetation would be established on the regraded area. Topsoil stockpiling may result in mixing of prime or unique farmland soils such that a soil's suitability for such uses would be altered, either positively or negatively. It is likely prime farmland soils would not be classified in the same manner after reclamation. These effects are typically long-term changes.

Spiro and McCurtain Planning Areas

Underground mining techniques would be used within the Spiro and McCurtain planning areas. Adverse impacts on surface covers and soils from underground mining would be expected to be minor. Soils would be disturbed near the mine entrances, staging areas, and haul roads. Disturbances in these areas would be repaired during reclamation activities so as to return the area to beneficial use.

Where underground mining occurs, there is a potential for ground subsidence. The possibility for subsidence or the depth or extent of the impact cannot be predicted. However, considering the limited number of structures and dwellings within the planning areas and based on the existing land uses (e.g., pastures, rangeland, woodlands, and abandoned mining areas), surficial subsidence, if it occurred would not be expected to adversely impact surficial soils or soil use.

Effects on prime or unique farmlands are not anticipated for the Spiro or McCurtain planning areas.

4.2.2.5 Water Resources

The primary groundwater impacts of concern include a potential degradation of water quality or potential reduction in groundwater availability. Groundwater impacts would be expected to be similar for all proposed lease areas. The following is a general discussion of water quality and usage concerns, as they apply to each of the planning areas.

Groundwater Quality

The primary concern for the potential degradation of groundwater quality would be impacts from coal mine drainage and/or acid mine drainage. The planning areas contain coal deposits that are relatively high in sulfur content. Sulfur-containing minerals like iron disulfide (pyrite) could react with oxygen and water to form sulfuric acid. The resultant acids could make the mine discharge corrosive and decrease the habitability and utility of the water. When mining occurs in areas of moderate rainfall, this acidification could occur rapidly along the many broken and exposed surfaces of the excavated materials.

The severity of acid mine drainage primarily depends onsite conditions and the site-specific mineral content. Site conditions that allow the interaction of oxygen and water (from rainfall, surface water, or shallow groundwater inflows) with the excavated materials tend to promote acid mine drainage formation. Sites known to contain higher concentrations of sulfur minerals are also at higher risk for developing acid mine drainage. These risks could be reduced by limiting and controlling the excavated materials that are exposed to air and water at any one time and by limiting the time that the mined area remains open before reclamation. The site also could be dewatered to allow excavation and limit acid mine drainage. However, after overburden is backfilled and the aquifer is allowed to re-water, acid mine drainage could be produced in the subsurface. If this occurs, acid mine drainage could be a long-term adverse impact on groundwater quality in the vicinity of the mined area.

Under Alternative B, the potential for impacts to groundwater quality would be anticipated to be low due to the monitoring measures that occur simultaneous to the mining activities. One year prior to mining, monitoring wells typically are installed to gauge the level and quality of water supplies. Data are collected for one year prior to, during, and for five years after mining activities occur to address the potential for groundwater impacts and to mitigate potential effects.

Groundwater Availability

Baseline groundwater quantity and resources are described in Section 3.11.1. A previous study conducted by the USACE that found groundwater within the Poteau River Basin, containing the planning lease areas, to be limited and of little consequence as a municipal and industrial water supply source. However, at least one permitted domestic water supply well is located within approximately 1 mile of each of the planning areas. Some of these permitted wells are relatively shallow, less than 60 feet total depth with estimated yields ranging between 0.8 and 15 gallons per minute. During the scoping process, residents in and around the planning areas raised concerns about these groundwater resources, which are currently used for both domestic and agricultural purposes.

The primary concern for potential loss of groundwater availability stems from mining dewatering activities. Dewatering is considered a temporary impact. When mining is completed, the aquifer would be allowed to re-water to natural conditions. However, low-yield wells or wells with shallow completion depths may be sensitive to dewatering impacts and may take additional time following the cessation of dewatering to return to normal production rates. Thus, dewatering impacts are considered short-term, but may be substantial and adverse for wells located within the influence of the dewatered zone. Because the zone of dewatering (radius of influence) tapers from the bottom of the dewatered excavation towards the top of the saturated zone (or water table), wells located farther away from the excavation could be affected less than wells located very near. Under Alternative B, the potential for impacts on groundwater availability would be anticipated to be low due to the low availability of water. Impacts would be limited to short-term effects and would be mitigated by aquifer recharge. Mitigation for short-term dewatering would be specifically addressed by the mine plan.

Surface Water Availability

Impacts on surface water availability are anticipated to be similar for the surface-mining planning areas (Liberty and Milton) and for the subsurface planning areas (McCurtain and Spiro).

Milton and Liberty Planning Areas

Surface water availability impact would be similar for the Liberty and Milton planning areas and are discussed here in common. During surface mining operations, the area disturbed by mining would be isolated from the surface water in the watershed. Diversion berms would be constructed to divert surface

water flows around disturbed area. As a result, no net change in surface water quantity should result from diversion around the disturbed areas.

Diversion berms and sediment ponds would be constructed to control surface-water discharges from within the disturbed area. Within these areas, surface-water runoff would be expected to be higher due to decreased evapotranspiration resulting from removal of vegetative cover. In addition, runoff within the disturbed area would be expected to exhibit lower infiltration rates due to faster runoff. Both of these factors would result in higher surface-water volumes and velocities in the disturbed areas. Sediment ponds would be used to control the rate of surface-water flow offsite. In addition, coordination and permitting through the county floodplain manager should minimize the potential for downstream impacts due to increased surface water volumes during storm events.

During mining activities, jurisdictional waters may be affected by surface mining at the Liberty and Milton planning areas. Placement of fill or dredging of jurisdiction water bodies would require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers. They also may require consultation with the ODEQ and USFWS, depending upon the degree of dredging or fill to be completed by the lessee. These permits and resultant actions would be completed by the lessee.

Depending upon the lease agreement reached between the landowner and the coal lessee, surface-water impoundments typically are replaced, expanded, or increased in number after reclamation. These changes in surface-water features would be determined by the landowner in agreement with the coal lessee and in accordance with any required permit. Short-term impacts on surface water availability would be adverse in the Liberty and Milton. However, long-term impacts are anticipated to be beneficial due to construction or reconstruction of water features during reclamation.

Spiro and McCurtain Planning Areas

Impacts on surface-water quantity would be minimal for the Spiro planning area, as the proposed operations would not entail additional surface expression, but rather an extension of the underground mining activities.

The McCurtain planning area also is proposed for subsurface mining, but would potentially have a new mine entrance and may mine under an impounded water body, Club Lake. Best management practices, including vertical off-set, would be applied to mitigate potential effects to water availability in Club Lake. No impacts on Club Lake or other surface water features are anticipated due to restrictions the Surface Mining Control and Reclamation Act places on perennial and intermittent stream subsidence. At the surface entrance, surface water impacts would be similar to those described above for surface mining.

4.2.2.6 Climate and Air Quality

The act of leasing Federal coal would not produce impacts. Rather, subsequent development of the proposed leasing areas could increase air born soil particles from roads and surface and subsurface work areas, and exhaust emissions from equipment and vehicles.

Direct air quality impacts associated with mining activities would be localized and similar for all four planning areas, though the means of handling the air-quality effects would differ for surface and subsurface mines. The duration of impacts would correspond with the duration of the mining activities and would not be permanent. The impacts are discussed in common below.

The primary project emissions from both surface and subsurface mining would be dust (particulate matter) comprised of process dust (e.g., dust from crushing and conveying systems) and non-process dust (e.g., dust from materials handling, blasting, and transport of coal along unpaved haul roads, and

maintenance activities such as road repair and grading). In surface mines, process and non-process dust is conveyed into the local atmosphere. Dust from surface mining may contribute directly to atmospheric pollution emissions. Process dust from the subsurface-mining operations would be handled through the mine's ventilation system and would not be expected to contribute significantly to air emissions. Non-process dust would contribute air emissions similar to surface mining activities.

Dust control would be required under both the Storm Water Pollution Prevention Plans and the Mine Plans for both surface and subsurface mining. Typically, dust-management practices used in these plans include watering exposed soils and establishment of temporary vegetative cover. These plans would be developed by the lessee and specific to each LAA. These controls apply to both operational and maintenance activities and reduce fugitive dust emissions.

Emissions from the combustions of fossil fuels in vehicles also would contribute to effects on climate and air quality in the form of both greenhouse gases, such as nitrous oxides and methane, as well as conventional air pollutants (particulate matter, nitrous oxide [N₂O], sulfur dioxide, carbon monoxide, and volatile organic carbon). However, mobile sources do not require air quality permits for operation.

Preliminary estimates of potential GHG emissions have been developed for the Liberty and Milton mines using emission factors from USEPA Document EPA430-K-08-004, Direct Emissions from Mobile Combustion Sources - Appendix A. Emissions of GHGs from mobile sources in the Liberty planning area have been estimated at approximately 20 tons CO₂ equivalent per year while greenhouse gas emissions for the Milton planning area from mobile sources have been estimated at approximately 30 tons CO₂-equivalent per year. Operations at the Spiro and McCurtain planning areas would be underground and electrically powered; as such no mobile emission sources would be used during mining. No stationary sources requiring air quality permits are anticipated to be constructed under Alternative B. Calculations of air emissions for mobile sources are provided as Appendix C

Preliminary estimates of potential GHG emissions have been developed for conversion of the coal mined at all four planning areas using emission factors from USEPA Emission Factors for Greenhouse Gas Inventories (2011). GHG emissions would occur at the point of conversion, rather than at the lease. GHG emissions from industrial coking for all four planning areas under Alternative B are projected to be 24.5 million metric tons CO₂ equivalent associated with generation of 415 tons N₂O, 2,860 tons CH₄, and 24.3 million tons CO₂. Calculations of GHG emissions for industrial coking are provided as Appendix C.

The assessment of GHG emissions, their relationship to global climatic patterns, and the resulting impacts is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the proposed action on climate—that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. The BLM does not have the ability to associate the contribution of a BLM action to climate change with impacts in any particular area (e.g., on a local or regional scale where the coal would be processed, either domestically or abroad). The science to be able to do so is not yet available. The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decision made at this level and determining the significance of any discrete amount of GHG emissions is beyond the limits of existing science.

4.2.2.7 Vegetation

Under Alternative B, direct impacts on vegetation would result from clearing the surface for excavation, haul roads, and staging areas. Cleared areas would result in a loss of a vegetative cover to stabilize soils from erosion, loss of habitat, as well as habitat fragmentation. Indirect impacts could result from accelerated wind and water erosion that would affect areas adjacent to earth-moving operations.

Reclamation measures would restore vegetation to productive post-mining uses, but the initial impacts from mining would be direct and short term.

Wetlands

Wetlands are protected under the CWA and are described in 40 CFR 328. Section 301 of the CWA prohibits unpermitted discharges of pollutants into wetlands and Section 404 prohibits the unpermitted discharge of dredged or fill material into wetlands. Wetlands and riparian areas are important for fish and wildlife habitat, providing sources of food and shelter for numerous types of wildlife, including migratory birds.

Riparian Areas

Riparian areas are present in portions of the planning areas. Some of these riparian areas may be directly affected during the clearing and grubbing of the lease prior to mining. In the Liberty and Milton planning areas, trees and shrubs would be removed by bulldozing as described in Section 2.2.1, Description of Typical Operations. The potential exists for additional direct impacts on riparian vegetation from spills or changes in water quality during operations. This vegetation type could be affected indirectly by changes in hydrology due to stream diversion. Riparian areas increase streambank stabilization, thereby reducing erosion, nutrient loading, and degradation of water quality and temperature. The loss of riparian vegetation would be considered important because of its value as wildlife habitat, its ability to increase streambank stabilization, and its limited existence within the planning areas.

According to the BLM's 1994 RMP, the BLM maintains a "Riparian Area Management Policy," which is designed to maintain, restore, and/or improve riparian areas to achieve a healthy and productive ecological condition for maximum long-term benefits (USDI BLM 1994).

Milton Planning Area

According to the MRLC Land Cover map, the dominant vegetative community type for the Milton planning area is deciduous forest providing habitat for numerous wildlife species. According to the USFWS NWI map, three mapped features and portions of two others would be affected by mining activities. These mapped features total 5.73 acres and are all described as Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated (PUBHx) using the Cowardin Classification System. The NWI map for the Milton planning area is provided as Map 3-25. These features along with any other mapped or unmapped streams, ponds, or wetlands also likely provide riparian forest habitat.

Spiro Planning Area

According to the MRLC Land Cover map, the dominant vegetative community types for the Spiro planning area (Map 3-26) are woody wetlands, pasture/hay, and deciduous forest, which all provide habitat for numerous wildlife species. According to the USFWS NWI map, 10 mapped features and portions of five others are located within the Spiro planning area. These mapped features total 76.40 acres. Using the Cowardin Classification System, 10 of these features are described as PUBHx, four are described as Palustrine, Forested, Broad-Leaved Deciduous, Temporarily Flooded (PFO1A) and one, the Poteau River, is described as Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded (L1UBHh). These features, along with any other mapped or unmapped streams, ponds, or wetlands, likely provide riparian forest habitat.

Underground mining operations are proposed for the Spiro planning area. Therefore, impacts on the above-described features would not be anticipated from mining activities (Map 3-27).

Liberty Planning Area

According to the MRLC Land Cover map, the dominant vegetative community type for the Liberty planning area is pasture/hay. According to the USFWS NWI map, 36 mapped features and a portion of one would be affected by mining activities. These mapped features total 16.46 acres. Using the Cowardin Classification System, 19 of these features are described as PUBHx, 17 are described as Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded (PUBHh), and one is described as PFO1A. These features along with any other mapped or unmapped streams, ponds, or wetlands also likely provide riparian forest habitat. Although according to the aerial, it appears only a limited amount of riparian forest occurs along intermittent streams in the northwest and northeast portions of the planning area.

McCurtain Planning Area

According to the MRLC Land Cover map, the dominant vegetative community types for the McCurtain planning area are deciduous forest and pasture/hay that provides habitat for numerous wildlife species. According to the USFWS NWI map, 21 mapped features and portions of 2 are located within the planning area (Map 3-28). These mapped features total 84.74 acres. Using the Cowardin Classification System, 21 of these features are described as PUBHx and one, Club Lake, is described as Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded, Excavated (L1UBHx), and PFO1A. These features along with any other mapped or unmapped streams, ponds, or wetlands also likely provide riparian forest habitat.

Underground mining operations are proposed for the McCurtain LAA. Therefore, impacts on the above-described features would not be anticipated from mining activities.

Noxious Weeds

The Federal Noxious Weed Act of 1974 requires that federal agencies develop a management program to control undesirable plants on federal lands under the agency's jurisdiction as well as coordinate with state agencies for the management of these plants. The Federal Noxious Weed Act was designed to protect agriculture, commerce, wildlife resources, and human health from these plants. Three invasive species of weeds listed on the Noxious Weeds List for the State of Oklahoma are musk thistle (*Carduus nutans*), Scotch thistle (*Onopordum acanthium*), and Canada thistle (*Cirsium arvense*) (USDA NRCS 2011).

No noxious weeds were observed in the planning areas during the site reconnaissance conducted on February 21, 2012. However, the entirety of each planning area was not surveyed by foot. Observations by BLM staff indicate the presence of cheatgrass (*Bromus tectorum*), Sericeae lespedeza (*Lespedeza cuneata*), and Johnsongrass (*Sorghum halepense*). The removal of these noxious weeds, as a result of clearing for mining activities, could be substantially beneficial. During reclamation, a seed mix would be used that excludes invasive species, and the reclamation progress would be monitored.

4.2.2.8 Wildlife

The magnitude of impacts on wildlife depends on the time of year, location, amount of surface disturbance, sensitivity, and adaptability of the wildlife species present, and duration of human activities associated with mining operations.

Direct impacts on wildlife include habitat loss and/or fragmentation, disturbance or displacement of wildlife, mortality of individuals, and hazards created by harmful substances. Under Alternative B, loss or fragmentation of habitat would result from clearing of vegetation for mining activities, roads, and facilities. The level of impacts could be greater if the habitat affected is rare or used during critical

periods in the animal's life, or if activities occur near a water source used by wildlife. Increased noise and human activity could disturb or displace wildlife. Although wildlife species are likely to avoid areas where increased human activity is present, they could be forced to less desirable habitats. Additionally, it is possible to displace animals into adjacent habitats beyond the carrying capacity, potentially increasing the competition for limited resources. Vehicles and facilities present possible hazards if leaks or spills were to occur.

Indirect impacts on wildlife could include the secondary effects of habitat fragmentation and the effects of soil erosion. Habitat fragmentation is the division of an extensive habitat into smaller sections. Soil erosion caused by mining operations could result in increased sedimentation into streams, thereby affecting aquatic habitat downstream as well as degrading water sources for wildlife.

Migratory Bird Species

All planning areas contain forested areas, mixed grass pastures, ponds, streams, and wetlands, which provide suitable habitat for avian species. Because of this, there is a potential for migratory birds to occupy all the planning areas. Therefore, there could be an adverse impact on migratory birds from mining operations as well as permanent removal of vegetation in the Milton and Liberty planning areas.

Habitat Enhancement

Wildlife habitat enhancement plans are designed to protect wildlife and sensitive areas of plant communities. Mining operations at each planning area would not affect the effectiveness of Wildlife Habitat Enhancement Plans under Alternative B.

Big Game

Milton and Liberty Planning Areas

Vegetation occurring at the Milton planning area is predominately woodland, which is preferred habitat for big game. Vegetation occurring at the Liberty planning area is predominantly pastureland, with limited woody vegetation along streams and in the southwest portion. Generally, big game would not be attracted to this type of vegetation in the Liberty planning area. It appears mining activities under Alternative B could result in substantial adverse, indirect impacts on big game. The conversion of woodlands to grassland, if woodlands are not reestablished during reclamation, would force big game in these areas to be displaced to adjacent, more desirable habitat.

Spiro and McCurtain Planning Areas

The dominant vegetative community type at these planning areas is deciduous forests, which is preferred habitat for big game. However, underground mining operations are proposed at these planning areas. Therefore, impacts on big game wildlife at the Spiro and McCurtain planning areas would not be anticipated.

Small Game

Suitable habitat for small game is present at all planning areas. Displacement of small game animals and some mortality of individuals would most likely result from mining operations. The majority of this would occur at the Milton and Liberty planning areas due to proposed surface mining operations.

Nongame

Several nongame wildlife species are believed to inhabit the planning areas, including amphibians, reptiles, birds, and mammals. The habitats at each of the areas support a wide variety of nongame wildlife species. These species would be displaced to areas of similar habitat and some mortality of individuals would most likely result from mining activities.

4.2.2.9 Wildlife Management Areas and National Wildlife Refuges

According to information provided by BLM, the Sequoyah National Wildlife Refuge and McClellan-Kerr WMA are approximately 8 miles from the Liberty Area boundary. The Ouachita WMA, located in LeFlore County, is located approximately 18 miles from the Milton Area boundary. Based on this information, no WMAs or national wildlife refuges are expected to be affected by activities in the planning areas under Alternative B.

4.2.2.10 Special Status Species

There are six federally listed and one state-listed threatened and endangered species that have the potential to be present in the planning areas. No designated critical habitat for any of the listed species occurs in the planning area.

Impacts Common to the Action Alternatives

Impacts associated with mining activities that could affect special status species are the same as those described for vegetation and wildlife in previous sections. The type of habitat disturbed, and the effects on species associated with those habitats, would be determined on a site-specific basis when the detailed mine Plan of Operations is reviewed for approval.

Because the planning areas are located in areas with no suitable habitat or all potential habitat would be avoided, mining activities would have no effect on the interior least tern, piping plover, scaleshell mussel, winged mapleleaf, and blackside darter.

Suitable habitat for the American burying beetle is present within all the planning areas. The lessee will not conduct surface-disturbing activities that could result in unacceptable impacts on the American burying beetle, a federally listed endangered species. The lessee would be required to follow current American burying beetle protocol as outlined by the USFWS. This protocol and additional information can be located at the USFWS Oklahoma Ecological Services Field Office, Southwest Region website at: (www.fws.gov/southwest/es/Oklahoma). All American burying beetle protocol and ESA coordination/consultation would be accomplished cooperatively with the USFWS. This stipulation would be attached to federal coal leases, which occur in areas designated by the USFWS Information, Planning, and Conservation System (IPaC) website (<http://ecos.fws.gov/ipac/>) as possibly containing American burying beetles.

Potential direct effects on the American burying beetle are not anticipated because lands are only becoming available for lease and development will not occur in this project phase. Indirectly, the proposed projects may affect the species by loss and conversion of suitable habitat in subsequent project phases. Because the proposed project is located in an area with American burying beetle habitat and documented occurrences of American burying beetles, this project may affect, but is not likely to adversely affect, the American burying beetle. A letter of concurrence with this finding has been provided by the USFWS (USFWS 2012).

Suitable summer roosting and foraging habitat for the Indiana bat, in the form of forested areas, occurs in the vicinity of each planning area. Surface mining, proposed at this time, is in the Milton and Liberty planning areas. The Indiana bat is not a listed species for the Liberty planning area and the portion of the Milton planning area located in Haskell County. Approximately 107 acres of forested habitat occurs in the portion of the Milton planning area located in LeFlore County (where the Indiana bat is a listed species). Spiro and McCurtain planning areas surface impacts would be minimal and avoid forested areas to eliminate potential impacts on this species.

There is only one documented hibernaculum in LeFlore County, which is not located within proposed Milton planning area, according to the Draft Recovery Plan (USFWS 2007). The recovery plan indicates only winter occurrences are on record for LeFlore County, none in the summer. The only known cave in LeFlore County with a winter population is Bear Cave and is considered Level 4 (low) for conservation due to the number of individuals. The portion of the Milton planning area in LeFlore County did not feature caves or karst-like features and likely only supports potential summer habitat. Therefore, Indiana bat individuals are not likely to occur within the Milton planning area.

Because of this, potential direct effects are not expected to occur on the Indiana bat as a result of the proposed activities. Indirectly, the proposed Milton LAA project may affect the species by loss and conversion of suitable foraging and roosting habitat. However, the amount of suitable habitat that would be lost is only approximately 107 acres. Because of this, the project, as proposed, may affect, but is no likely to adversely affect, the Indiana bat. A letter of concurrence with this finding has been provided by the USFWS (USFWS 2012).

The bald eagle was federally delisted on August 8, 2007. However, bald eagles continue to receive protection from the MBTA and the Bald and Golden Eagle Protection Act. Though the same level of protection is not provided, the eagle remains protected from “take” of their offspring, eggs, parts, or nests. The MBTA and Bald and Golden Eagle Protection Act are enforced by the USFWS.

Avoidance of potential bald eagle nests and habitat was one of the criteria addressed in the Unsuitability Analysis. According to the BLM report, potential nesting sites are located 4 miles to the north, along the Arkansas River and Kerr-McGee Reservoir; however, no bald or golden eagle nests or sites are located within the planning areas.

Suitable habitat for the bald eagle was observed only along the Poteau River in the Spiro planning area. The Spiro mine would use underground mining techniques and impacts on and near this stream would not occur. Therefore, this project is not expected to adversely impact the bald eagle.

4.2.2.11 Cultural Resources

In accordance with the provisions of the NHPA and 36 CFR 800, the BLM is consulting with American Indian tribes. Once final mine plans are developed by the lessee, these areas would be surveyed for cultural resources. BLM has consulted with the Oklahoma SHPO, OAS, American Indian tribes, and the interested public regarding the potential impacts the proposed alternatives may have on cultural resources will also take place at that time. Any cultural resources identified that may be affected by the proposed project would be evaluated and treated in accordance with 36 CFR 800.

4.2.2.12 Paleontological Resources

No concentrations of vertebrate fossils or bone beds are known to occur within the four planning areas. In accordance with the Paleontological Resources Preservation Act of 2009, paleontological resources on Federal land must be managed and protected using scientific principles and expertise. Prior to ground

disturbance, an inventory for paleontological resources must be completed. This is typically done in conjunction with the cultural resources survey by the cultural resources specialist.

4.2.2.13 Recreation

Potential impacts on recreation resources would occur because mining activities would be in the viewshed of a scenic or recreational area and cause an indirect impact on recreation uses. These impacts are addressed in Section 4.2.2.14. No direct impacts on developed recreation areas are anticipated from the addition of these mining lease areas. Informal and dispersed recreation may occur within these planning areas, but this has not been addressed in this analysis.

4.2.2.14 Visual Resources

The assessment of impacts on visual resources is based on BLM Handbook H-8431-1, Visual Resource Contrast Rating. Even though the lands within the planning areas are not public lands administered by the BLM, a visual resource analysis must be conducted as required by NEPA and FLPMA.

- NEPA Section 101 (b) states that measures should be taken to "...assure for all Americans...aesthetically pleasing surroundings..."
- FLPMA Section 102 (a) (8) states that "...public lands will be managed in a manner which will protect the quality of the scenic (visual) values of these lands."

In response to these requirements a contrast rating worksheet, BLM Form 8400-4 was completed representing a typical view a casual observer would have viewing each proposed LAA. These worksheets are based on the concept of visual contrast, which is defined as the contrast generated by the proposed project (form, line, color, and texture) as compared to the existing condition of the landscape (landform, vegetation, water, and structures). Other factors also are analyzed through the contrast rating process, including distance, angle of observation, duration of view, relative scale, season of use, lighting conditions, recovery time, spatial relationships, atmospheric conditions, and motion. These factors are described from the four key observation points on the included contrast rating worksheets. Due to the abundance of dense hardwood vegetation in this area of Oklahoma, views from outside of the planning areas are generally screened by vegetation and the highest impacts occur on viewers located within these proposed mining areas. In addition to analyzing impacts on viewers, impacts on scenic quality also have been analyzed to determine the effects on the inherent landscape character of the planning areas.

Milton Planning Area

Surface-mining operations in the Milton planning area would be visible from numerous adjacent residences as well as State Route 31 (refer to key observation point [KOP] 1 visual-contrast-rating worksheet). Short-term impact associated with mining activities would produce moderate to strong visual contrast due to the removal of vegetation along the ridge and the modification of the existing landforms to conduct surface mining. Mining equipment also would be visible, which would add industrial structural elements as well as motion into the landscape. After mining operations have ceased and reclamation has been completed, long-term impacts would be limited mostly to vegetation clearing along the ridgeline, which would require considerable time for regrowth. To reduce contrast generated by vegetation clearing, it is recommended the reclamation effort include creating irregular instead of geometric shapes within existing vegetation. This would greatly reduce contrast as viewed from these viewers.

Views from State Highway 26 and McCurtain generally would be screened by vegetation and local topography; therefore, visual contrast from mining operations would be weak. More distant viewing locations, including the Robert S. Kerr Reservoir, U.S. Highway 59, U.S. Highway 270, State Highway 9,

and the proposed Butterfield-Overland Trail NHT, would be completely screened by vegetation and there would be no noticeable contrast present in their viewsheds from operations in the Milton planning area.

Scenic quality within the Milton planning area would be altered through surface mining operations including the removal of mature vegetation and linear landform modifications that would cause short-term impacts on the landscape character. Even though surface mining has occurred previously in this area (which has created linear ponds), the new lease area is located on steeper slopes and therefore would cause a greater modification to the scenic quality.

Spiro Planning Area

As underground mining is proposed for the Spiro planning area, visual resource impact would be lower than if surface mining were proposed. Views from U.S. Highway 271, State Highway 9A, dispersed residences (refer to KOP 2 visual-contrast-rating worksheet), the Poteau River, and the proposed Butterfield-Overland Trail NHT would be screened primarily by vegetation. Other than potentially viewing mining equipment as part of preparing the portal to access underground mining, there would be little to no visual contrast from these viewers. More distant viewers (e.g., the Robert S. Kerr Reservoir, Trails of Tears NHT, U.S. Highway 59, State Highway 9, State Highway 31, and State Highway 112) would have their views of the proposed mining activities completely screened by vegetation.

The landscape character present within the Spiro planning area would be modified in the short-term through the construction of the mine portal as well as through potential subsidence from underground mining techniques. If areas need to be cleared of vegetation because of subsidence, the scenic quality would be marginally modified unless areas of vegetation clearing repeat the irregularly shaped meadows found within the existing landscape character. In the long-term, the area would return to a condition similar to the existing landscape character after reclamation efforts are complete.

Liberty Planning Area

Surface-mining operations in the Liberty planning area would be occurring among dispersed residences within the proposed area for mining. Short-term impacts on the residences would produce a strong visual contrast due to the proximity of these operations to the residences (refer to KOP 3 visual-contrast-rating worksheet). Long, linear pits and their associated spoils piles would dominate views from these residences as well as mining equipment that would introduce motion and industrial elements further into the landscape. Existing surface-mining operations are occurring to the east and southeast of this LAA, but these operations are screened partially from the majority of the residences and are located more than 0.5 mile away. The proposed mining operations may occur up to 300 feet from these residences, which would modify their viewshed considerably. Long-term impacts on these residences would be minimal as the mined areas would be reclaimed to the existing contours and re-vegetated.

Views from the town of Stigler and State Highway 9 would be mostly screened by vegetation and visual contrast would be weak where the mining operations would be visible. More distant viewers associated with the Robert S. Kerr Reservoir, Sequoyah National Wildlife Refuge, Trails of Tears NHT, State Highway 82, State Highway 31, State Highway 2, and State Highway 26 would be completely screened by vegetation; therefore, there would be no noticeable contrast present in their viewsheds from operations in the Liberty LAA.

In the short term, the landscape character within the Liberty planning area would be modified from the surface-mining operations that would create linear pits and spoils piles, which would introduce substantial deviations in the existing scenic quality. After reclamation has been completed, the landscape character of this area would trend toward the pre-mining condition and in the long term, landscape modifications would be minimal.

McCurtain Planning Area

Underground-mining operations are proposed to occur within the McCurtain planning area; therefore, impacts on visual resources would be less than if surface mining were proposed. Views from dispersed residences within the planning area (refer to KOP 4 visual-contrast-rating worksheet) would have a moderate short-term visual contrast introduced into their viewshed if the portal to access under underground-mining operations would occur within their viewshed. If only underground mining operations would be occurring in the viewshed of a residence, a weak visual contrast would result through any land subsidence that could occur, but these areas would repeat existing landscape elements (form, line, color, texture) and would not attract attention. Long-term impacts on these residences from the proposed mining operations would be minimal, as existing contours would be matched.

Views from State Highway 26 would be mostly screened by vegetation due to the dense band of vegetation present on either side of the highway. Therefore, visual contrast in the viewshed of motorists on this highway would be weak to minimal as mining operations would likely not be visible as the highway passes through the planning area. Viewers associated with State Highway 31 and the town of McCurtain also would have their views mostly screened by vegetation toward mining operations in the McCurtain planning area. More distant viewers (e.g., the Robert S. Kerr Reservoir, State Highway 9, State Highway 82, and U.S. Highway 59) would have their views toward the planning area completely screened by vegetation and terrain.

The landscape character present within the McCurtain planning area would be modified in the short term through the construction of the mine portal, as well as through potential subsidence from underground-mining techniques. If, through subsidence, areas need to be cleared of vegetation, the scenic quality would be marginally modified unless areas of vegetation clearing repeat the amorphous shaped meadows found within the existing landscape character. In the long term, the area would return to a condition similar to existing landscape character.

4.2.2.15 Social and Economic Conditions

Certain effects would be common to both of the action alternatives, Alternative B and Alternative C. The continuation of mining in each of the four planning areas would have a positive direct effect on the local economy. Benefits such as direct and secondary (indirect or induced) job creation and retention; direct and secondary (indirect or induced) earnings; lease payments; taxes and royalties returned to federal, state, and local governments; and corporate contributions to charities and local community groups likely would continue or increase in proportion to jobs and coal production in the planning area.

The history and presence of mining in the area suggests that it is an established part of the lifestyle in local communities. Future growth would occur in this context under all action alternatives and would, thus, be consistent with the prevalent community attitudes and values.

Given the lack of significant adverse effects associated with the action alternatives, there would not be a disproportionate share of such impacts on environmental justice populations. Public input has not indicated any other specific concerns related to environmental justice.

Milton Planning Area

Under Alternative B, employment and earnings associated with the Milton Mine would be expected to remain at current levels over the time required to mine the entire area. This is estimated at 80 directly affected jobs earning an average of \$70,000 (including benefits) or total wages of \$5,600,000 annually.

Spiro Planning Area

Under Alternative B, employment and earnings associated with the Spiro Mine would be expected to remain at current levels over the time required to mine the entire area. This is estimated at 80 directly affected jobs earning an average of \$85,000 (including benefits) or total wages of \$6,800,000 annually.

Liberty Planning Area

Under Alternative B, employment and earnings associated with the Liberty Mine would be expected to continue at their current levels over the time required to mine the entire area. This is estimated at 125 directly affected jobs earning an average of \$70,000 (including benefits) or total wages of \$8,750,000 annually. This would be a positive impact compared to the baseline of taking no action.

At the Liberty planning area, cattle-grazing leases are known on 160 acres in Section 28, Township 10 North, Range 21 East, Haskell County (USDI BLM 2011b). The presence of other grazing leases is unknown. The typical duration of surface mining of a parcel is approximately five years from initial clearing through reclamation and land currently in pasture would be reclaimed to similar use. Reclamation may include the replacement of ponds and other water features necessary to cattle grazing in keeping with the land's prior condition. Impacts on grazing leases would be anticipated to be short-term under Alternative B.

McCurtain Planning Area

Under Alternative B, mining this area would continue from adjacent subsurface mines and continue to employ about 300 persons at an annual average rate of \$70,000 (including benefits). The total annual wage expenditures including benefits would be \$2,100,000. The leasing of this area would extend the mine life for McCurtain approximately six years.

4.2.3 Balanced Coal Development and Other Resource Protection (Alternative C)

4.2.3.1 Land and Realty

Impacts anticipated as a result of Alternative C would be similar to Alternative B.

4.2.3.2 Access and Transportation

Impacts anticipated as a result of Alternative C would be similar to Alternative B.

4.2.3.3 Energy and Mineral Resources

If Alternative C is selected, potential impacts are expected to be similar to impacts previously discussed in Section 4.2.2.3 for Alternative B. The difference in anticipated coal recovery between Alternatives C and B is shown in Table 2-2 and the differences are considered not appreciable. In general, coal mining in the proposed lease areas is not expected to adversely or beneficially impact the other energy and mineral resources in the area (i.e., oil and gas, clay, shale, limestone, dimensional stone, sand, and gravel) with the exception of coalbed methane.

4.2.3.4 Soils

If Alternative C is selected, potential impacts are expected to be similar to impacts previously discussed in Section 4.2.2.4 for Alternative B. Because Alternative C provides greater protection of areas identified as wetlands, riparian areas, priority streams, and cultural resources than does Alternative B, the area of surficial soil impacts may be lower if Alternative C is selected. However, this difference in land-area

disturbance is not considered significant when compared to the total leasing area and would only apply to the two proposed lease areas that would use surface-mining techniques (Liberty and Milton lease areas). In general, impacts from mining and efforts to mitigate impacts are expected to be similar for Alternatives B and C.

4.2.3.5 Water Resources

Groundwater

If Alternative C is selected, potential impacts on groundwater quality and quantity are expected to be similar to impacts previously discussed for Alternative B in Section 4.2.2.5. Because Alternative C provides greater protection of areas identified as wetlands, riparian areas, priority streams, and cultural resources than does Alternative B, the area of surface impacts may be lower if Alternative C is selected. However, impacts on groundwater are not expected to be appreciably different between alternatives B and C due to the minor reduction in surface area to be disturbed. No significant differences are expected for the two areas that propose to use subsurface mining techniques (McCurtain and Spiro lease areas). In general, impacts from mining and efforts to mitigate impacts are expected to be similar for alternatives B and C.

Surface Water

Alternative C provides greater protection of areas identified as wetlands, riparian areas, and streams than does Alternative B, and therefore the area of surface-water impacts may be lower if Alternative C is selected. In the two surface-mine planning areas, Milton and Liberty, the area of disturbance most directly drives water runoff generation. The 4 percent difference in surface disturbance between Alternative B and Alternative C would lessen the impacts of Alternative B only slightly. In the Spiro and McCurtain planning areas, water availability for Alternative C would be expected to be similar to that described for Alternative B.

However, the preservation of riparian, wetland, and priority streams would have a much more positive effect on water quality, as these systems directly affect sediment and nutrient concentrations in runoff. As such, water quality impacts are anticipated to be much less for Alternative C as compared to Alternative B in the surface-mine planning areas. Water quality impacts under Alternative C for the subsurface mining operations would be similar to those for Alternative B.

4.2.3.6 Climate and Air Quality

Air quality impacts from Alternative C would be similar to those described under Alternative B.

Using Alternative C, GHG emissions from industrial coking of coal from all four planning areas would decrease by 1.9% to 24.1 metric tons CO₂ equivalent resulting from generation of 407 tons of N₂O, 2,805 tons CH₄, and 23.9 million tons CO₂.

4.2.3.7 Vegetation

Under Alternative C, all surface-water features (e.g., wetlands, streams, impoundments, etc.) would be avoided as well as a 100-foot buffer zone on all sides. Therefore, impacts on vegetation at the Milton and Liberty planning areas would be the same as those described under Alternative B for terrestrial ecosystems and eliminated within riparian and wetland ecosystems. Because underground mining

operations are proposed for Spiro and McCurtain planning areas, impacts on vegetation at these locations would be minimal and the same as those described under Alternative B.

4.2.3.8 Wildlife

Because underground-mining operations are proposed for Spiro and McCurtain planning areas, impacts on wildlife (including migratory bird species, big game, small game, nongame, etc.) at these locations would be minimal and the same as Alternative B. Impacts on wildlife at the Milton and Liberty planning areas would be reduced because this alternative would avoid riparian forest and wetland habitats.

Mining operations at all planning areas would not affect Wildlife Habitat Enhancement Plans under Alternative C.

4.2.3.9 Wildlife Management Areas

No WMAs or national wildlife refuges are expected to be affected by activities in the planning areas under Alternative C.

4.2.3.10 Special Status Species

Because underground mining operations are proposed for Spiro and McCurtain planning areas, impacts on listed threatened and endangered species would not occur. Impacts on the American burying beetle and Indiana bat within the Milton and Liberty planning areas would be reduced compared with Alternative B because this alternative would avoid riparian forest habitats and provides greater protection to special status species.

4.2.3.11 Cultural Resources

Alternative C provides greater protection of areas identified as cultural resources than does Alternative B. The spatial extent of disturbance most directly drives cultural resource impacts within the Milton and Liberty surface-mine planning areas; the 184.4 acres of expected surface under Alternative C is only 4.6 percent less than would occur under Alternative B. In the Spiro and McCurtain planning areas, cultural-resource impacts of Alternative C would be expected to be similar to those described for Alternative B.

4.2.3.12 Paleontological Resources

Alternative C provides greater protection of areas identified as paleontological resources as compared to Alternative B. The 4.6 percent difference in surface disturbance for Alternative C at the planning areas with surface-mine LAAs would result in slightly lower impacts than under Alternative B. In the Spiro and McCurtain planning areas, paleontological resource impacts for Alternative B and C would be expected to be similar.

4.2.3.13 Recreation

Impacts anticipated as a result of Alternative C would be similar to Alternative B.

4.2.3.14 Visual Resources

Impacts anticipated as a result of Alternative C would be similar to Alternative B.

4.2.3.15 Social and Economic Conditions

Alternative C would allow development of all lands within the leased areas except for those lands considered to be unsuitable for development under Alternative B. In addition, wetland and riparian areas, priority streams, and cultural resources would be considered unsuitable for development under this alternative. Under Alternative C, these areas total approximately 323.4 acres, which is 4.6 percent more acres restricted from coal resource development than Alternative B. Operations at existing mines, including those contiguous to all four planning areas, would continue. However, the duration of operations or number of employees would be anticipated to be slightly less positive than Alternative B. The duration of mining would most likely be limited under Alternative C. The level of employment would be expected to be consistent with Alternative B; however, the duration of mining is related to the coal available for mining and employment duration would be expected to be slightly lower under this alternative than under Alternative B.

4.3 CUMULATIVE EFFECTS

Cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the impact on the environment that results from the incremental impact of the action when added to other past, present, and RFFAs, regardless of what agency (federal or non-federal) or person undertakes other such actions. Cumulative impacts could result from individually minor, but collectively significant actions taking place over a period of time. The purpose of the cumulative effect analysis is to ensure that the decision maker considers the full range of consequences of a Proposed Action and Alternatives, including the No-Action Alternative. Cumulative effects, discussed in this section, are the total effects on a given resource or ecosystem of all actions taken or proposed.

4.3.1 Elements Considered in the Cumulative Effects Analysis

The cumulative effects assessment process considered (1) planning issues; (2) cumulative effect timeframes and the resources that could be affected by the Proposed Action and Alternatives; (3) the geographical area in which the impacts would occur; and (4) other past, present, and RFFAs that have or could be expected to cause impacts on these resources when considered with the Proposed Action and Alternatives.

4.3.1.1 Cumulative Effects Issues

The identification of analysis for analysis in the EA is discussed in Section 1.4.1. Those issues determined to potentially involve a cumulative effect with other past, present, or RFFAs are included in the cumulative effects analysis. An exception is if the Proposed Action or Alternatives would not have direct or indirect effects on a resource. In this case, the Proposed Action or Alternatives would not contribute incrementally to cumulative effects and the issue (and resource) is not included in the analysis.

4.3.1.2 Geographic and Temporal Scope

The geographic scope is the spatial extent where cumulative effects may occur on a resource. The geographic scope is assessed, and will often be different, for each cumulative effects issue. It is general based on the natural boundaries of the resource affected. In several cases, the geographic scope for a resource is larger than the planning areas in order to consider an area large enough to encompass likely effects from other actions on the same resource. A timeframe for a cumulative effects issue—that is, the duration of both short-term and long-term effects anticipated—establishes the temporal scope for the analysis of the issue. Table 4-1 identifies the geographic and temporal scope identified for each resource.

**TABLE 4-1
CUMULATIVE EFFECTS ISSUES AND SCOPE OF ANALYSIS**

Resource	Resource Issues	Geographic Scope	Temporal Scope
Lands and Realty	<ul style="list-style-type: none"> • What are the cumulative effects on: <ul style="list-style-type: none"> – Planned future development; – Future coal leasing? 	Haskell and LeFlore counties	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Access and Transportation	<ul style="list-style-type: none"> • What are the cumulative effects on safety on local roads associated with trucks transporting coal from the mines? 	Planning areas	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Energy and Mineral Resources	<ul style="list-style-type: none"> • What are the cumulative effects on the development of other energy development? 	Arkoma Basin	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Soils	<ul style="list-style-type: none"> • What are the cumulative effects of surface disturbance on the stability and fertility of soils? 	The geographical extent of soil units intersecting by planning areas	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Water Resources	<ul style="list-style-type: none"> • What are the cumulative effects on: <ul style="list-style-type: none"> – Natural springs; – Ponds and wetland areas? 	Oklahoma Water Resources Board watershed planning basin	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Climate Change	<ul style="list-style-type: none"> • What are the cumulative effects on climate change? 	Region, generally Oklahoma and the southwest United States	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Air Quality	<ul style="list-style-type: none"> • What are the cumulative effects associated with fugitive dust generated by mining activities? 	Local airshed	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Vegetation	<ul style="list-style-type: none"> • What are the cumulative effects on old-growth forests? 	The geographical extent of vegetation communities intersected by the planning areas	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)

Wildlife and Special Status Species	<ul style="list-style-type: none"> • What are the cumulative effects on: <ul style="list-style-type: none"> – American burying beetle; – Indiana bat? 	The extent of species-specific habitat intersected by the planning areas	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Cultural Resources	<ul style="list-style-type: none"> • What are the cumulative effects on archaeological and historic sites? 	Planning areas	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Paleontological Resources	<ul style="list-style-type: none"> • What are the cumulative effects on paleontological resources? 	Geographic extent of geological formations intersected by planning areas	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Visual Resources	<ul style="list-style-type: none"> • What are the cumulative effects on visual resources? 	Viewshed from planning areas	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)
Social and Economic Conditions	<ul style="list-style-type: none"> • What are the cumulative effects on property values? • What will be the cumulative economic impacts in the Haskell and LeFlore counties? 	Haskell and LeFlore counties	Short-term effects from one to three years during development and construction activities; long-term effects assumed for the life of the Project (10 years or more)

4.3.1.3 Cumulative Actions

In general, a cumulative action is a past, present, other proposed action, or RFFA, that potentially has a cumulatively substantial impact together with the Proposed Action or Alternatives. For purposes of this analysis, RFFAs are proposed projects or actions that have applied for a permit from local, state, or federal authorities or which are publically known.

The planning areas are located in an area characterized by open space and rural development with pockets of suburban development. As part of the planning effort, Haskell and LeFlore counties were contacted for information on cumulative actions. No other known types of developments or activities were known or planned in the counties.

The BLM administers 222,313.3 acres of federal coal split-estate lands within the two-county area (USDI BLM 2012b). Coal mining is an ongoing activity within the region. Reasonably foreseeable development for this planning effort is a projection of the coal-mining activities that are likely to occur in the planning areas over the life of the proposed activities associated with the Proposed Action. The reasonably foreseeable development for the four planning areas is based on the estimate of coal to be mined and the method of mining (i.e., surface or underground). As part of the planning process, BLM analyzed the

reasonably foreseeable development for the four planning areas and reported the results in Reasonably Foreseeable Coal Development Analysis for Four Coal Lease Applications: Haskell and LeFlore Counties, Oklahoma (USDI BLM 2013). The reasonably foreseeable development report is available on the BLM's project website.

4.3.2 Results

4.3.2.1 Land and Realty

Cumulatively, the effect of expanding coal leases in Haskell and LeFlore Counties is anticipated to have a neutral effect on lands and realty as demand for housing would be maintained.

4.3.2.2 Access and Transportation

There are no known or anticipated future actions that may cause cumulative impacts on the access and transportation in the proposed lease areas.

4.3.2.3 Energy and Mineral Resources

Energy and mineral resource demand within the Arkoma Basin is high, and many areas in Haskell and LeFlore counties have natural gas and petroleum-liquids production. It is possible that demand for these energy resources could occur in lands proposed for leasing. Evaluation for oil and gas leases in areas addressed by this RMPA would be addressed on a case-by-case basis by the BLM.

4.3.2.4 Soils

There is an existing FCMC coal surface-mining operation adjacent to the Liberty planning area. Implementing the project would result in cumulative effects on surface soils consistent with and in addition to that at the adjacent mining operation. Reclamation plans at both the current mine and any future lease would require the land be returned to productive use compatible with pre-mining conditions. In the McCurtain planning area, existing underground mining is being completed with reclamation of overlying abandoned mine land. Similar abandoned-mine-land reclamation would be conducted with any future subsurface mining in the McCurtain planning area, resulting in a positive cumulative effect on soils at that location. No similar circumstances are known to exist for the Milton or Spiro planning areas. There are no known or anticipated future actions that would contribute to these effects in the proposed lease areas.

4.3.2.5 Water Resources

It is possible that if another nearby industry or municipality began a groundwater dewatering or groundwater extraction project at the same time as mining dewatering, the impacts on groundwater resources could be cumulative and of increased severity; however, no known future actions of this type are anticipated at this time.

4.3.2.6 Air Quality

The existing surface coal mine adjacent to the Liberty planning area has had effects on air quality in the area. Residents have complained of excessive dust during public meetings. The continuation of surface mining in this area would have similar effects on air quality over the duration of the mining operations. Though this would be a continuation of an existing condition, it is not considered a cumulative effect. There are no known or anticipated future actions that may cause cumulative impacts on the air quality of the proposed lease areas.

4.3.2.7 Climate Change

While the act of leasing of Federal coal would have no impact on climate change as a result of GHG emissions, subsequent development of the proposed leasing areas, combined with GHG emissions from other GHG-emitting activities, could have effects on global climate through GHG emissions. However, those effects on global climate change cannot be determined. The very small increase in GHG emissions that could result from (1) subsequent development of the proposed leasing areas and (2) processing of the coal into coke, both domestically and abroad, would not be anticipated to have effects on the global climate that differ substantially from the No-Action Alternative. This is because climate change is a global process that is impacted by the sum total of GHGs in the Earth's atmosphere. The incremental contribution to global GHGs from the Proposed Action cannot be translated into a specific effect on climate change globally or in the area of this site-specific action. It is currently not feasible to predict with certainty the net impacts from particular emissions associated with Federal actions on global or regional climate.

4.3.2.8 Vegetation

There is an existing FCMC coal surface-mining operation adjacent to the Liberty planning area. Implementing the project would result in cumulative effects on vegetation consistent with and in addition to that at the adjacent mining operation. Reclamation plans at both the current mine and any future lease would require the land be returned to productive use compatible with pre-mining conditions. However, forested land is slow to recover and reclamation would be long term. In the McCurtain planning area, existing underground mining is being completed with reclamation of overlying abandoned mine land. Similar abandoned-mine-land reclamation would be conducted with any future subsurface mining in the McCurtain planning area, resulting in a positive cumulative effect on vegetation at that location. No similar circumstances are known to exist for the Milton or Spiro planning areas. There are no known or anticipated future actions that would contribute to these effects in the proposed lease areas.

4.3.2.9 Wildlife and Special Status Species

Cumulative impacts on wildlife and special status species would be similar to those described for soils and vegetation, as each species is dependent upon its habitat. Cumulative effects on wildlife may occur at the Liberty planning area as a continuation of the adjacent surface mine and removal of forest land cover. While not permanent, these effects would be long-term, reflecting long-term forest recovery.

Proposed activities at the planning areas could cumulatively affect the American burying beetle by loss and conversion of suitable habitat in subsequent project phases. Because the proposed project is located in an area with American burying beetle habitat and documented occurrences of American burying beetles, this project may affect, but is not likely to adversely affect, the American burying beetle. A letter of concurrence with this finding has been provided by the USFWS (USFWS 2012).

Proposed activities at the planning areas could cumulatively affect the Indiana bat by loss and conversion of suitable habitat in subsequent project phases. Mining activities at the proposed Milton LAA project could cumulatively affect the species by loss and conversion of suitable foraging and roosting habitat. The amount of suitable habitat that would be lost is approximately 107 acres. Because of this, the project, as proposed, may affect, but is not likely to adversely affect, the Indiana bat. A letter of concurrence with this finding has been provided by the USFWS (USFWS 2012).

4.3.2.10 Cultural Resources

Impacts on cultural resources are minimized during mining operations by application of the BLM's coal leasing stipulations regarding these resources. There are no known cultural resources present in the

planning areas and those that are identified would be treated in accordance with 36 CFR 800 and the NHPA. There are no known current or anticipated future actions that may cause cumulative impacts on the cultural resources of the proposed lease areas.

4.3.2.11 Paleontological Resources

Similar to cultural resources, impacts on paleontological resources are minimized during mining by application of coal-leasing stipulations regarding these resources. No concentrations of vertebrate fossils or bone beds are known to occur within the four planning areas. There are no known current or anticipated future actions that may cause cumulative impacts on the paleontological resources of the proposed lease areas.

4.3.2.12 Visual Resources

A program of viewshed change or large-scale view disturbance implemented by another nearby industry or activity at the same time as the mining activities could result in cumulative impacts to visual resources. However, no known future actions of this type are anticipated at this time.

4.3.2.13 Social and Economic Conditions

Employment of large numbers of personnel by another nearby industry at the same time as mining activities could result in cumulative impacts to social and economic conditions. However, no known future actions of this type are anticipated at this time.

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5.0 CONSULTATION AND COORDINATION

5.1 INTRODUCTION

Integrated with the planning, analysis, and review activities of RMPA and EA preparation, the BLM is conducting agency coordination and public participation, commencing with scoping early on and continuing throughout the environmental process. The intent of the program is to proactively encourage interaction between the BLM and other federal, state, and local agencies and the public to keep them informed about the project through dissemination of information and to solicit information that assists in analysis and decision-making.

Throughout the preparation of the RMPA and EA, formal and informal efforts have been made by the BLM to involve, consult, and coordinate with other federal agencies, state and local governments, American Indian tribes, and the public. Such communication is important to ensure agency policy and public sentiment and values are considered and incorporated into decision-making.

This chapter provides a brief description of the methods employed for communication and interaction, which includes consultation and coordination with agencies, tribes, and stakeholders; the scoping process; and public review of the RMPA and EA.

5.2 CONSULTATION AND COORDINATION

Agencies and organizations having jurisdiction and/or specific interest in the project were contacted at the beginning of scoping, during the resource inventory, and prior to the publication of the RMPA/EA to inform them of the project, request data and comments, and solicit their input about the Proposed Action. Additional contacts were made throughout the process to clarify or update information. All conversations with agency personnel were documented and are maintained in the project files. This section describes the consultation and coordination activities that occurred throughout the RMPA/EA process.

5.2.1 Cooperating Agencies

As part of scoping, the BLM sent formal letters inviting seven federal and state agencies to participate in preparation of the RMPA/EA as cooperating agencies. Of the agencies invited to be cooperating agencies (refer to the following list), no responses were received.

Federal Agencies

- USFWS
 - Tulsa, Oklahoma
- USACE
 - Tulsa District, Tulsa, Oklahoma
- OSM
 - Mid-Continent Region, Afton, Illinois

Oklahoma State Agencies

- Department of Mines
 - Oklahoma City, Oklahoma
- Department of Environmental Quality
 - Oklahoma City, Oklahoma
- Department of Wildlife Conservation
 - Oklahoma City, Oklahoma
- Oklahoma Corporation Commission
 - Oklahoma City, Oklahoma

5.2.2 Formal Consultation

The BLM is required to prepare RMPA/EAs in coordination with any studies or analyses required by the Fish and Wildlife Conservation Act (16 U.S.C. 661 et seq.), ESA (16 U.S.C. 1531 et seq.), NHPA, as amended (16 U.S.C. 470 et seq.), and other environmental review laws and executive orders.

5.2.2.1 Biological Resources

Under provisions of Section 7(a)(2) of the ESA, a federal agency that carries out, permits, licenses, funds, or otherwise authorizes an activity must consult with the USFWS as appropriate to ensure the action is not likely to jeopardize the continued existence of any species listed as threatened or endangered. This RMPA is considered a major planning effort and consultation has been initiated. The BLM initiated informal consultation with the USFWS in March 2012 by requesting comments on conservation measures to minimize and/or avoid potential impacts to any listed species and their habitat known by the USFWS to occur in the planning area. No response to this letter was received. In May 2012 BLM provided a Biological Assessment for the proposed leasing activities (Appendix B). As part of development of the Biological Assessment, the Oklahoma Department of Wildlife Conservation and Oklahoma Natural Heritage Inventory were also consulted informally. In July 2012, USFWS provided a letter of concurrence with the findings of the Biological Assessment. Coordination and consultation will continue throughout the planning process and implementation of the RMPA.

5.2.2.2 Cultural Resources

Section 106 (16 U.S.C. 470f) of the NHPA requires federal agencies to take into account the effect of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP, historic properties, including those listed on, or eligible for, the NRHP. Regulations for the implementation of Section 106 are defined in 36 CFR Part 800 – Protection of Historic Properties. These regulations define how federal agencies meet their statutory responsibilities as required under the law. The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties (36 CFR 800.1). These parties include the ACHP, SHPO, American Indian tribes, Tribal Historic Preservation Office, state and other federal agencies, and individuals or organizations with a demonstrated interest in the undertaking due to their legal or economic relation to the undertaking or affected properties, or their concern with the undertakings effects on historic properties (36 CFR 800.2) The Section 106 process is separate from but often conducted parallel with the preparation of an EIS.

As part of scoping, the BLM mailed Scoping Notices on September 2, 2011 to the following four American Indian tribes to inform them of and determine their interest in the planning effort:

- Seminole Nation of Oklahoma
- Choctaw Nation of Oklahoma
- Chickasaw Nation of Oklahoma
- Muscogee Creek Nation

The tribes were also provided the Draft RMPA and EA for comment as shown in Section 5.3.5. Responses from the Choctaw Nation and the Osage Nation were received as a result of this second contact. BLM personnel also reviewed the Liberty planning area in the field with tribal members as a result of individual comments received on the draft RMPA and EA.

5.3 PUBLIC PARTICIPATION

5.3.1 Scoping Process

The scoping process is purposefully conducted early in the planning and NEPA process for the RMPA and EA and is open to all interested agencies and public. The intent is to solicit comments and identify issues that help direct the approach and depth of the environmental studies and analysis needed to prepare the RMPA and EA. Objectives to meet this goal include:

- Identifying and inviting agencies with jurisdiction and/or special expertise relevant to the project to participate in the preparation of the RMPA and EA as cooperating agencies
- Identifying other interested parties and inviting them to participate in the planning and NEPEA process
- Identifying other environmental review and consultation requirements
- Identifying the relevant and substantive issues that need to be addressed during the studies and in the RMPA and EA
- Determining the range of alternatives to be evaluated
- Developing the environmental analysis criteria and systematic process, allocating RMPA and EA assignments among agencies, as appropriate

The scoping process is summarized in this section and documented in the *Oklahoma Resource Management Plan Amendment and Environmental Assessment Scoping Report* (USDI BLM 2011b). The issues derived from scoping comments are listed in Chapter 1.0, Table 1-2.

5.3.2 Approach

The range of issues summarized in this RMPA and EA (refer to Section 1.4) were derived from the scoping process, described below.

5.3.2.1 Notification

The RMPA and EA and public scoping process began officially with the publication in the *Federal Register* of BLM's NOI to amend the RMP, prepare an EA, and conduct public scoping meetings. The NOI was published on June 24, 2011.

A Planning Bulletin and Scoping Notice were mailed by the BLM on September 2, 2011 to approximately 250 individuals, agencies, and interested organizations on the BLM's mailing list. Advertisements and paid legal notices were placed in local newspapers (refer to Table 5-1). Also, project information was posted on the project website.

**TABLE 5-1
ADVERTISEMENTS AND PAID LEGAL NOTICES**

Newspaper	Publication Dates
Spiro Graphic	September 15, 2011
Stigler News-Sentinel	September 15, 2011

Scoping Meetings

Two scoping meetings were held in September 2011 to inform the public about the project and the planning and NEPA process and to solicit input on the scope of the project and potential issues. Several displays illustrating or explaining components of the RMPA and EA were stationed around the meeting room for those in attendance to review. Representatives of BLM and the ENERCON team (the consultant assisting BLM) were available to explain the displays and answer questions.

Each meeting began with a welcome address by the BLM Oklahoma Field Manager, Stephen Tryon, followed by a formal presentation by Tryon and the two RMPA and EA co-leads. The presentation described the project background, addressed the need for the RMPA and EA, described the planning and NEPA process, presented the project schedule, and discussed opportunities for public participation.

After the presentation, comments and questions were received from the public. To ensure a clear and accurate record, the comments and questions were recorded in writing as stated on a flipchart for the audience to view. Also, those in attendance at the meetings were given comment forms to complete and submit.

A total of 44 members of the public attended the scoping meetings. The two scoping meetings were held at the locations and dates listed below:

McCurtain, Oklahoma
Tuesday, September 20, 2011
6:30–8:00 p.m.
McCurtain City Hall

Spiro, Oklahoma
Thursday, September 22, 2011
6:30–8:00 p.m.
Spiro Public Schools

Verbal comments provided during the scoping meetings were documented in meeting notes to include in the scoping report. Written comments were accepted at the public scoping meetings, via electronic mail, and via United States mail at the BLM Oklahoma Field Office.

5.3.3 Scoping Results

The results of scoping efforts early in the process are documented in the *Oklahoma Resource Management Plan Amendment and Environmental Assessment Scoping Report* (USDI BLM 2011b). Issues derived from comments received are listed in Chapter 1.0, Table 1-1.

5.3.4 Information Dissemination

A mailing list is maintained by the BLM Oklahoma Field Office along with a list of federal, state, and local agency representatives, community leaders, and potential stakeholders. Other additions included interested organizations and individuals who commented on the project or requested information. The mailing list is used to distribute project information.

As explained in Section 5.2, information about the project was disseminated early in the environmental process. The publication of the NOI in the *Federal Register* marked the beginning of the planning and NEPA process for the RMPA and EA and scoping. Additional notifications included a media release, a scoping notice distributed to those on the BLM mailing list, public scoping meetings, and the Scoping Report.

5.3.5 Public Review of the Draft RMPA and EA

On April 1, 2013, the BLM made available, for a 30-day public review and comment period, the Draft RMPA and EA. The availability of the Draft RMPA and EA and deadline for comments were announced on the BLM website and in postcards sent to agencies, landowners, attendees at the scoping meetings early in the project, and other interested parties on the project mailing list. The Draft RMPA and EA was posted to the BLM website and paper copies or CDs were produced and provided for those who requested them. The BLM received comments on the Draft RMPA and EA from 12 people, which included 6 electronic mail messages and 8 letters; a total of 32 individual comments were received. The BLM reviewed the comments and prepared responses to each substantive comment¹.

Following is a list of the comment submittals, listed in the order in which they were received. The Choctaw Nation offered comments; however, those comments are not available to the public. The comments and responses to the comments may be viewed on the BLM's Oklahoma Field Office project website.

Submittal Number	Submitted by
1	Larry Kennedy
2	Paul Green
3	Jeremy Warren
4	Paul Green
5	Paul Green
6	Carl Green
7	Nate Green
8	Kimberly Lane
9	Tammy Green
10	Harry Green, D. Elvina Green
11	Osage Nation
12	Brian and John L. Keith
13	Farrell-Cooper Mining Company

Also, in July 2013, the BLM prepared and sent a letter in response to each person who submitted comments.

In response to the substantive comments on the Draft RMPA and EA, additions and revisions were made to this Proposed RMPA and EA. The revisions are demarcated with a vertical line in the left margin adjacent to the text revised.

Any person who has participated in the planning process and has an interest that is or may be adversely affected by the amendment of the BLM's Oklahoma RMP may protest the amendment. The protest only may raise an issue or issues that were submitted for the record during the planning process (e.g., during the scoping process, in comments on the Draft RMPA and EA). The protest must be in writing and will be filed with the BLM State Director to the following:

¹A substantive comment is one that does one or more of the following: (1) questions, with reasonable basis, the accuracy of the information in the EA; (2) questions, with reasonable basis or facts, the adequacy of, methodology for, or assumptions used for the environmental analysis; (3) presents reasonable alternatives other than those presented in the EA; or (4) promotes the lead agency to consider changes or revisions in one or more of the alternatives.

Jesse Juen, State Director
Bureau of Land Management
P.O. Box 27115
Santa Fe, New Mexico 87502-0115

The protest must be filed within 30 days of the effective date of this Proposed RMPA and EA/FONSI.

The protest must contain the following:

- The name, mailing address, telephone number, and interest of the person filing the protest;
- A statement of the issue or issues being protested;
- A statement of the part of parts of the RMPA being protested;
- A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and
- A concise statement explaining why the BLM State Director's decision is believed to be wrong.

In the event of a protest, the State Director will promptly render a decision on the protest. The decision will be in writing and will set forth the reasons for the decision. The decision will be sent to the protesting party by certified mail, return receipt requested. The decision of the state Director will be the final decision of the Department of the Interior.

5.4 PREPARERS AND CONTRIBUTORS

Preparers, contributors, and consultants involved throughout the planning effort, are listed in Table 5-2.

**TABLE 5-2
PREPARERS AND CONTRIBUTORS**

Name	Education	Involvement
ENERCON SERVICES, INC.		
Michelle Barnett	B.S. Civil Engineering M.S. Civil Engineering	Project director, water resources
Charlie F. Andrews	B.S. Biology M.S. Environmental Science	Biological resources
Rebecca Carroll	B.S. Zoology Biomedical Sciences	Biological resources
Sarah Cole	B.S. Anthropology M.S. Anthropology	Cultural resources, paleontological resources, Native American concerns
Kim Stapleton	A.D. History B.S. Geography M.S. Geography	Social and economic conditions, environmental justice
Julie Turrentine	B.S. Geology	Geology, energy and mineral resources, soils, groundwater
ENVIRONMENTAL PLANNING GROUP (EPG)		
Cindy Smith	B.S. Liberal Arts and Sciences	Project manager
Louise Brown	B.S. Administrative Systems	Document management/Technical editor
Suzy Cavanagh	M.S. Geology B.S. Geology	NEPA review
Amanda O'Connor	M.S. Conservation Studies B.A. Environmental Biology	Senior technical review, NEPA coordination
Kevin Rauhe	B.LA Landscape Architecture	Land use, Visual resources
Jan Summerhays	M.S. Ecology B.A. Environmental Studies	NEPA review

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Appendix A Unsuitability Analysis

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**U.S. Department of the Interior
Bureau of Land Management**

**Final Unsuitability Analysis for
Four Federal Coal Tracts**

2011-2012 Resource Management Plan Amendment

June 2013

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INTRODUCTION

Bureau of Land Management (BLM) regulations regarding federal coal management are found in Title 43 of the Code of Federal Regulations (CFR), Part 3400. Whenever land use planning is undertaken, BLM is required to analyze whether areas are unsuitable for coal mining based on 20 criteria listed in 43 CFR 3461.5. This report applies and documents the analysis of unsuitability criteria for the coal resource areas associated with the Liberty (OKNM 124610) Lease by Application (LBA), McCurtain (OKNM 127509) LBA, Milton (OKBLM 017902) Lease Modification (LM), and Pollyanna (OKNM 91190) LM. McCurtain LM and Pollyanna LM are both underground mines, whereas Milton LM and Liberty LBA are surface mines. Unsuitability decisions were based on these criteria and applied to federally owned coal estate within the Oklahoma Field Office (OFO) Planning Area (OPA) not currently covered under the 1994 Oklahoma Resource Management Plan, as amended.

GEOLOGIC SETTING

The coal lease applications lie in east-central Oklahoma portion of the Arkoma Basin. The basin was the result of subsidence that began in Mississippian time and continued into the Early to Middle Pennsylvanian era. Most of the rocks in the basin are thought to have been deposited in a deltaic environment with materials coming from highlands to the northeast, north, or northwest. The coals originated as peat deposits in low lying swamps which were located lateral to delta channels. The Ouachita mountain building phase of the Permian era compressed and solidified the source sediments in the Arkoma Basin as well as folded and faulted them into a series of east-west anticlinal and synclinal folds. As these rocks were eroded, the coals were exposed in ribbons that wind their way back and forth across most of the counties in east central Oklahoma. The following is a simplified coal stratigraphic chart showing the seam name for each application area:

System	Series	Group	Formation	Coal Seam	Coal Seam Splits	Application Area
Pennsylvanian	Desmonian	Krebs	McAlester	Stigler (Lower McAlester)	-----	Liberty
Pennsylvanian	Desmonian	Krebs	Hartshorne	Hartshorne	Upper Hartshorne	McCurtain, Milton, Pollyanna
Pennsylvanian	Desmonian	Krebs	Hartshorne	Hartshorne	Lower Hartshorne	Milton

LANDS CONSIDERED

The recoverable coal resources within the OPA area underlie private surface within Haskell and LeFlore Counties, Oklahoma. This report considers suitability for approximately 4,000.62 acres of federally owned coal within the OPA (Maps 1 and 2).

COAL RESOURCES

Description of Coal Resources

(Source: CRO/CDP maps dated 1981-1985, released as U.S. Geological Survey Open file Reports 79-307, 79-493, and 79-496)

Physical Description

Application Area	Quadrangle	Coal Thickness (feet)	Dip Direction	Dip Angle (degrees)	Coal Resource Estimate for Entire Quadrangle (tons)	Coal Resource Estimate for Lease Application (tons)
Liberty	Stigler East	1.5-3.0	NW	3-4	31,660,000	1,394,000
McCurtain	McCurtain	3.4-4.2	N-NW	7-8	85,940,000	3,610,000
Milton	McCurtain	2.5-3.5 (Upper Hartshorne) 2-4 (Lower Hartshorne)	S-SW	18-23	85,940,000	567,000
Pollyanna	Spiro	3.4-4.5	N-NW	5-7	74,940,000	4,456,000

Average Quality (As Received)

Application Area	Quadrangle	BTU per Pound	Moisture	Volatile Matter	Fixed Carbon	Ash	Sulfur
Liberty	Stigler East	14,260-14,710	1.5-3.6	24.2-27.6	66.2-68.9	2.5-6.2	0.4-1.0
McCurtain	McCurtain	13,989-15,740	0.22-0.47	21.1-21.4	73.1-75.5	3.1-5.3	0.83-0.91
Milton	McCurtain	13,989-15,740	0.22-0.47	21.1-21.4	73.1-75.5	3.1-5.3	0.83-0.91
Pollyanna	Spiro	12,265-13,220	2.5-4.7	14.5-17.0	64.9-70.9	10.9-17.0	1.1-2.8

EVALUATION OF THE COAL UNSUITABILITY CRITERIA

This report assesses OPA coal resources for suitability based on the 20 criteria outlined in 43 CFR 3461.5. Underground mining of coal deposits are exempt from the criteria, where there would be no surface coal mining operations as stated in 3461.1(a). Surface mining operations include surface mining and surface operations associated with underground mining as stated in 43 CFR 3400.0-5(mm). Additionally, in instances where underground mining would have surface operations or impacts on lands where the criterion applies, the lands shall be assessed as unsuitable unless an exception or exemption applies (43 CFR 3461.1(b)). Each criterion is subject to exception and/or exemptions as prescribed in the regulations.

Criterion Number 1

All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, lands acquired with money derived from the Land and Water Conservation Fund, National Forests, and Federal lands in incorporated cities, towns, and villages.

- *Exceptions. (i) A lease may be issued within the boundaries of any National Forest if the Secretary finds no significant recreational, timber, economic or other values which may be incompatible with the lease; and (A) surface operations and impacts are incident to an underground coal mine, or (B) where the Secretary of Agriculture determines, with respect to lands which do not have significant forest cover within those National Forests west of the 100th Meridian, that surface mining may be in compliance with the Multiple-Use Sustained-Yield Act of 1960, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control and Reclamation Act of 1977. (ii) A lease may be issued within the Custer National Forest with the consent of the Department of Agriculture as long as no surface coal mining operations are permitted.*

- *Exemptions. The application of this criterion to lands within the listed land systems and categories is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.*

No lands within the planning area fall within the criteria set for in the above section for unsuitability for coal leasing. Sequoyah National Wildlife Refuge, which also contain two National Recreation Trails, is four miles north of the Liberty LBA, and Butterfield National Historic Trail, one mile north of Pollyanna LM, are the only qualifying areas located within eastern Oklahoma (Map 3).

Summary: Criterion Number 1- No acres are determined to be unsuitable.

Criterion Number 2

Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes, on federally owned surface shall be considered unsuitable.

- *Exceptions. A lease may be issued, and mining operations approved, in such areas if the surface management agency determines that: (i) All or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement; or (ii) The right-of-way or easement was granted for mining purposes; or (iii) The right-of-way or easement was issued for a purpose for which it is not being used; (iv) The parties involved in the right-of-way or easement agree, in writing, to leasing; or (v) It is impractical to exclude such areas due to the location of coal and method of mining and such areas or uses can be protected through appropriate stipulations.*

- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

There is no federally owned surface within the planning areas for the above mentioned coal areas (Map 4). However, Federal lands are defined in 43 CFR 3400.0-5(o) as:

lands owned by the United States, without reference to how the lands were acquired or what Federal agency administers the lands, including surface estate, mineral estate and coal estate, but excluding lands held by the United States in trust for Indians, Aleuts or Eskimos. Therefore, areas that contain right-of-ways or easements that overly Federal coal must be analyzed for suitability.

Within the Liberty Planning area, two (2) electric transmission lines cross (Map 5). These transmission line right-of-ways account for 40.3 acres of lands being classified as unsuitable under Criterion #2.

Summary: Criterion Number 2- A total of 40.3 acres within the Liberty Planning Area are determined to be unsuitable due to electric transmission right-of-ways overlying federally owned coal.

Criterion Number 3

The terms used in this criterion have the meaning set out in the Office of Surface Mining Reclamation and Enforcement regulations at Chapter VII of Title 30 of the Code of Federal Regulations. Federal lands affected by section 522(e) (4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or public park or within 300 feet of an occupied dwelling.

- *Exceptions. A lease may be issued for lands: (i) Used as mine access roads or haulage roads that join the right-of-way for a public road; (ii) For which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated; (iii) If after public notice and opportunity for public hearing in the locality, a written finding is made by the authorized officer that the interests of the public and the landowners affected by mining within 100 feet of a public road will be protected. (iv) For which owners of occupied dwellings have given written permission to mine within 300 feet of their buildings.*
- *Exemptions. The application of this criterion is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.*

Currently, two locations within the planning area have been proposed as surface coal mines, Liberty LBA and Milton LM. Within the Liberty LBA, seven (7) occupied structures exist where no written permission has been given to mine within 300 feet (45.4 acres). Additionally, there are three (3) potential cemetery/ grace locations in the southwest portion of Section 32, which results in 2.2 acres being classified as unsuitable. In addition, 5,610 ft. of public road bisects the Liberty LBA planning area (25.8 ac.) and another 18,986 ft. of public road lies along the edges of the Liberty LBA planning area (43.6 ac). Therefore, the unsuitable area associated with public roads is

69.4 ac. The cumulative unsuitable area associated with the Liberty LBA is 117.00 acres (Map 6).

The Milton LM area is bisected by 1 public road, 271.5 ft. in length (1.4 ac total). No occupied structures or other applicable areas are within the Milton LBA. Therefore, the cumulative unsuitable area is 1.4 acres (Map 7).

Summary: Criterion Number 3- Currently, 118.4 acres are determined to be unsuitable, unless occupied dwelling owner or county permissions are obtained to mine these areas. Failure to obtain surface owner permissions does not eliminate the acreage from the RMP-A planning process, but would preclude issuance of a lease for that acreage once the RMP has been amended.

Criterion Number 4

Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation. For any Federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

- *Exemptions. The application of this criterion to lands for which the Bureau of Land Management is the surface management agency and lands in designated wilderness areas in National Forests is subject to valid existing rights.*

Only one Wilderness study areas are found within Oklahoma. This wilderness study area is located at the Wichita Mountains National Wildlife Refuge in Comanche County, Oklahoma. No wilderness study areas are located within Haskell or LeFlore Counties, Oklahoma.

Summary: Criterion Number 4- No acres are determined to be unsuitable.

Criterion Number 5

Scenic Federal lands designated by visual resource management analysis as Class I (areas of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable.

- *Exceptions. A lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.*
- *Exemptions. This criterion does not apply to lands: to which the operator has made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977, or which include operations on which a permit has been issued.*

There are no areas within the planning area that classified as Visual Resource Management (VRM) Class I. A visual resource inventory and evaluation was conducted by BLM for the planning area in 1979. This analysis determined that the entire planning area is a VRM Class IV.

Summary: Criterion Number 5- No acres are determined to be unsuitable.

Criterion Number 6

Federal lands under permit by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

No federal lands within the planning areas are under permit for any of the above mentioned scientific studies.

Summary: Criterion Number 6- No acres are determined to be unsuitable.

Criterion Number 7

All publicly or privately owned places which are included in the National Register of Historic Places shall be considered unsuitable. This shall include any areas that the surface management agency determines, after consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, are necessary to protect the inherent values of the property that made it eligible for listing in the National Register.

- *Exceptions. All or certain stipulated methods of coal mining may be allowed if, after consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, they are approved by the surface management agency, and, where appropriate, the State or local agency with jurisdiction over the historic site.*

- *Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

No National Registry of Historic Places sites are within the planning areas for the above mentioned coal areas (Map 8).

Summary: Criterion Number 7- No acres are determined to be unsuitable.

Criterion Number 8

Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

- *Exceptions. A lease may be issued and mining operation approved in an area or site if the surface management agency determines that: (i) The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site; or (ii) The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).*

- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which includes operations on which a permit has been issued.*

There are currently only three (3) National Natural Landmarks within the state of Oklahoma. None of the three are within the planning area for the above mentioned coal areas.

Summary: Criterion Number 8- No acres are determined to be unsuitable.

Criterion Number 9

Federally designated critical habitat for listed threatened or endangered plant and animal species, and habitat proposed to be designated as critical for listed threatened or endangered plant and animal species or species proposed for listing, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife

Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

- *Exceptions. A lease may be issued and mining operations approved if, after consultation with the Fish and Wildlife Service, the Service determines that the proposed activity is not likely to jeopardize the continued existence of the listed species and/or its critical habitat.*
- *Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

No critical habitat has been designated or proposed for any federally listed threatened or endangered species within the planning area. Potential habitat for the endangered American burying beetle is within the planning area, however, the habitat is not considered to be essential. Consultation under the Endangered Species Act of 1977, as amended, may be required for specific actions, such as any leasing and mining, undertaken subsequent to this planning effort.

Summary: Criterion Number 9- No acres are determined to be unsuitable at this time.

Criterion Number 10

Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

- *Exceptions. A lease may be issued and mining operations approved if, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.*
- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

No lands within the planning area have been determined to be critical or essential for plant or animal species listed by the state of Oklahoma (M. Howery, *pers. Comm.*).

Summary: Criterion Number 10- No acres are determined to be unsuitable.

Criterion Number 11

A bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

- *Exceptions. A lease may be issued if: (i) It can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during breeding season; or (ii) The surface management agency, with the concurrence of the Fish and Wildlife Service, determines that the golden eagle nest(s) will be moved. (iii) Buffer zones may be decreased if the surface management agency determines that the active eagle nests will not be adversely affected.*
- *Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

Potential nesting sites are located four miles to the north along the Arkansas River and Kerr-McGee Reservoir, however, no bald or golden eagle nests or sites are located within the planning area (Map 8).

Summary: Criterion Number 11- No acres are determined to be unsuitable.

Criterion Number 12

Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

- *Exceptions. A lease may be issued if the surface management agency determines that all or certain stipulated methods of coal mining can be conducted in such a way, and during such periods of time, to ensure that eagles shall not be adversely disturbed.*
- *Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

Potential roost sites and concentration areas are located four miles to the north along the Arkansas River and Kerr-McGee Reservoir, however, no bald or golden eagle nests or sites are located within the planning area (Map 8).

Summary: Criterion Number 12- No acres are determined to be unsuitable.

Criterion Number 13

Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and a buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

- *Exceptions. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the falcon habitat during the periods when such habitat is used by the falcons.*
- *Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

No falcon cliff nesting sites are located within the planning area.

Summary: Criterion Number 13- No acres are determined to be unsuitable.

Criterion Number 14

Federal lands which are high priority habitat for migratory bird species of high Federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.

- *Exceptions. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.*
- *Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

The planning area is located within the West Gulf Coastal Plain/Ouachitas Bird Conservation Region, where 28 Birds of Conservation Concern are listed. However, Breeding Bird Survey Routes within the geographic area list only thirteen (13) bird species from that list. The USFWS has identified forested and emergent wetlands and

riverine areas as high priority habitats for migratory birds within the geographic area. No high priority migratory bird habitats are located within the planning areas for either surface mine, Liberty LBA or Milton LM (Maps 9, 10, & 11).

Summary: Criterion Number 14- No acres are determined to be unsuitable.

Criterion Number 15

Federal lands which the surface management agency and the state jointly agree are habitat for resident species of fish, wildlife and plants of high interest to the state and which are essential for maintaining these priority wildlife and plant species shall be considered unsuitable. Examples of such lands which serve a critical function for the species involved include: (i) Active dancing and strutting grounds for Greater sage-grouse, sharp-tailed grouse, and prairie chicken; (ii) Winter ranges crucial for deer, antelope, and elk; (iii) Migration corridor for elk; and (iv) Extremes of range for plant species;

- *Exceptions. A lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.*
- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

No lands within the planning area have been determined to be habitat for high interest species of plants, animals, or fish or that are essential to maintenance of fish, wildlife, or plant species according to the Oklahoma Department of Wildlife Conservation (M. Howery, *pers. Comm.*).

Summary: Criterion Number 15- No acres are determined to be unsuitable.

Criterion Number 16

Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining.

- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface*

coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

No riverine, coastal or special floodplains are within the planning area nor any such areas that would present substantial threat to loss of life or property.

Summary: Criterion Number 16- No acres are determined to be unsuitable.

Criterion Number 17

Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

- *Exceptions. A lease may be issued where the surface management agency in consultation with the municipality (incorporated entity) or the responsible governmental unit determines, as a result of studies, that all or certain stipulated methods of coal mining will not adversely affect the watershed to any significant degree.*
- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

The Oklahoma Water Resources Board has two identified High Quality Watersheds within northern Haskell and LeFlore Counties, Oklahoma. Spiro Lake and John Wells Reservoir are both located within 6-miles of all of the Lease Modification and Lease by Application areas (Map 12). However, neither watershed has the potential to be impacted by the current planning effort of any subsequent development that may occur from leasing or mining.

Summary: Criterion Number 17- No acres are determined to be unsuitable.

Criterion Number 18

Federal lands with National Resource Waters, as identified by states in their water quality management plans, and a buffer zone of Federal lands ¼ mile from the outer edge of the far banks of the water, shall be unsuitable.

- *Exceptions. The buffer zone may be eliminated or reduced in size where the surface management agency determines that it is not necessary to protect the National Resource Waters.*

- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

No National Resource Waters identified by the State of Oklahoma Water Quality Standards criteria are located within or adjacent to the planning area.

Summary: Criterion Number 18- No acres are determined to be unsuitable.

Criterion Number 19

Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in §3400.0—5(a) of this title, the standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published, and approved state programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

- *Exemptions. This criterion does not apply to surface coal mining operations which produced coal in commercial quantities in the year preceding August 3, 1977, or which had obtained a permit to conduct surface coal mining operations.*

Alluvial valley floors are not found east of the 100th meridian, therefore they are not present in Oklahoma.

Summary: Criterion Number 19- No acres are determined to be unsuitable.

Criterion Number 20

Federal lands in a state to which is applicable a criterion (i) proposed by the state or Indian tribe located in the planning area, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

- *Exceptions. A lease may be issued when: (i) Such criterion is adopted by the Secretary less than 6 months prior to the publication of the draft comprehensive land use plan or land use analysis, plan, or supplement to a comprehensive land use plan, for the area in which such land is included, or (ii) After consultation with the state or affected Indian tribe, the surface management agency determines that all or certain stipulated methods of coal mining will not adversely affect the value which the criterion would protect.*

- *Exemptions. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.*

Neither the State of Oklahoma, Indian Tribes, or Secretary have proposed any criteria that would affect coal reserves within the planning area.

Summary: Criterion Number 20- No acres are determined to be unsuitable.

SUMMARY OF THE UNSUITABILITY EVALUATION

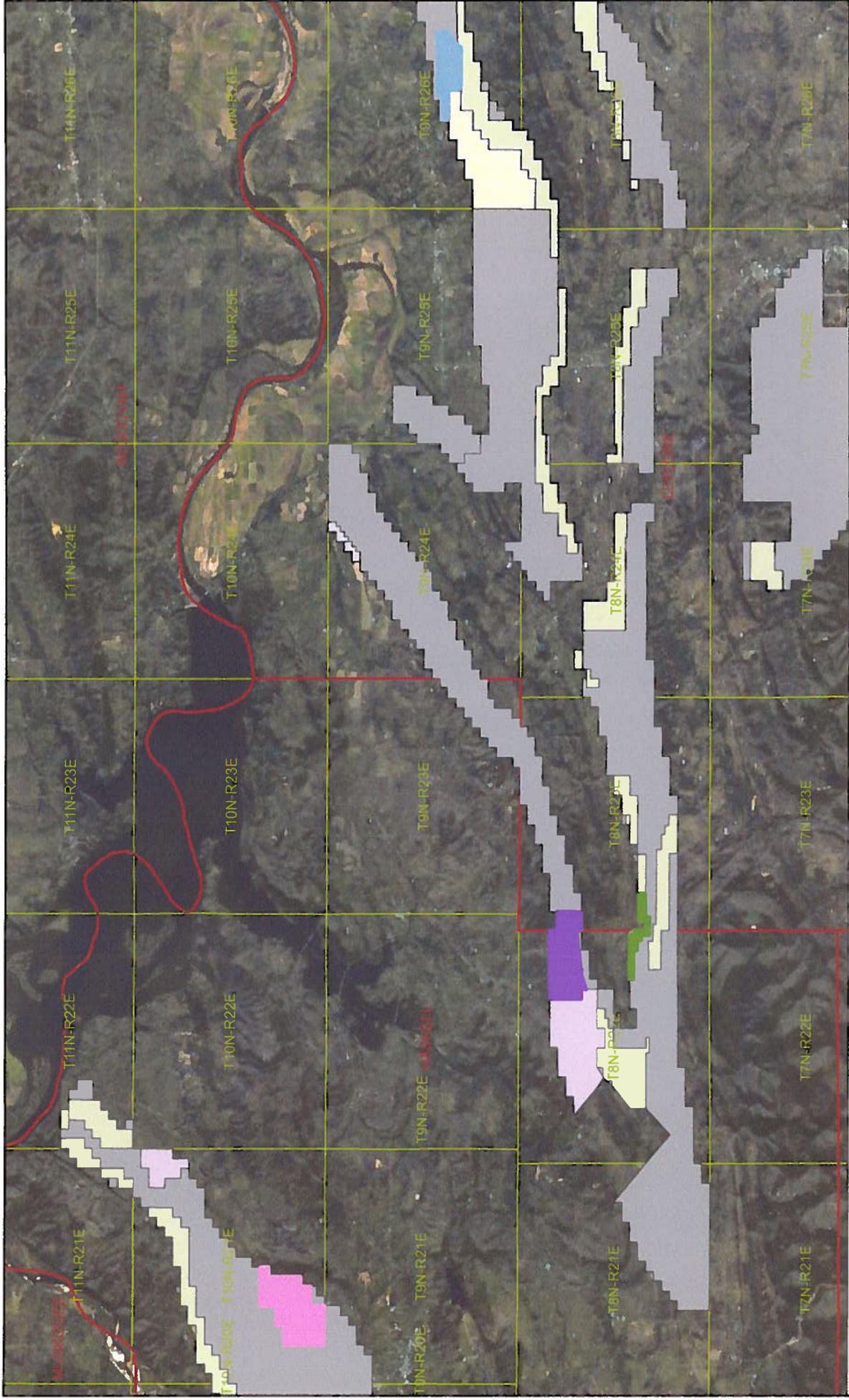
The coal resources within the Planning Area for the 2011 Oklahoma Resource Management Plan Amendment have been evaluated based on the 20 criteria of unsuitability. Based on these criteria, the coal resources that are considered unsuitable are shown on Map 2. These resources have been determined to currently be unsuitable for leasing based on Criteria 3. This determination does not eliminate the associated acreage from consideration and analysis during the RMP-, but would preclude issuance of a lease for that acreage once the RMP has been amended. All other coal resources identified as McCurtain LM, Milton LM, Pollyanna LM, and Liberty LBA are suitable for further leasing consideration as shown on Map 2.

As a result of this analysis, there are approximately 3,841.9 acres that are determined to be suitable and 158.7 acres that are determined to be unsuitable at the present time based on the 20 criteria.

REFERENCES

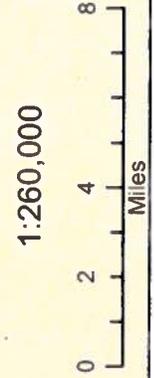
Bureau of Land Management. 1979. Visual Resource Inventory and Evaluation Southeast Oklahoma Land Use Analysis. 130 pgs.

Map 1: Oklahoma Field Office 2011 Resource Management Plan Amendment Planning Area and Coal Planning History.



Federal Coal Ownership and Planning History.

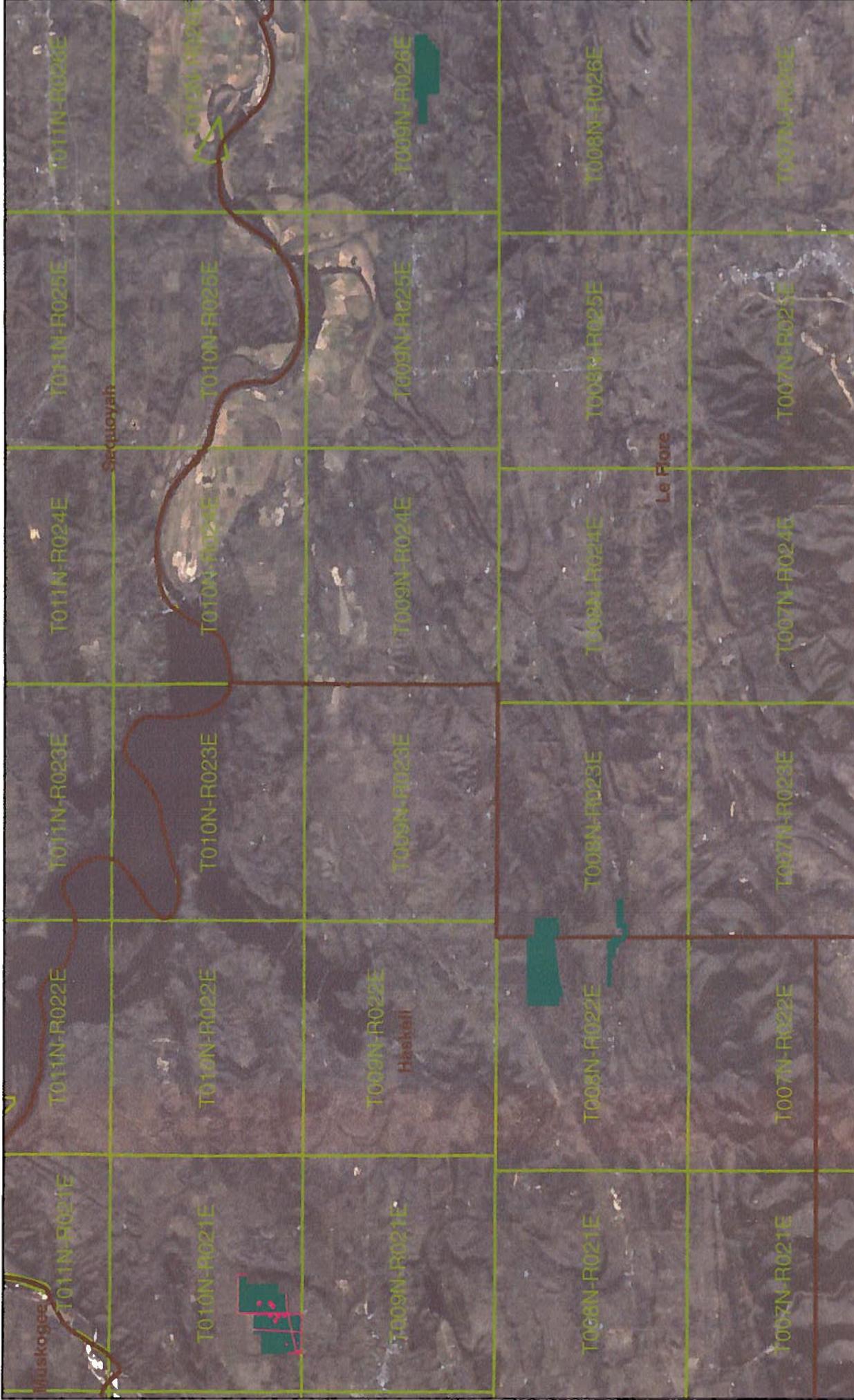
No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
 Map modified 12/07/2011.



Legend

- McCurtain LBA
- Milton LM
- Pollyanna LM
- Liberty LBA
- 1994 RMP Planning Area
- 1994 RMPA Planning Area
- 1996 RMPA Planning Area
- 2004 RMPA Planning Area
- Segregated Coal
- OK Counties
- OK Township

Map 2: Lands Currently Classified as Suitable or Unsuitable for Surface Coal Leasing Based on the 20 Unsuitability Criteria for the 2011 RMPA.



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 Map modified 5/31/2013.

Areas Classified as Suitable or Unsuitable for Coal Leasing under 43 CFR 3461.

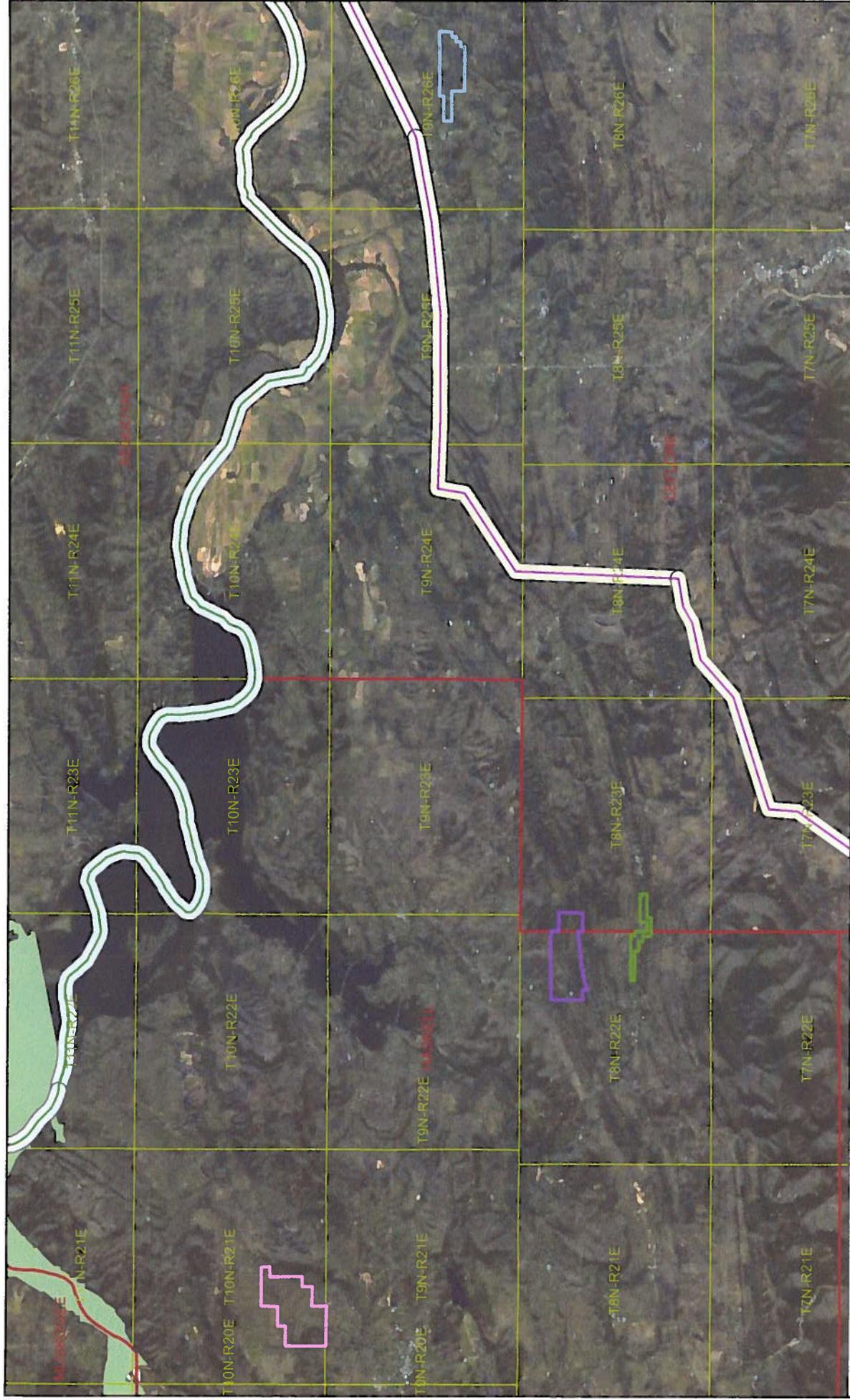
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Legend

- Unsuitable Areas
- Suitable Areas
- Counties
- OK Townships
- World Imagery

Map 3: National Scenic Trails Located Within the Oklahoma 2011 Resource Management Plan Amendment Planning Area.

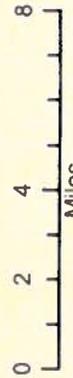






**National Scenic Trails
within Planning area.**

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Miles

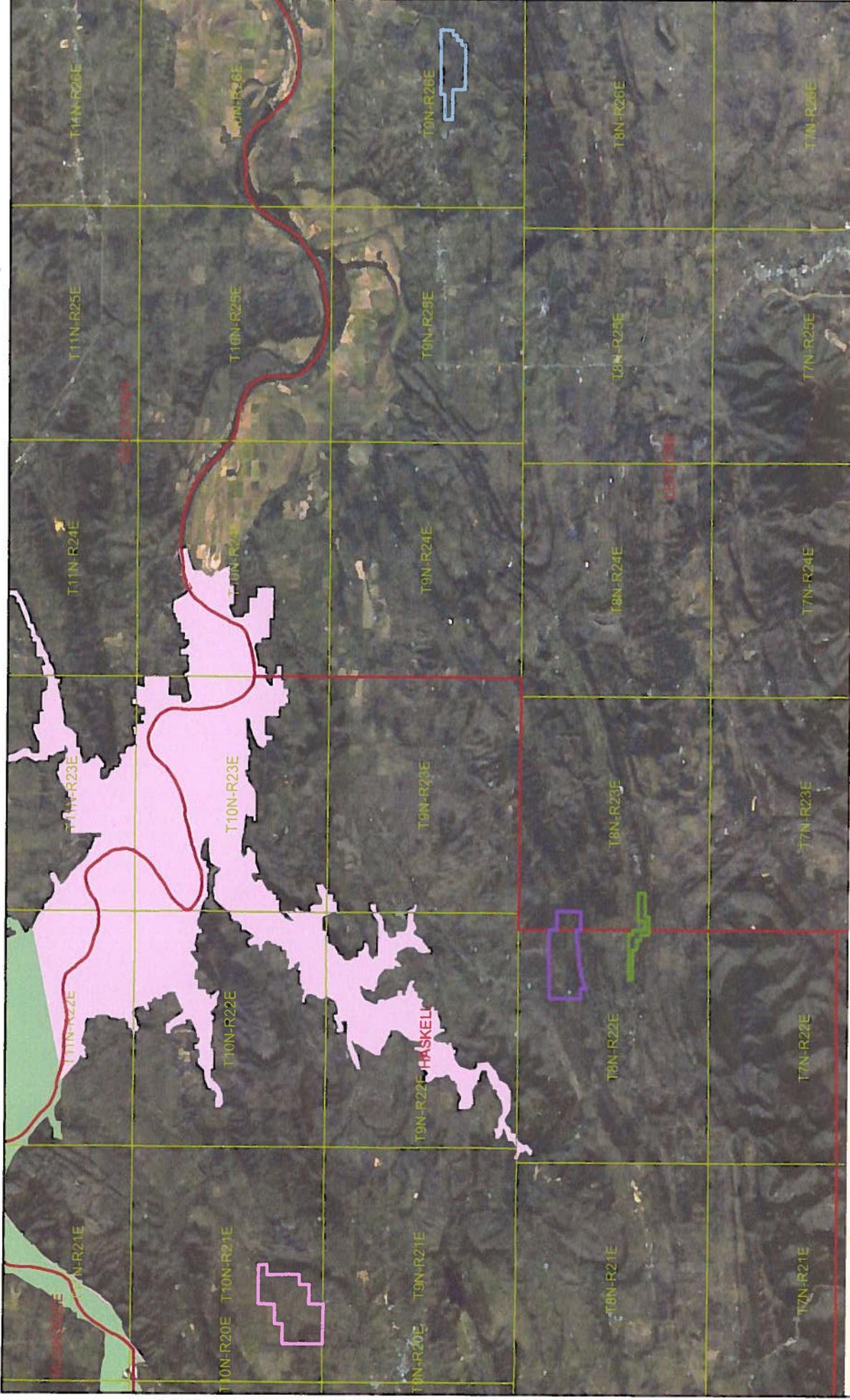
Legend

	Liberty LBA		Butterfield Trail NST		Sequoyah NWR
	McCurtain LBA		Butterfield Trail NST Buffer		OK Township
	Milton LM		Trail of Tears NST		OK Counties
	Pollyanna LM		Trail of Tears NST Buffer		

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Map modified 12/07/2011.

Map 4: Federal Lands Located Within the Oklahoma 2011 Resource Management Plan Amendment Planning Area.



Federal Lands Ownership within 2011 RMPA Planning Area.

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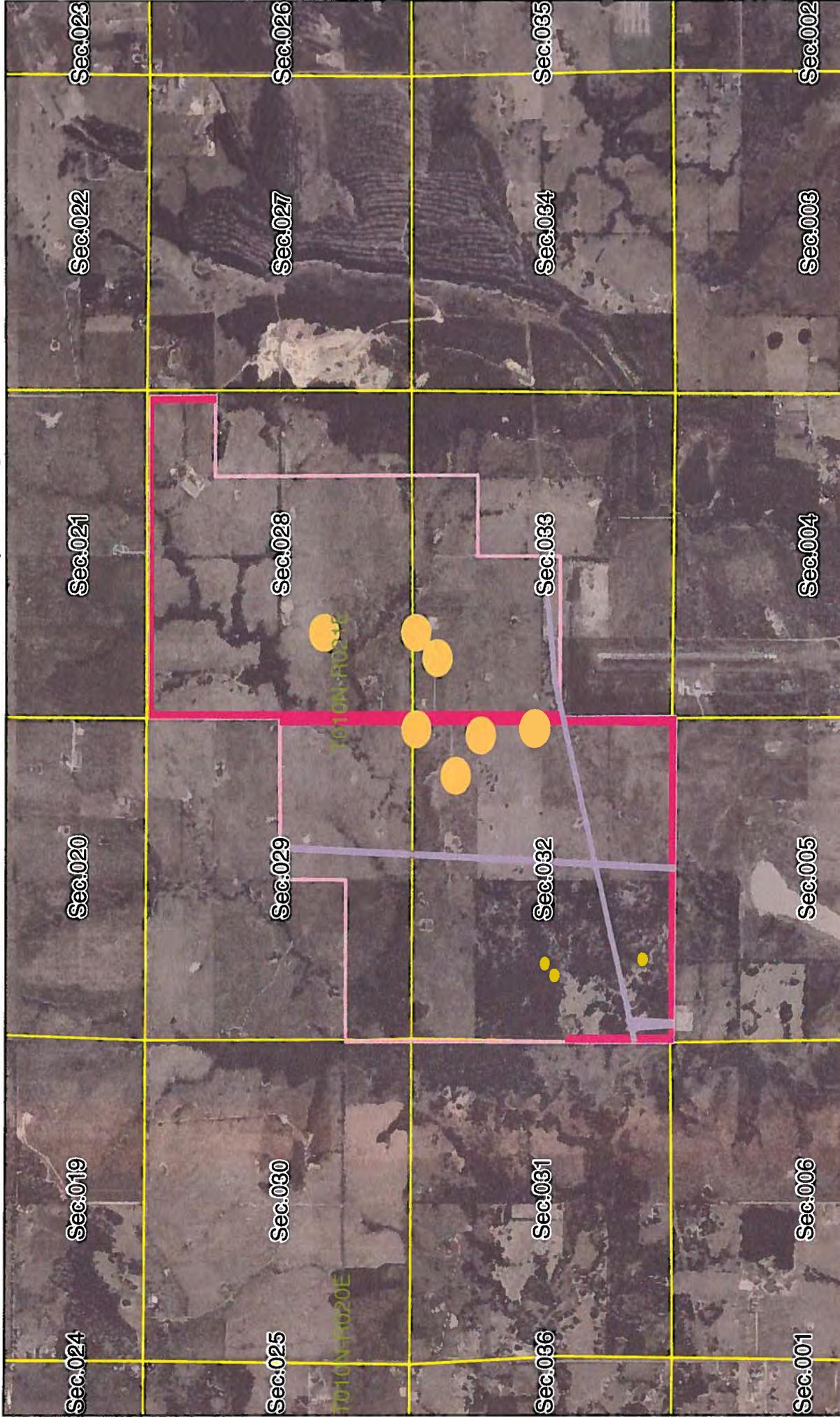
0 2 4 8 Miles

Legend

	Liberty LBA		Sequoyah NWR
	McCurtain LBA		Kerr-McGee Reservoir
	Milton LM		OK Township
	Pollyanna LM		OK Counties

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map modified 12/07/2011.

Map 5: Areas Unsuitable for Surface Coal Mining Under Criteria #2 & #3 within the Liberty Planning Area of the 2011 RMPA.



Powerline ROW, Gravesite, Occupied Structures, and Public Road Unsuitability Buffers under Criteria #2 & #3 for the Liberty LBA.



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 Map modified 5/31/2013.

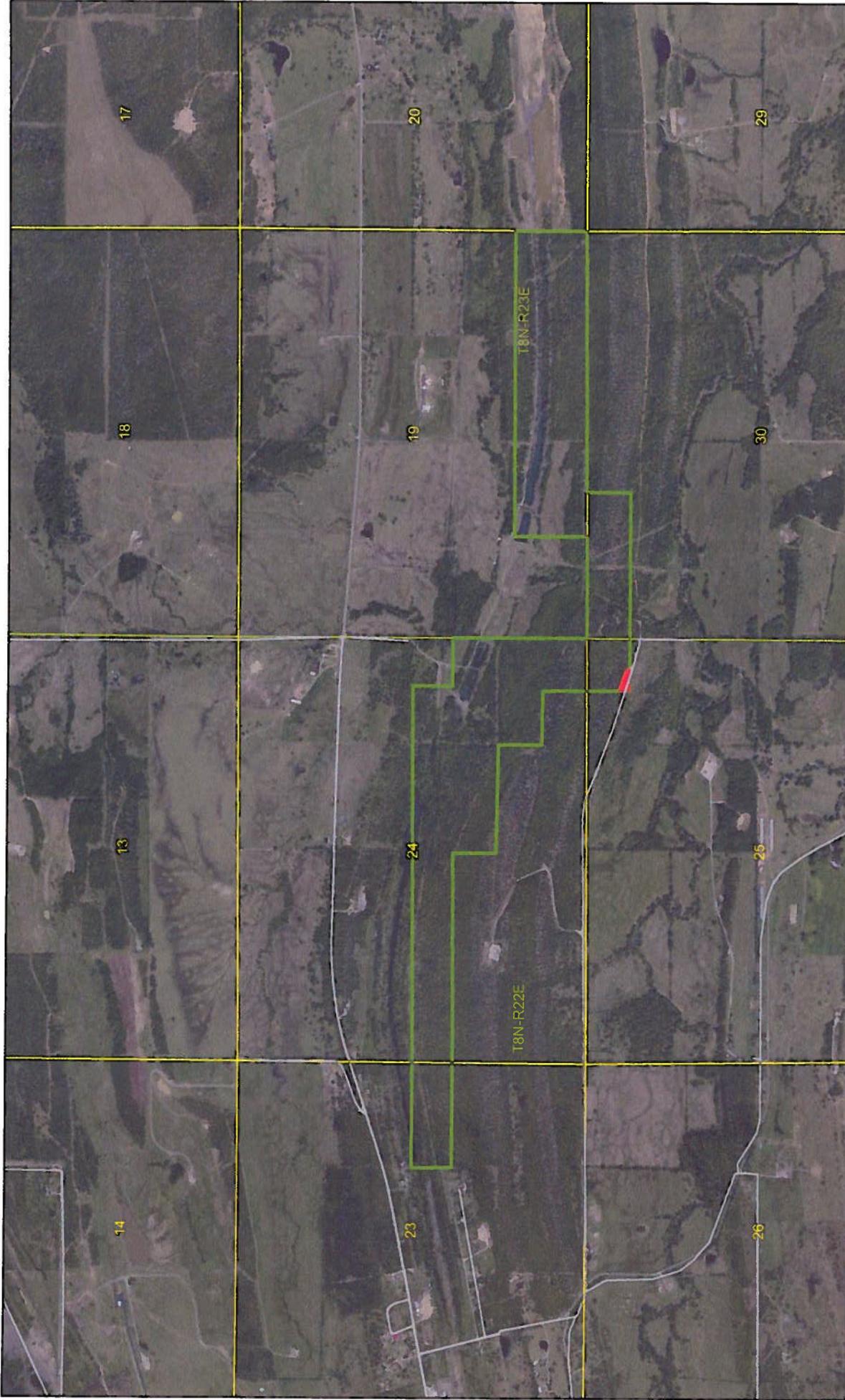
Legend

- Liberty Powerline ROW 50' Buffer
- Liberty Gravesites 100' Buffer
- Liberty Occupied Structure 300' Buffer
- Liberty Public Road 100' Buffer
- Liberty LBA
- OK Sections
- OK Townships

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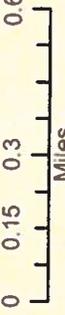
Map 6: Areas Unsuitable for Surface Coal Mining Under Criteria #3 within Milton LM Planning Area of 2011 RMPA.







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Miles

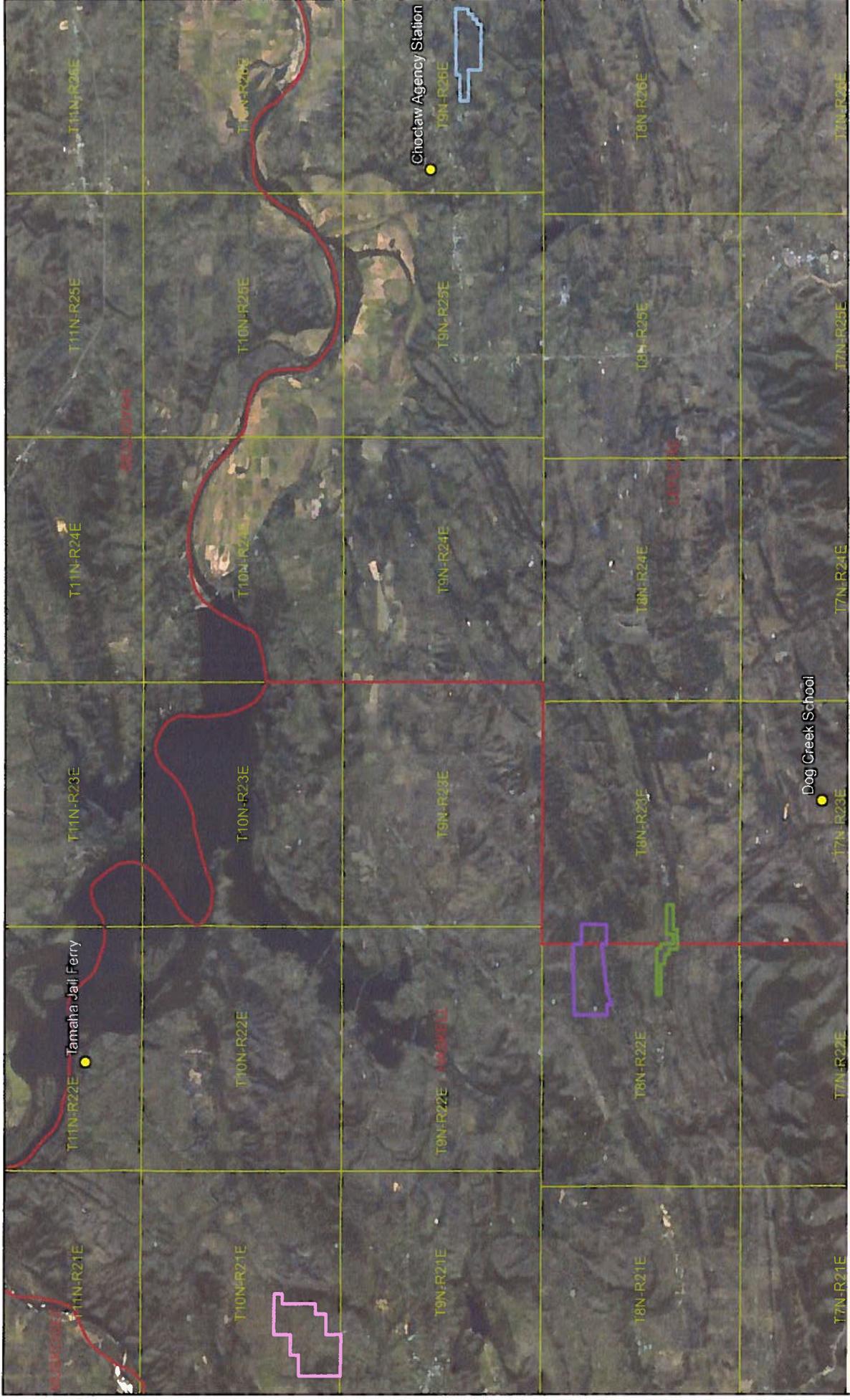
Legend

	Milton LM		OK Section
	Public Roads 100' Buffer		OK Township
	Haskell County Roads		

Occupied Structures and Public Road Unsuitability
Buffers under Criteria #3 for Milton LM.

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
 Map modified 12/07/2011.

Map 7: National Registry of Historic Places Sites within the Oklahoma 2011 Resource Management Plan Amendment.



National Registry of Historic Places Sites within Planning Area.

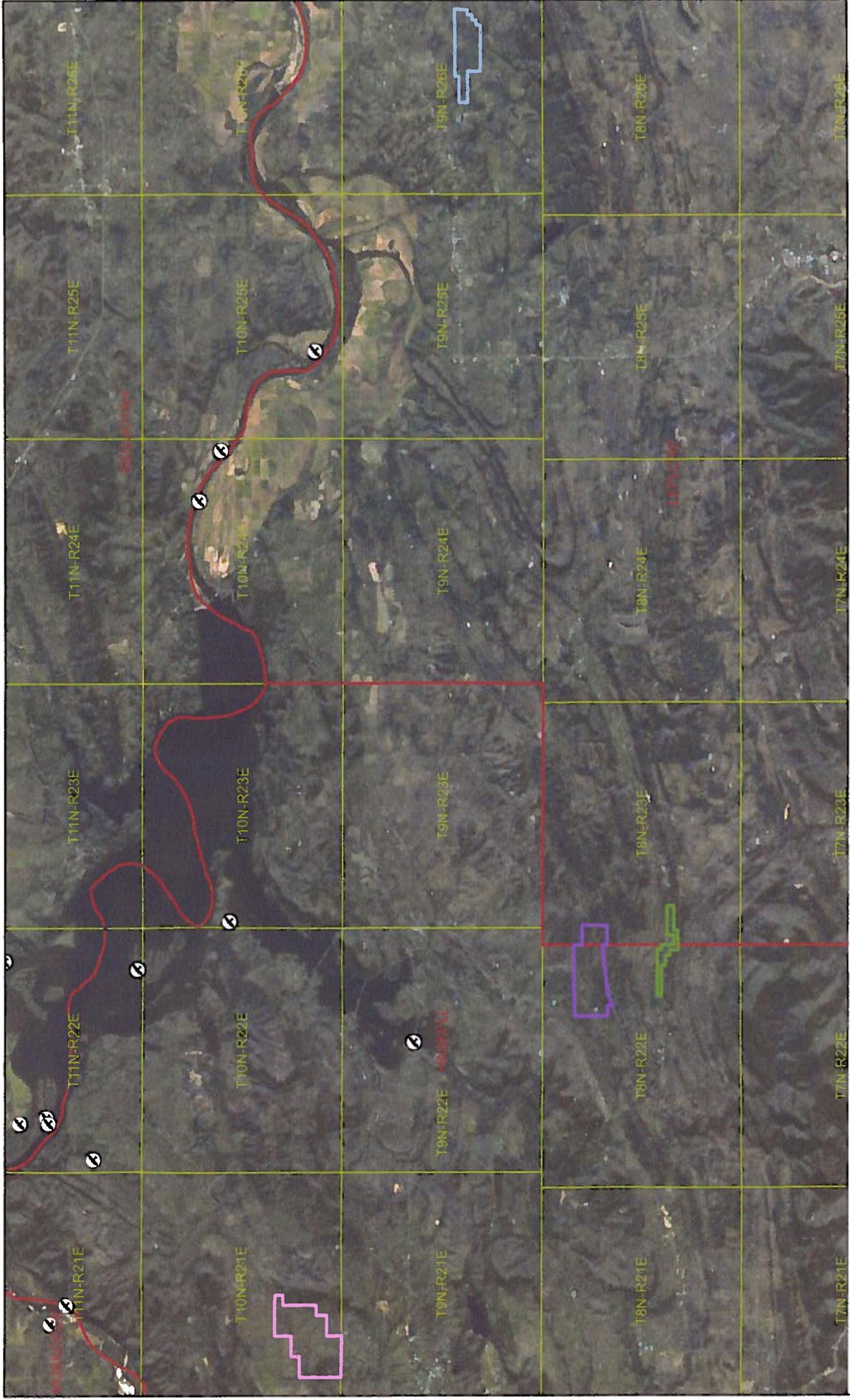
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Legend

	Liberty LBA		NRHP Locations
	McCurtain LBA		OK Township
	Milton LM		OK Counties
	Polyanna LM		

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map modified 12/07/2011.

Map 8: Bald and Golden Eagle Sightings Within the Oklahoma 2011 Resource Management Plan Amendment Planning Area.



**Oklahoma Natural Heritage Inventory
Bald and Golden Eagle Sightings.**

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0 2 4 8 Miles

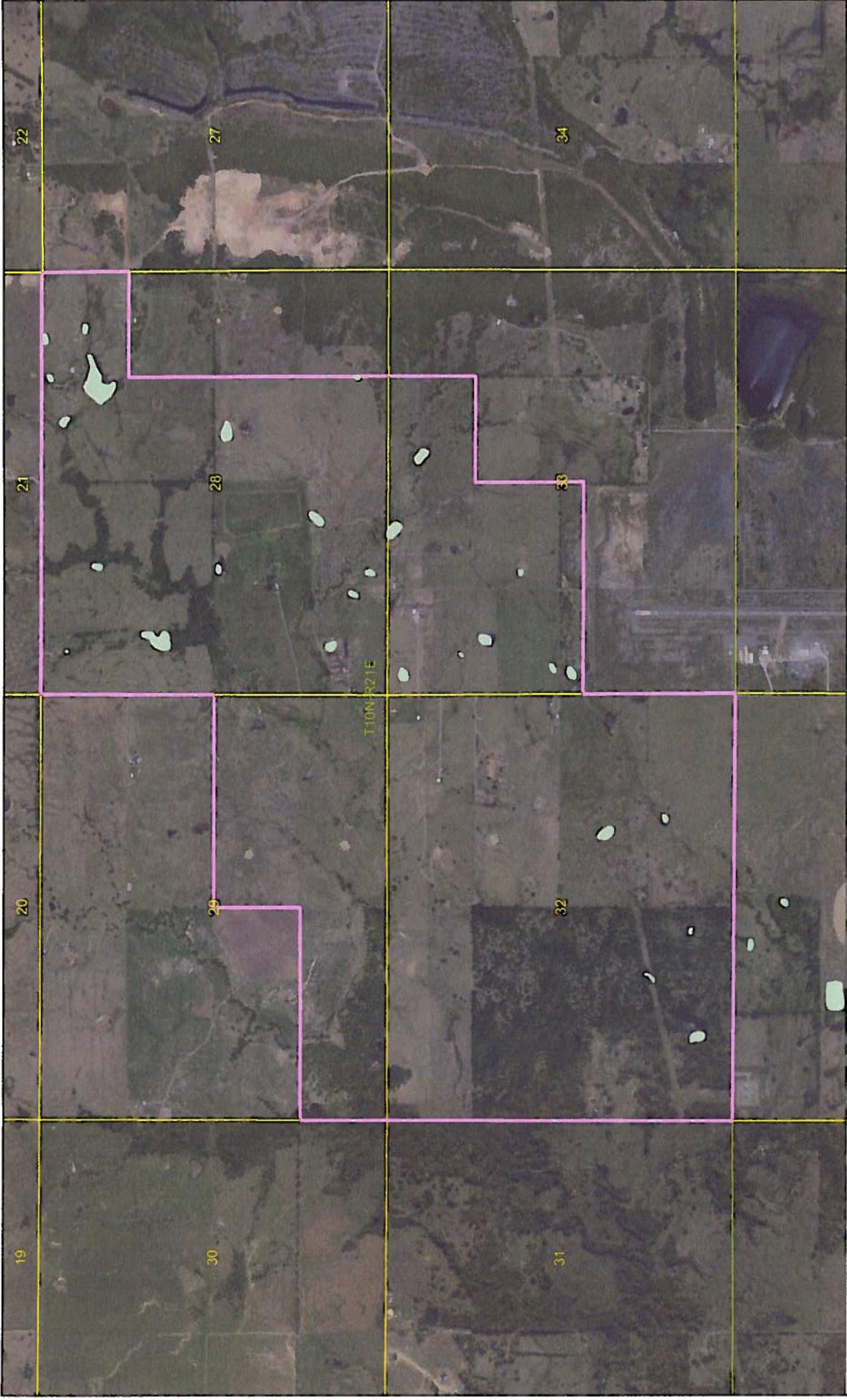
Liberty LBA
 McCurtain LBA
 Milton LM
 Polyanna LM

Bald Eagle
 Golden Eagle
 OK Township
 OK Counties

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Map modified 12/07/2011.

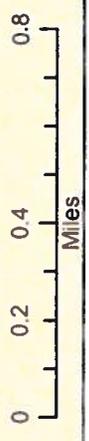
Map 9: Migratory Bird High Priority Wetland Habitats Within the Liberty LBA 2011 RMPA Planning Area.



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
 Map modified 12/07/2011.

High Quality Bird Wetland Habitats within the Liberty LBA 2011 RMPA Planning Area.

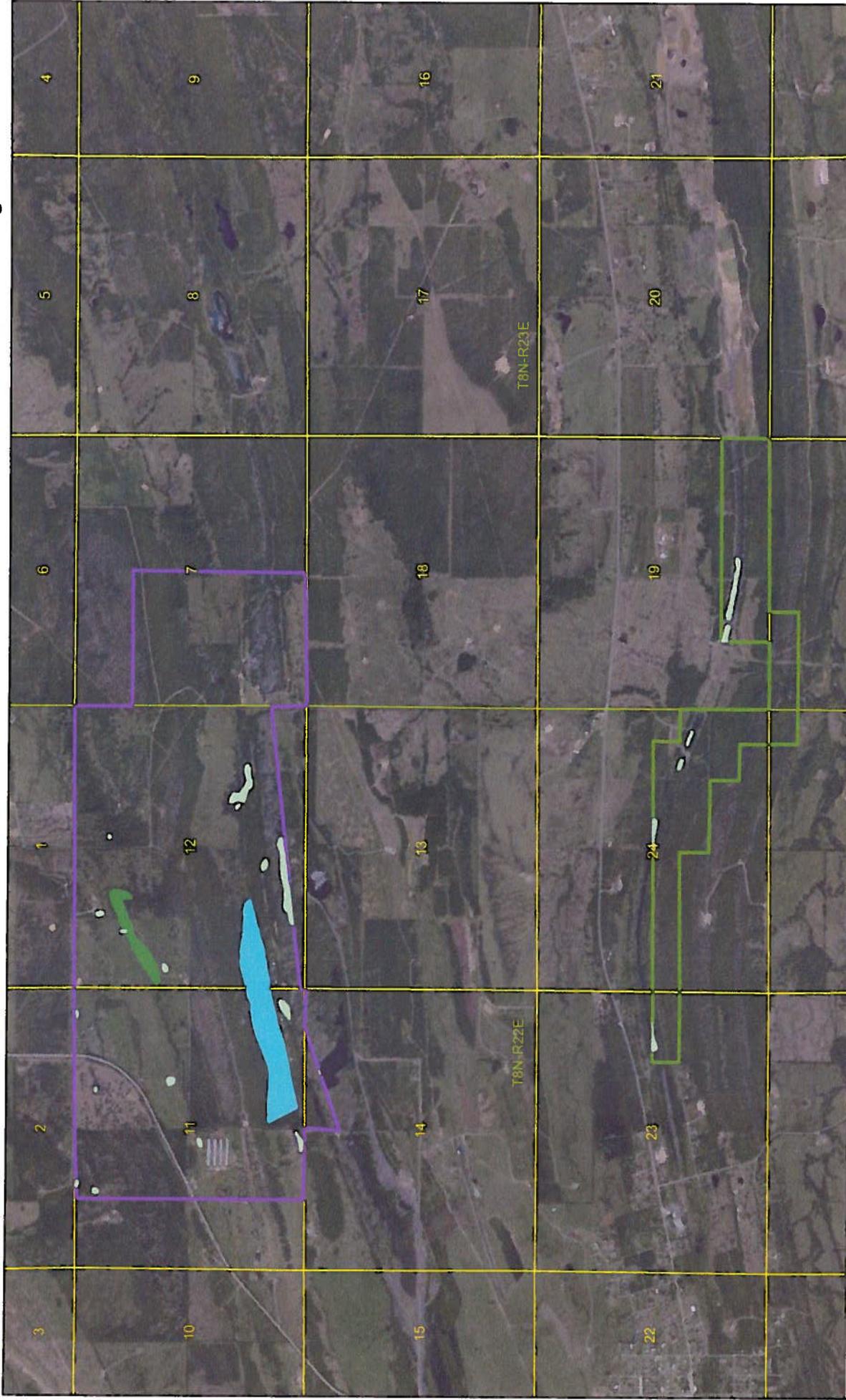
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Legend

-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  Liberty LBA
-  OK Section
-  OK Township

Map 10: Migratory Bird High Priority Wetland Habitats Within the McCurtain LBA & Milton LM 2011 RMPA Planning Area.



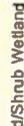
High Quality Bird Wetland Habitats within the McCurtain LBA & Milton LM 2011 RMPA Planning Area.

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map modified 12/07/2011.

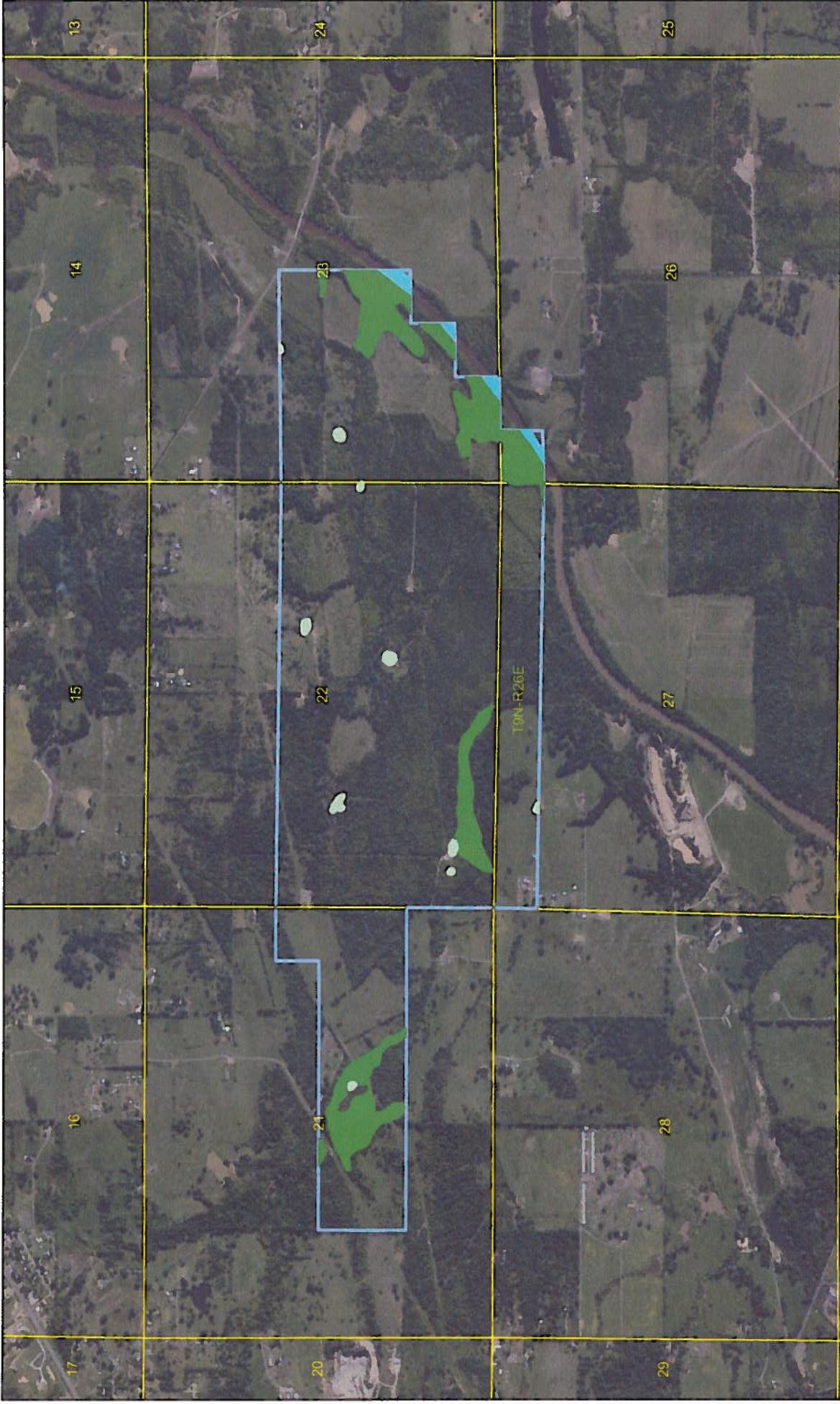
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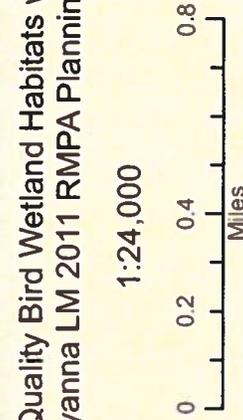
Legend

-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  McCurtain LBA
-  Milton LM
-  OK Section
-  OK Township

Map 11: Migratory Bird High Priority Wetland Habitats Within the Pollyanna LM 2011 RMPA Planning Area.



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
 Map modified 12/07/2011.



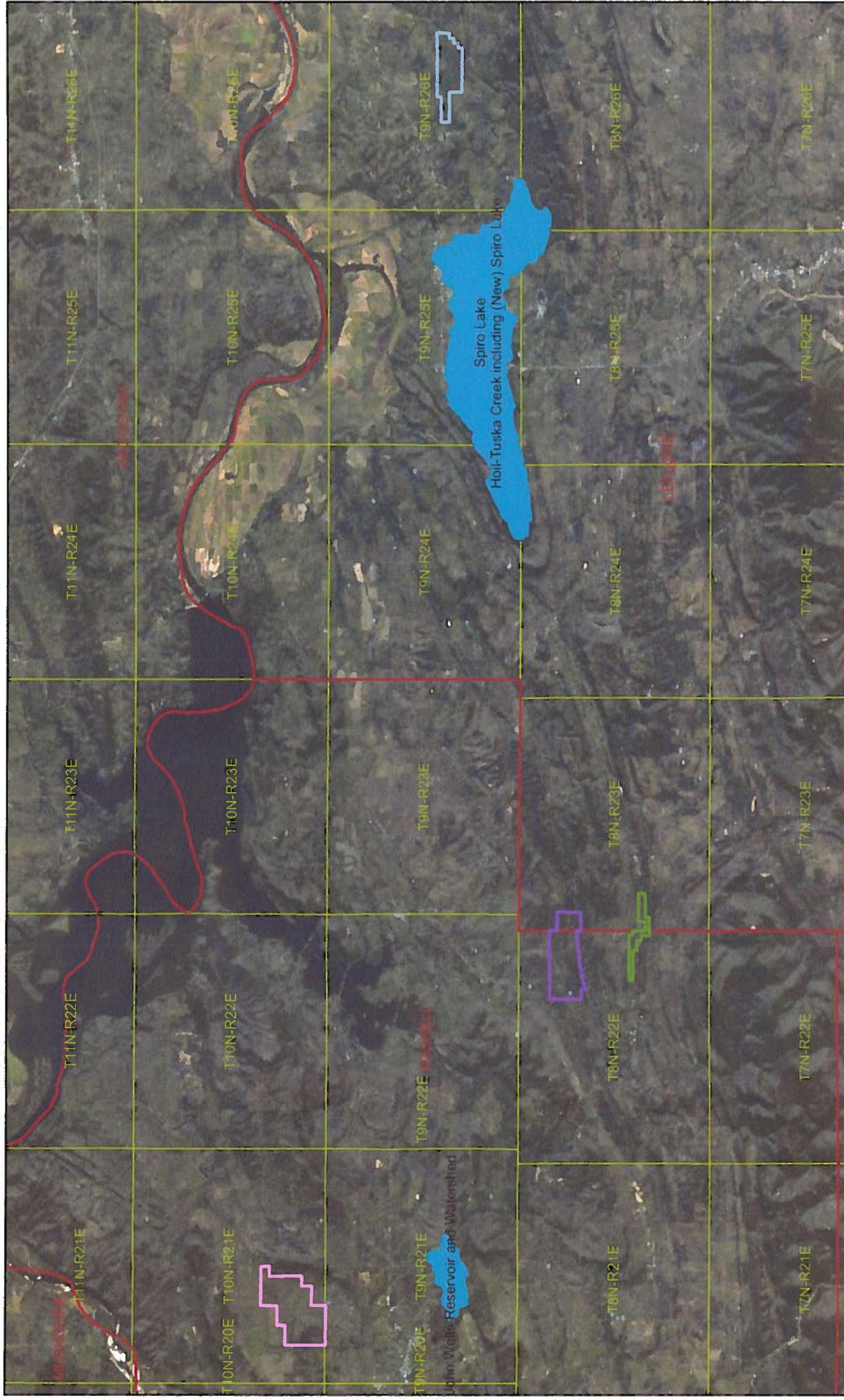
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High Quality Bird Wetland Habitats within the Pollyanna LM 2011 RMPA Planning Area.

Legend

-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  Pollyanna LM
-  OK Section
-  OK Township

Map 12: Municipal Watersheds Within the Oklahoma 2011 Resource Management Plan Amendment Planning Area.



**Municipal Watersheds within the Oklahoma
2011 RMPA Planning Area.**

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map modified 12/07/2011.

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Legend

-  Liberty LBA
-  McCurtain LBA
-  Milton LM
-  Pollyanna LM
-  High Quality Watersheds
-  OK Township
-  OK Counties

Appendix B Biological Assessment

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Division of Ecological Services

9014 East 21st Street

Tulsa, Oklahoma 74129

918/581-7458 / (FAX) 918/581-7467



In Reply Refer To:
FWS/R2/OKES/
02EKOK00-2012-F-
0196

July 24, 2012

Memorandum

To: Mr. Stephen Tryon, Field Manager , Bureau of Land Management, Oklahoma Field Office

From: Dixie Porter, Ph.D., Field Supervisor *Dixie Porter*

Subject: Amendment of the Oklahoma Resource Management Plan (RMP) to incorporate 4,000.62 acres of Federal coal reserves.

This is in response to the Bureau of Land Management's (BLM) July 3, 2012, Biological Assessment concerning the inclusion of an additional 4,000.62 acres of Federal coal lease into the Oklahoma Resource Management Plan (RMP). The additional acreage consists of portions of Haskell and LeFlore Counties, Oklahoma, and includes two coal lease modifications and two competitive Federal coal lease applications. BLM's Biological Assessment and their determination of effect for federally listed threatened and endangered species is based solely on the amendment to the RMP and does not cover any subsequent actions to the landscape.

The Service has reviewed the biological information submitted by your office describing the effects of the proposed project on all federally listed species and our comments are submitted in accordance with section 7 of the Endangered Species Act (ESA), National Environmental Protection Act (NEPA), the Bald and Golden Eagle Protection Act (BGEPA), and the Migratory Bird Treaty Act (MBTA).

There are six federally-listed species that are known to occur within Haskell and LeFlore Counties, Oklahoma: the American burying beetle *Nicrophorus americanus* (ABB), interior least tern *Sterna antillarum*, piping plover *Charadrius melodus*, Indiana bat *Myotis sodalis*, scaleshell mussel *Leptodea leptodon*, and the winged mapleleaf mussel *Quadrula fragosa*. Additionally, Bald eagles *Haliaeetus leucocephalus* are protected under the Bald and Golden Eagle Protection Act (BGEPA) and are known to occur within BLM's proposed action area.

BLM has made the determination that the proposed action "may effect, not likely to adversely affect" the American burying beetle and the Indiana bat, but will have "no effect" on the interior least tern, piping plover, scaleshell mussel, or the winged mapleleaf mussel. Furthermore, BLM has determined that the Bald eagle will not be adversely impacted by the proposed action.

2012 JUL 27 A 11:
M-OKFO-TULS

For determinations of “no effect”, concurrence is not required. The Service does, however, concur with BLM’s determination of “may effect, not likely to adversely affect” for the ABB and the Indiana bat. BLM should document their “no effect” determination for the interior least tern, piping plover, scaleshell mussel, and the winged mapleleaf mussel for their administrative record as a “no effect” determination does not provide incidental take of threatened or endangered species as described in section 9 of the ESA. The Services’ concurrence encompasses only the amendment to the RMP and not actions or changes to the landscape. The Service should be consulted on any future actions in which the proponent determines that a project may affect any federally-listed species.

Please contact Christopher Tanner of my staff at (918)382-4517 if you have questions regarding this response.

2012 JUL 27 A 11: 28
LH-OKFO-TULSA

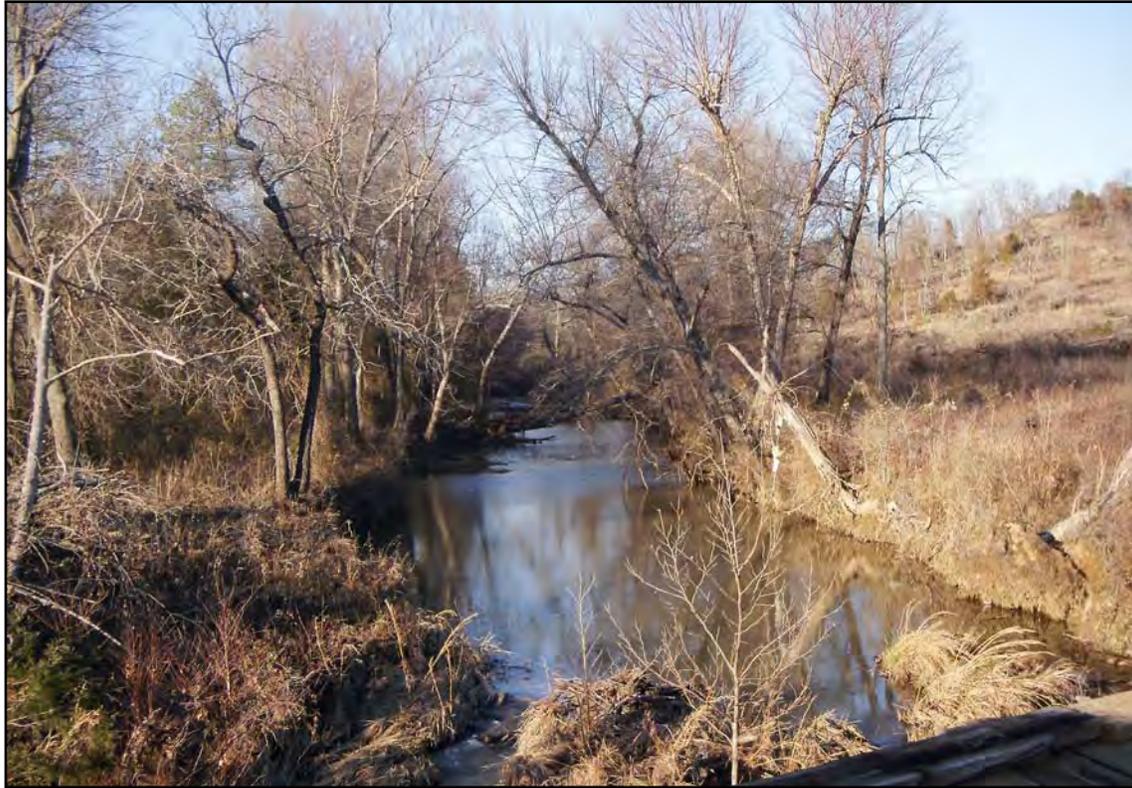
APPENDIX A:
REPRESENTATIVE SITE PHOTOGRAPHS



Photograph 1: Milton LAA – Upland Forest Community Type



Photograph 2: Milton LAA – Mixed Grass Pasture Community Type



Photograph 3: Milton LAA – Mapped Intermittent Stream



Photograph 4: Milton LAA – Strip Pit Impoundment



Photograph 5: Spiro LAA – Upland Forest Community Type



Photograph 6: Spiro LAA – Mixed Grass Pasture Community Type



Photograph 7: Spiro LAA – Riparian Forest Community Type



Photograph 8: Spiro LAA – Poteau River



Photograph 9: Spiro LAA – Potential Indiana Bat Habitat



Photograph 10: Liberty LAA – Upland Forest Community Type



Photograph 11: Liberty LAA – Mixed Grass Pasture Community Type



Photograph 12: Liberty LAA – Improved Grass Pasture and Mining Operation



Photograph 13: Liberty LAA – Utility Line ROW Community Type



Photograph 14: Liberty LAA – Riparian Forest Community Type



Photograph 15: Liberty LAA – Impoundment



Photograph 16: Liberty LAA – Emergent Wetland Community Type



Photograph 17: Liberty LAA – Mapped Intermittent Stream



Photograph 18: Liberty LAA – Mapped Intermittent Stream



Photograph 19: Liberty LAA – Mapped Intermittent Stream



Photograph 20: Liberty LAA – Mapped Intermittent Stream



Photograph 21: McCurtain LAA – Upland Forest Community Type



Photograph 22: McCurtain LAA – Mixed Grass Pasture Community Type



Photograph 23: McCurtain LAA – Club Lake



Photograph 24: McCurtain LAA – Club Lake



Photograph 25: McCurtain LAA – Forested Wetland Community Type



Photograph 26: McCurtain LAA – Emergent Wetland Community Type

APPENDIX B:
USFWS OFFICIAL SPECIES LISTS FOR
PROPOSED LAAS



United States Department of Interior
Fish and Wildlife Service

Project name: Milton LAA

Official Species-list: *Milton LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Milton LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on May 24, 2012, 1:02 PM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0802, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

This list below only addresses federally proposed, listed, or candidate species and federally designated critical habitat. Please contact the appropriate State agencies for information regarding State species of special designation. Also, please feel free to contact the office(s) identified below if you would like information on other important trust resources (such as migratory birds) in your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: Milton LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

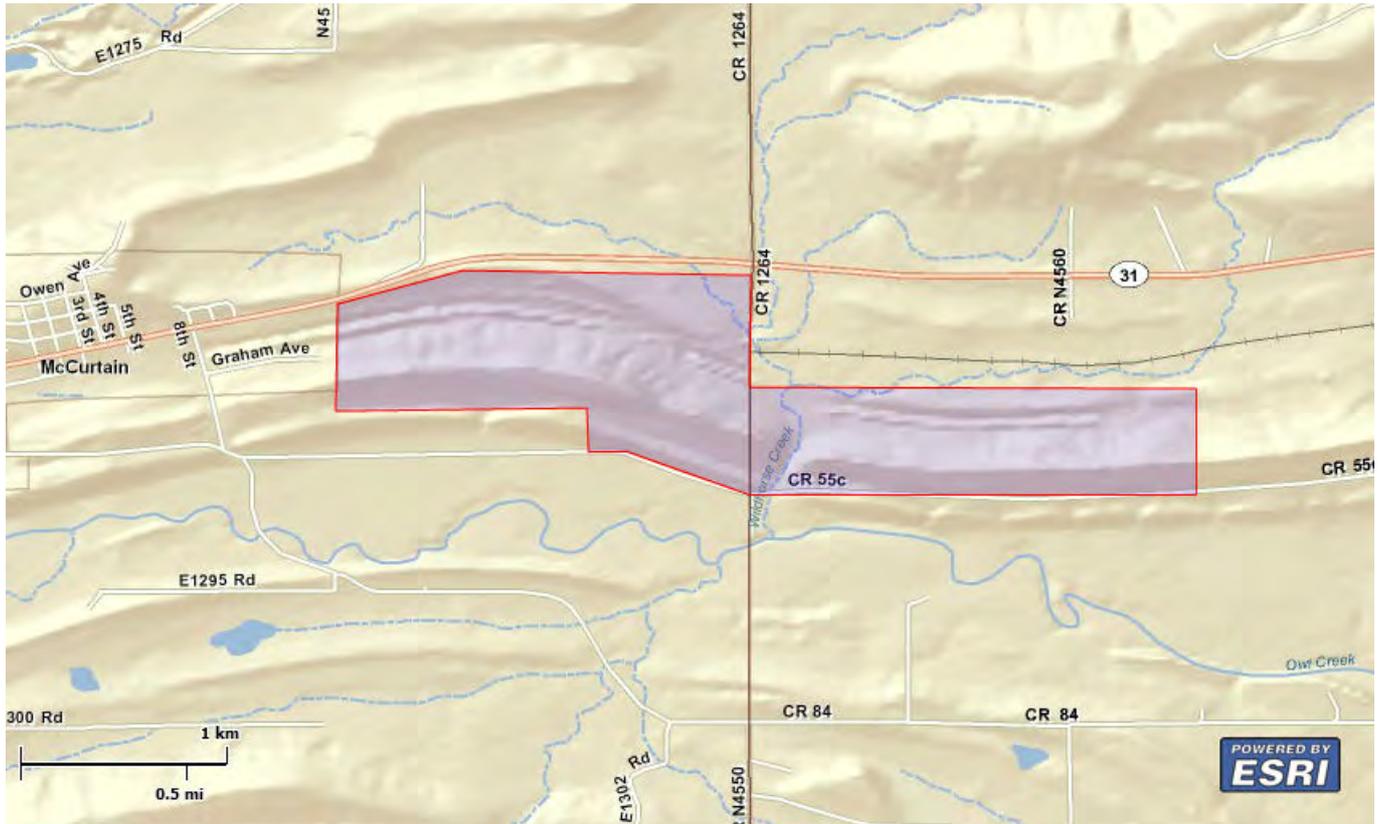
TAILS consultation code: 02EKOK00-2012-SLI-0802

Project type: Mining

Project Description: Surface Coal Mining



Project location map:



Project coordinates: MULTIPOLYGON (((-94.9500215 35.1532342, -94.9433267 35.1550367, -94.927963 35.1547792, -94.9280488 35.148771, -94.9042737 35.1486852, -94.9042737 35.1430204, -94.9281347 35.1430204, -94.9346578 35.1453378, -94.9366319 35.1453378, -94.9367177 35.1476552, -94.9501073 35.1474836, -94.9500215 35.1532342)))

Project counties: Haskell, OK | Le Flore, OK



Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Indiana bat (*Myotis sodalis*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened

Scaleshell mussel (*Leptodea leptodon*)

Listing Status: Endangered

Winged Mapleleaf (*Quadrula fragosa*)

Population: Entire; except where listed as experimental populations

Listing Status: Endangered



United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

Official Species-list: *Spiro LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Spiro LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 9:46 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0292, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

This list below only addresses federally proposed, listed, or candidate species and federally designated critical habitat. Please contact the appropriate State agencies for information regarding State species of special designation. Also, please feel free to contact the office(s) identified below if you would like information on other important trust resources (such as migratory birds) in your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0292

Project type: Mining

Project Description: Underground coal mining with minimal surface disturbance.



United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

Project coordinates: MULTIPOLYGON (((-94.56669849 35.23983087, -94.5668488 35.2395679, -94.56672445 35.23987867, -94.56672 35.2398683, -94.56669717 35.23993679, -94.56669849 35.23983087)), ((-94.56669717 35.23993679, -94.56669704 35.23994717, -94.5666771 35.239997, -94.56669717 35.23993679)), ((-94.56669849 35.23983087, -94.5665054 35.2401687, -94.5215302 35.2394821, -94.5210152 35.2365638, -94.52668 35.2312423, -94.5313148 35.2278091, -94.5668488 35.2278091, -94.56669849 35.23983087)), ((-94.56669704 35.23994717, -94.56672445 35.23987867, -94.5668488 35.2401687, -94.5666771 35.241542, -94.56669704 35.23994717)))

Project counties: Le Flore, OK



Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Indiana bat (*Myotis sodalis*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened

Scaleshell mussel (*Leptodea leptodon*)

Listing Status: Endangered

Winged Mapleleaf (*Quadrula fragosa*)

Population: Entire; except where listed as experimental populations

Listing Status: Endangered



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Official Species-list: *Liberty LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Liberty LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 10:18 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0296, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

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United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0296

Project type: Mining

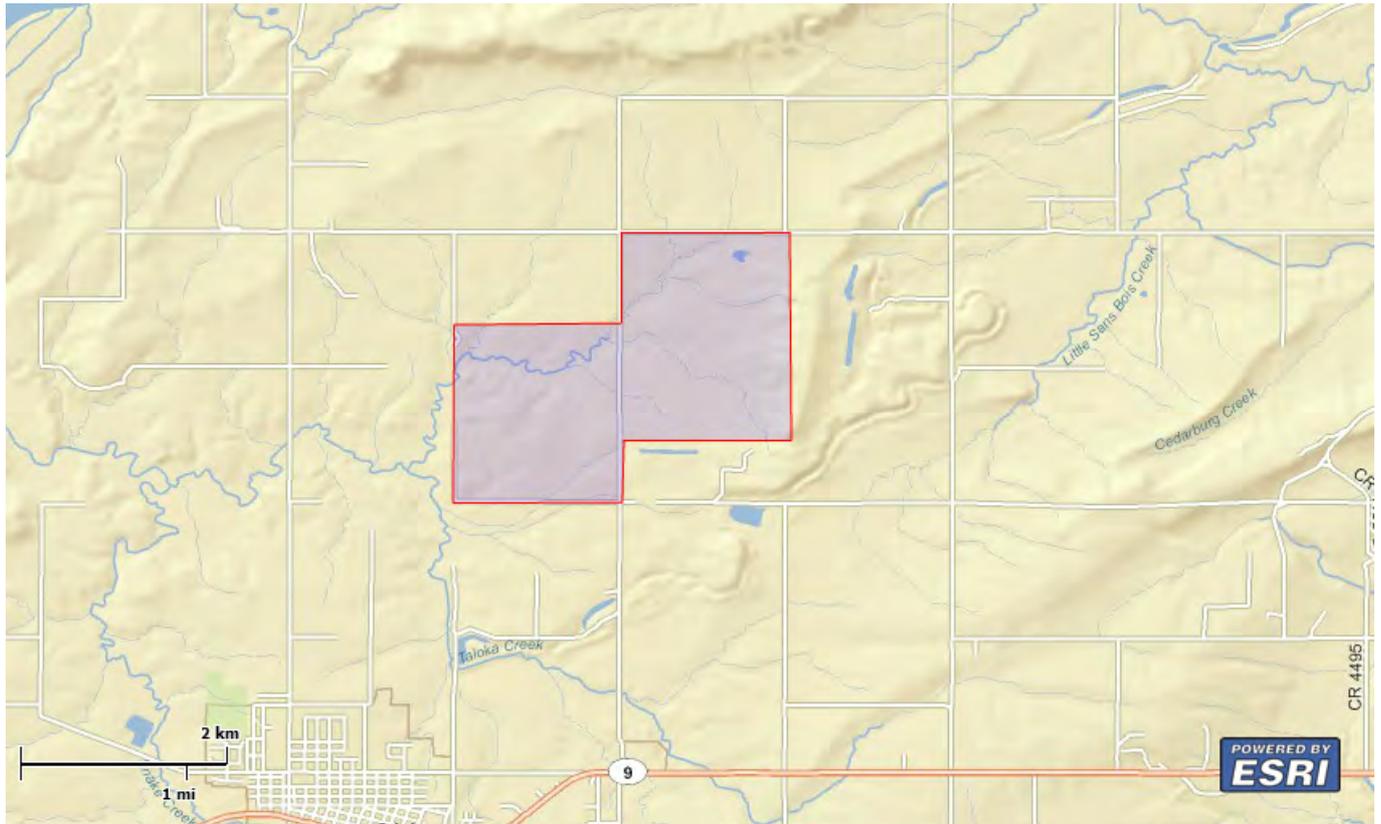
Project Description: Surface coal mining.



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Project location map:



Project coordinates: MULTIPOLYGON (((-95.1148777 35.30871, -95.0971107 35.3088816, -95.0971107 35.3186663, -95.0790863 35.3186663, -95.0789146 35.2963504, -95.0967674 35.2963504, -95.0969391 35.2896556, -95.1149635 35.2895697, -95.1148777 35.30871)))

Project counties: Haskell, OK



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Official Species-list: *McCurtain LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "McCurtain LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 9:59 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0293, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

This list below only addresses federally proposed, listed, or candidate species and federally designated critical habitat. Please contact the appropriate State agencies for information regarding State species of special designation. Also, please feel free to contact the office(s) identified below if you would like information on other important trust resources (such as migratory birds) in your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0293

Project type: Mining

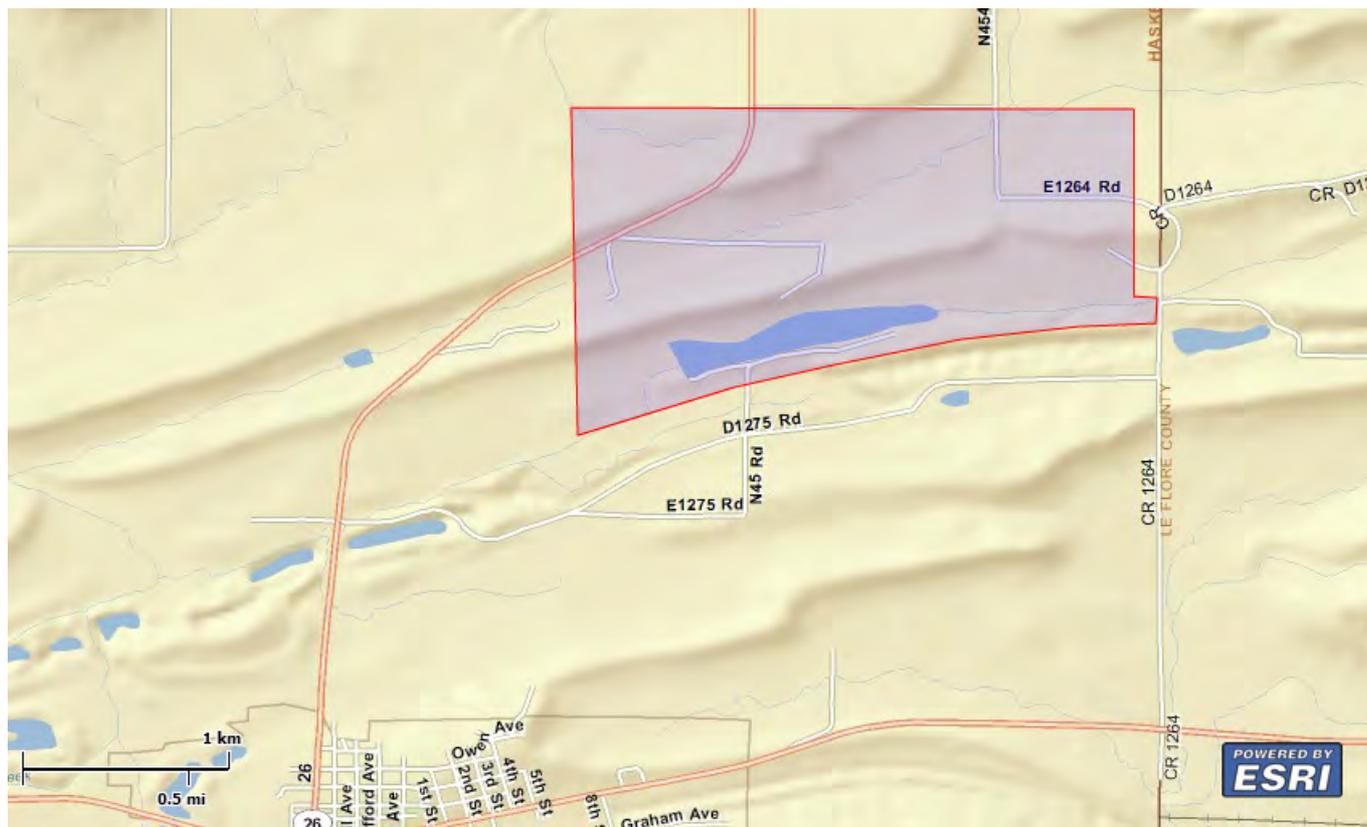
Project Description: Underground coal mining with minimal surface impacts.



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Project location map:



Project coordinates: MULTIPOLYGON (((-94.9293976 35.1886382, -94.9293976 35.178596, -94.9281101 35.1785101, -94.928196 35.1771368, -94.9323158 35.1769652, -94.9385815 35.1762785, -94.9453621 35.1749052, -94.9506836 35.1737036, -94.9590092 35.1711287, -94.9593525 35.188724, -94.9293976 35.1886382)))

Project counties: Haskell, OK



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened

APPENDIX C:
SPECIES CONCLUSIONS TABLE

Species Conclusions Table

Project Name: Proposed Coal Leases in Haskell and LeFlore Counties

Date: March 26, 2012

Species / Resource Name	Conclusion	ESA Section 7	Notes / Documentation
Interior Least Tern (<i>Sterna antillarum</i>)	No Potential Habitat Present; Species Not Likely Present	No Effect	USFWS, 2011; ONHI, 2012
Piping Plover (<i>Charadrius melodus</i>)	No Potential Habitat Present; Species Not Likely Present	No Effect	ONHI, 2012
Indiana Bat (<i>Myotis sodalis</i>)	Potential Habitat Present; Species Likely Present	May Affect, Not Likely to Adversely Affect	Approximately 107 acres of potential habitat will be impacted. ONHI, 2012
Scaleshell (<i>Leptodea leptodon</i>)	Potential Habitat Present; Species Likely Present	No Effect	All potential habitat will be avoided by proposed mining activities. USFWS, 2010; ONHI, 2012
Winged Mapleleaf (<i>Quadrula fragosa</i>)	No Potential Habitat Present; Species Not Likely Present	No Effect	USFWS, 2010; ONHI, 2012
American Burying Beetle (<i>Nicrophorus americanus</i>)	Potential Habitat Present; Species Likely Present	May Affect, Not Likely to Adversely Affect	Trap and relocate efforts would be conducted prior to mining activities. ONHI, 2012

Remember to save a copy of this form once you have filled it out. This table is part of your project review package.

APPENDIX D:
CONSULTATION HISTORY

March 1, 2012

Oklahoma Department of Wildlife Conservation
1801 North Lincoln Boulevard
Oklahoma City, Oklahoma 73105

RE: Request for Comment
Threatened and Endangered Species Habitat Assessment
Four Lease Application Areas
Haskell and LeFlore Counties, Oklahoma

Dear Sir or Madam:

The Bureau of Land Management (BLM) Oklahoma Field Office would like to amend its 1994 Resource Management Plan (RMP) to incorporate two Federal coal lease modifications and two competitive Federal coal leases for lands in Haskell and LeFlore counties, Oklahoma.

Enercon Services, Inc. (ENERCON) recently completed field surveys to identify potentially suitable threatened and endangered species habitat within the four Lease Application Areas (LAAs). United States Fish and Wildlife (USFWS) Official Species Lists for the project areas are included with this letter. We believe that potential habitat exists for the American burying beetle, Indiana bat, winged mapleleaf, scaleshell, and the bald eagle within the LAAs (one of the LAAs (Spiro) includes reaches of the Poteau River).

It is important to note that the only surface mining proposed at this time would occur at the Liberty LAA located in Haskell County. All other LAAs would use underground mining techniques and surface impacts would be minor (e.g. access roads, storm water, etc.). Please see attached maps for specific LAA locations and details.

We would appreciate your comments on conservation measures to minimize and/or avoid potential impacts to any listed species and their habitat that you may know to occur in the above mentioned areas. According to the USFWS Critical Habitat Portal, no designated critical habitat occurs in Haskell or LeFlore counties, your concurrence on this would also be appreciated.

If you have questions or require additional information please feel free to call me at (918) 707-1545 or Charlie Andrews at (214) 205-6174.

Best regards,



Rebecca Carroll
Biologist
Enercon Services, Inc.
rcarroll@enercon.com

Attachments:

USFWS Official Species Lists for LAAs
LAA Maps (17)



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Official Species-list: *Liberty LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Liberty LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

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Please reference our tracking number, 02EKOK00-2012-SLI-0296, in future reference to this project to assist in expediting the process.

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<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

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United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0296

Project type: Mining

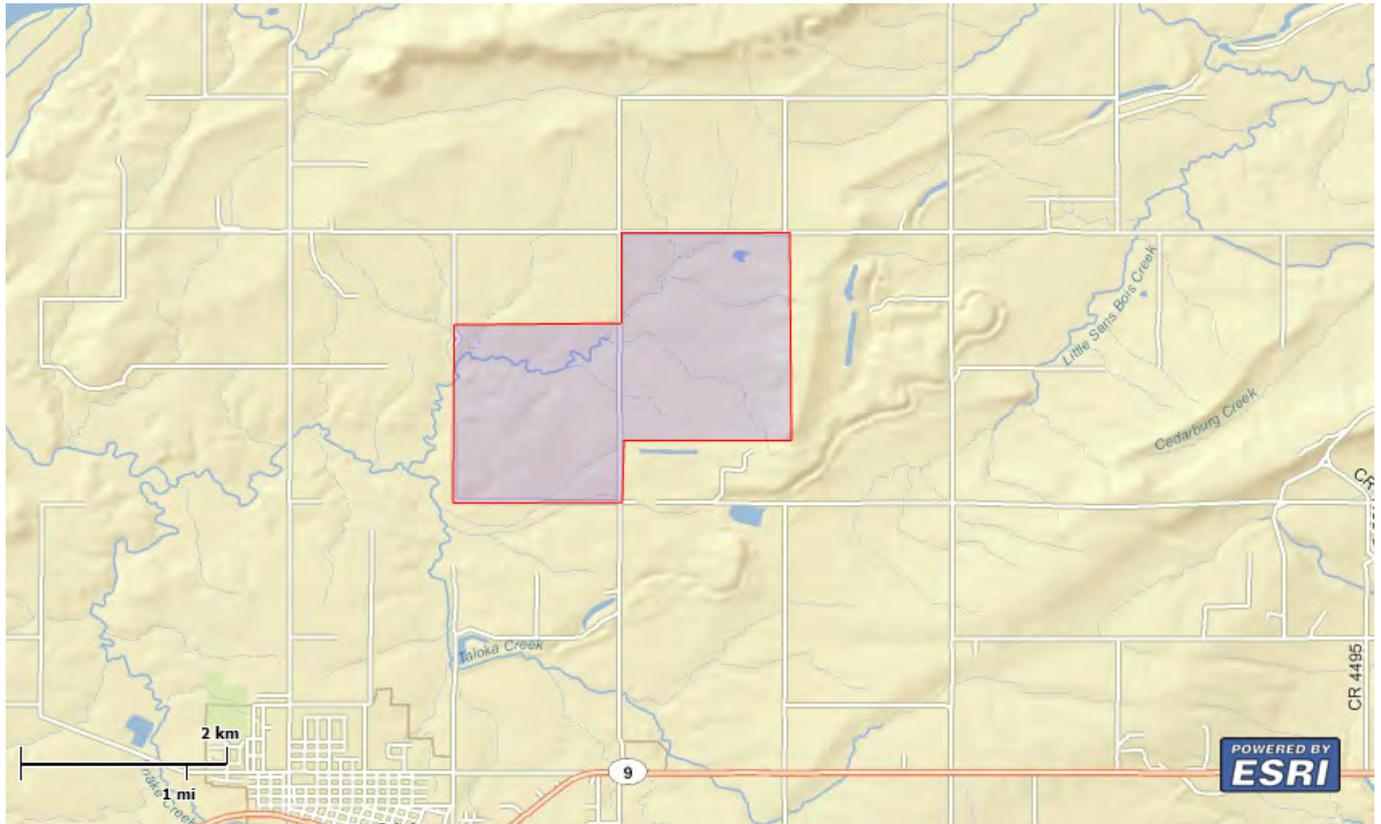
Project Description: Surface coal mining.



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Project location map:



Project coordinates: MULTIPOLYGON (((-95.1148777 35.30871, -95.0971107 35.3088816, -95.0971107 35.3186663, -95.0790863 35.3186663, -95.0789146 35.2963504, -95.0967674 35.2963504, -95.0969391 35.2896556, -95.1149635 35.2895697, -95.1148777 35.30871)))

Project counties: Haskell, OK



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Official Species-list: *McCurtain LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "McCurtain LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

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Please reference our tracking number, 02EKOK00-2012-SLI-0293, in future reference to this project to assist in expediting the process.

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<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

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United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0293

Project type: Mining

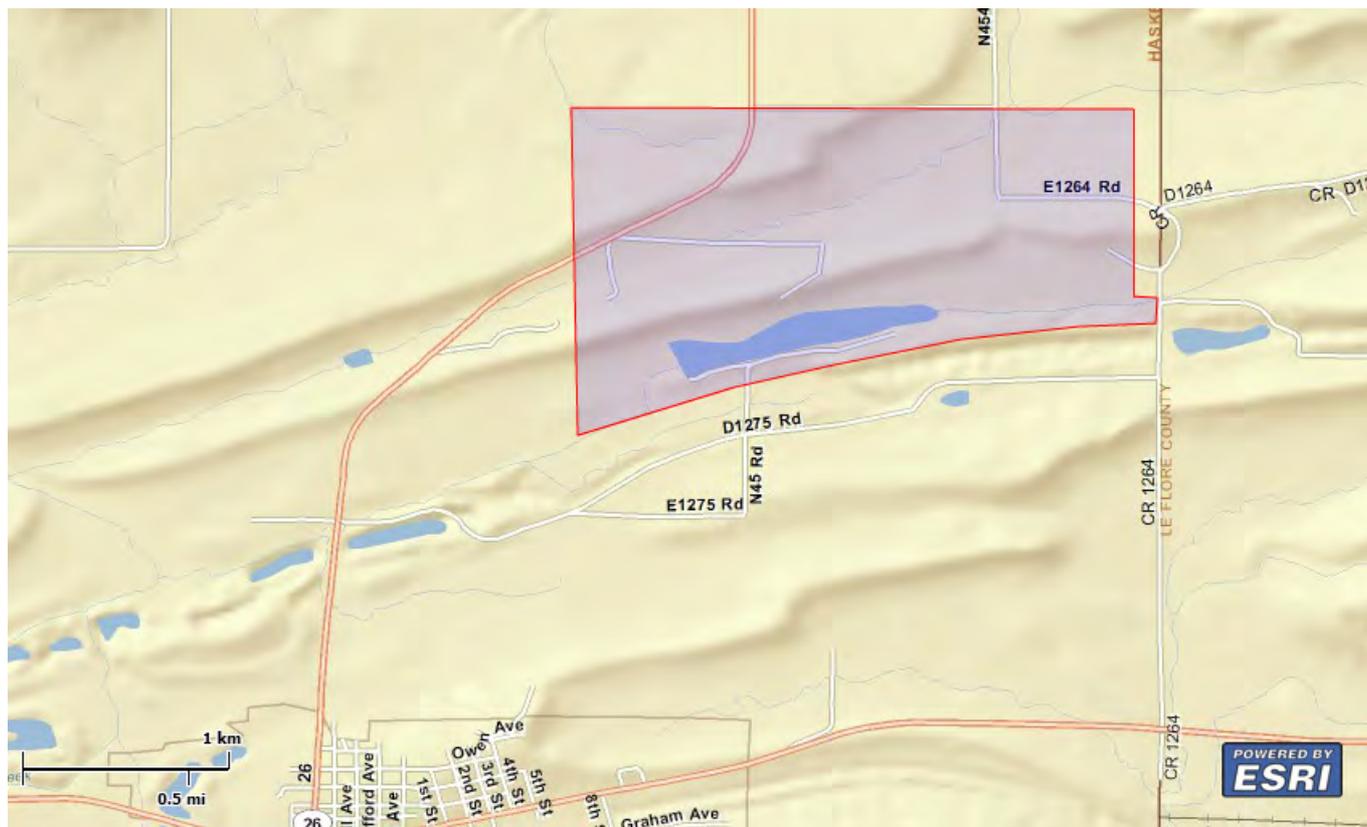
Project Description: Underground coal mining with minimal surface impacts.



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Project location map:



Project coordinates: MULTIPOLYGON (((-94.9293976 35.1886382, -94.9293976 35.178596, -94.9281101 35.1785101, -94.928196 35.1771368, -94.9323158 35.1769652, -94.9385815 35.1762785, -94.9453621 35.1749052, -94.9506836 35.1737036, -94.9590092 35.1711287, -94.9593525 35.188724, -94.9293976 35.1886382)))

Project counties: Haskell, OK



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened



United States Department of Interior
Fish and Wildlife Service

Project name: Milton LAA

Official Species-list: *Milton LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Milton LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 10:10 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0294, in future reference to this project to assist in expediting the process.

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<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

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United States Department of Interior
Fish and Wildlife Service

Project name: Milton LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0294

Project type: Mining

Project Description: Underground coal mining with minimal surface impacts.



United States Department of Interior
Fish and Wildlife Service

Project name: Milton LAA

Project coordinates: MULTIPOLYGON (((-94.9497824 35.1528736, -94.9279385 35.1528736, -94.9279385 35.1487537, -94.9099998 35.1487537, -94.9099998 35.1425739, -94.9303417 35.1426597, -94.9303846 35.1458784, -94.9368649 35.1458355, -94.9369936 35.1487966, -94.9499969 35.148625, -94.9497824 35.1528736)))

Project counties: Haskell, OK | Le Flore, OK



Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Indiana bat (*Myotis sodalis*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened

Scaleshell mussel (*Leptodea leptodon*)

Listing Status: Endangered

Winged Mapleleaf (*Quadrula fragosa*)

Population: Entire; except where listed as experimental populations

Listing Status: Endangered



United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

Official Species-list: *Spiro LAA*

Oklahoma Ecological Services Field Office

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This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 9:46 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0292, in future reference to this project to assist in expediting the process.

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<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

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United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0292

Project type: Mining

Project Description: Underground coal mining with minimal surface disturbance.



United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

Project coordinates: MULTIPOLYGON (((-94.56669849 35.23983087, -94.5668488 35.2395679, -94.56672445 35.23987867, -94.56672 35.2398683, -94.56669717 35.23993679, -94.56669849 35.23983087)), ((-94.56669717 35.23993679, -94.56669704 35.23994717, -94.5666771 35.239997, -94.56669717 35.23993679)), ((-94.56669849 35.23983087, -94.5665054 35.2401687, -94.5215302 35.2394821, -94.5210152 35.2365638, -94.52668 35.2312423, -94.5313148 35.2278091, -94.5668488 35.2278091, -94.56669849 35.23983087)), ((-94.56669704 35.23994717, -94.56672445 35.23987867, -94.5668488 35.2401687, -94.5666771 35.241542, -94.56669704 35.23994717)))

Project counties: Le Flore, OK



Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Indiana bat (*Myotis sodalis*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened

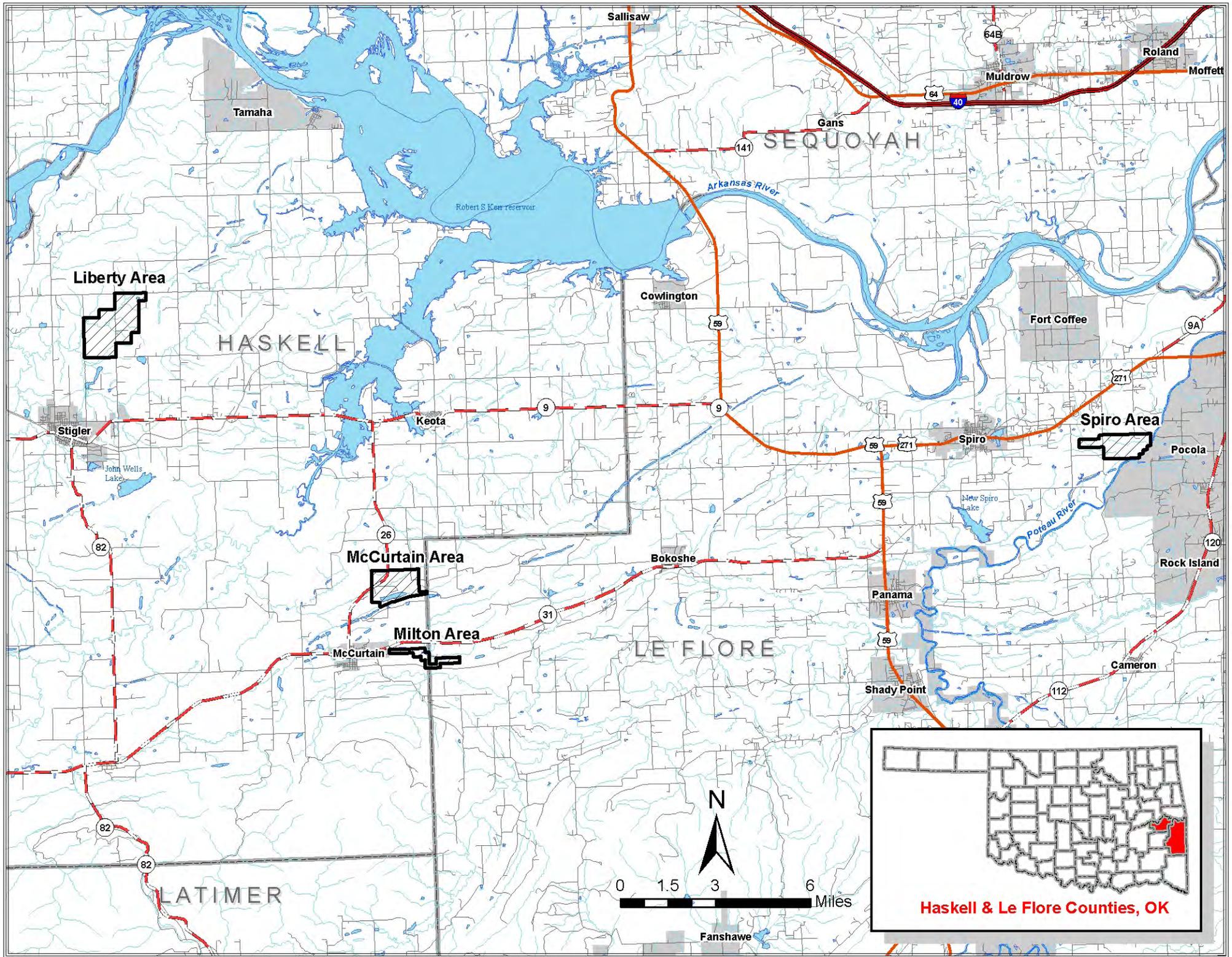
Scaleshell mussel (*Leptodea leptodon*)

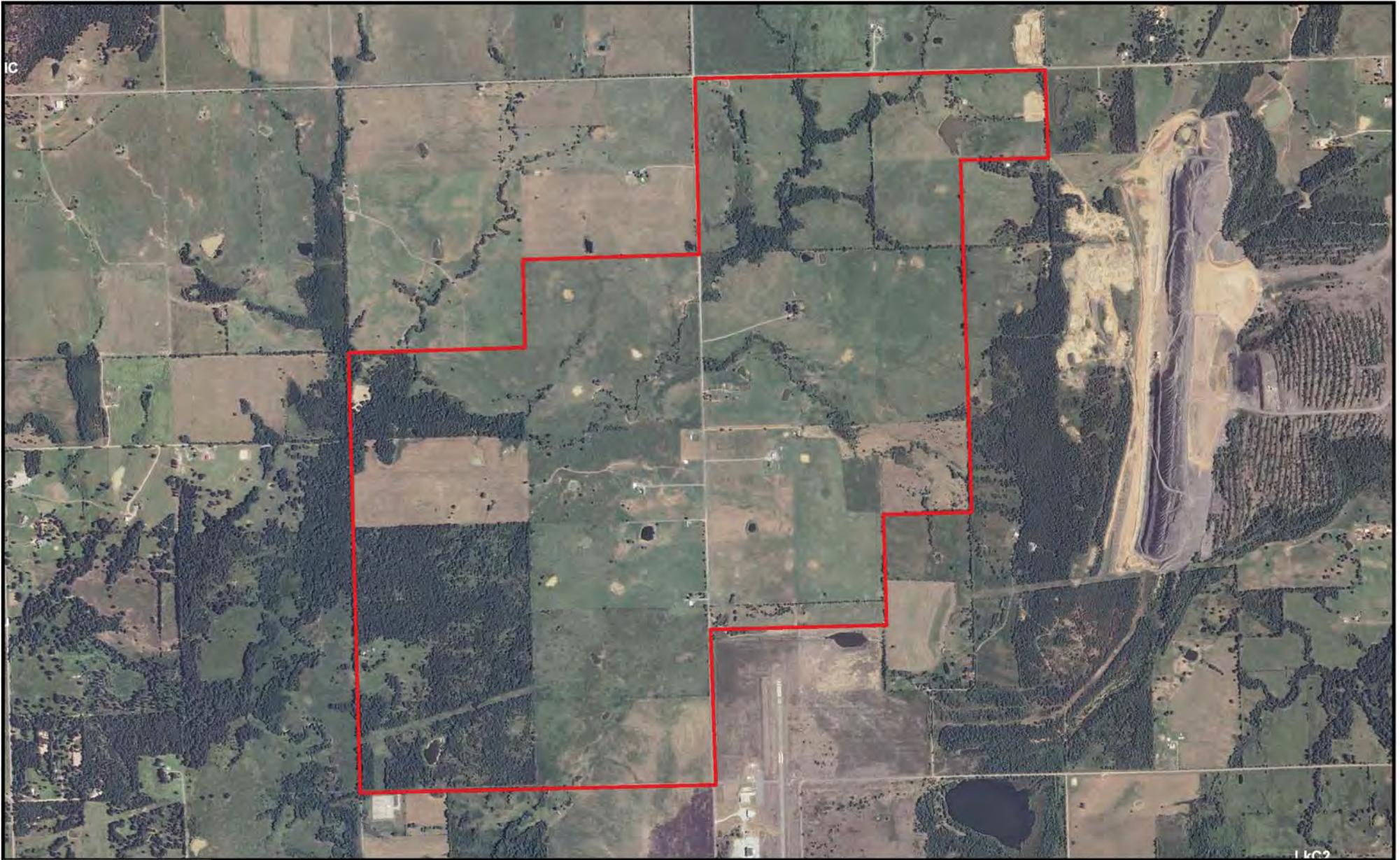
Listing Status: Endangered

Winged Mapleleaf (*Quadrula fragosa*)

Population: Entire; except where listed as experimental populations

Listing Status: Endangered





Legend

 Liberty Planning Area

Map X-X: Liberty Area Aerial Photography

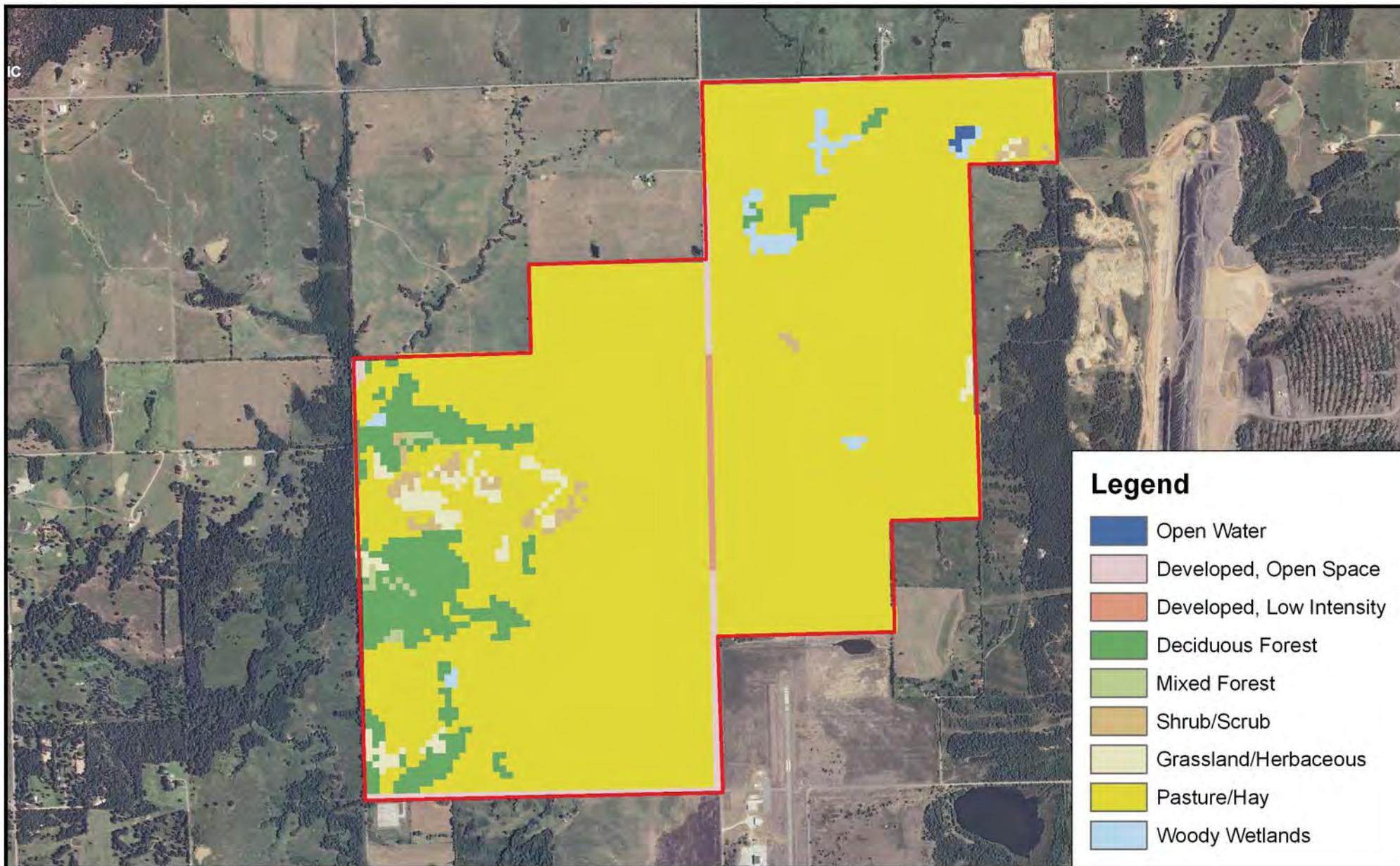
BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/22/11.



Source:
2011 BLM
2010 USDA NAIP
Hakell County, Oklahoma

 Miles



Legend

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Deciduous Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands

Legend

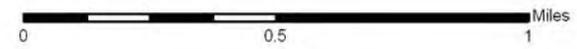
- Liberty Planning Area

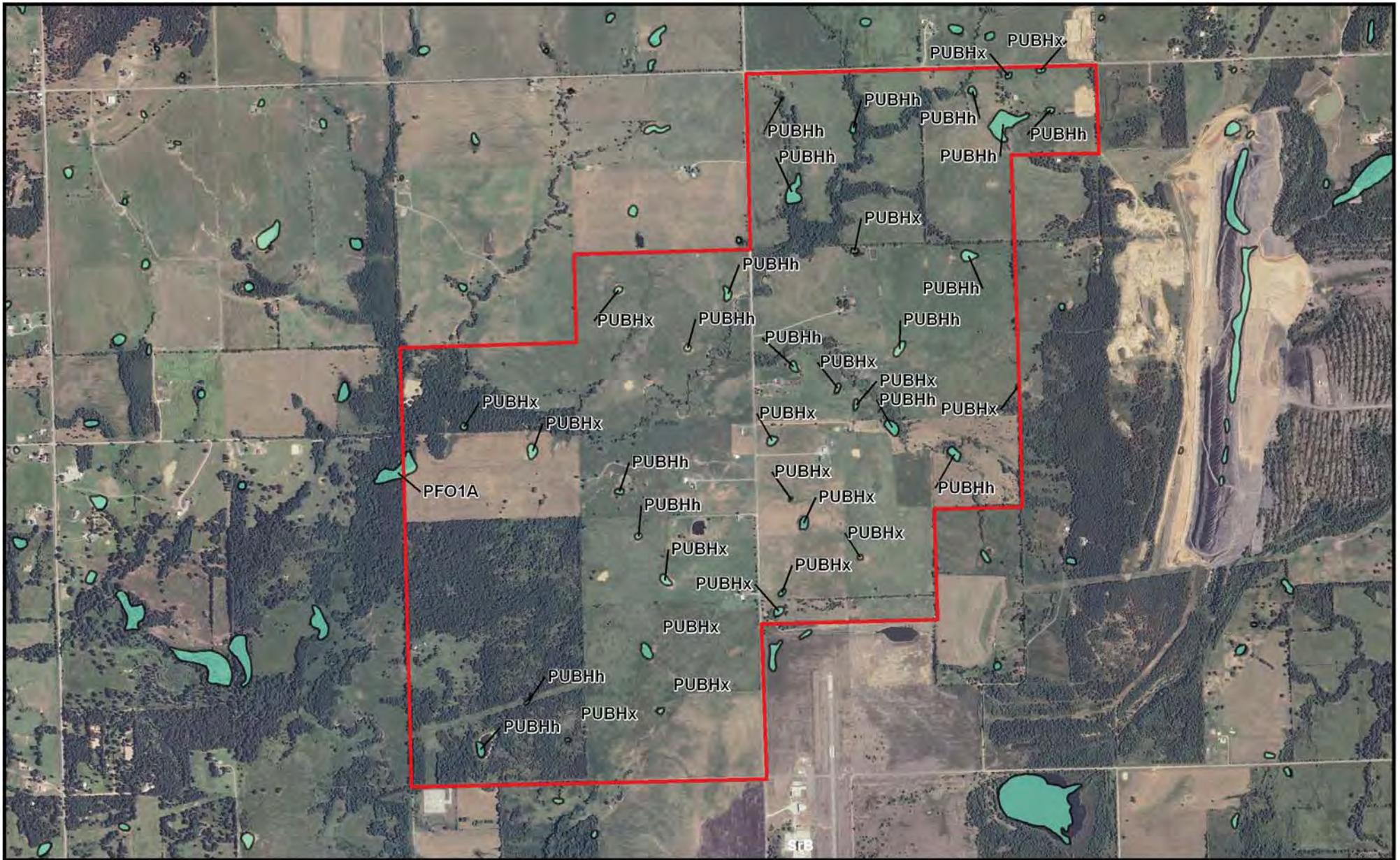
Map X-X: Liberty Area Land Cover

Source:
2011 BLM
2006 MLRC Land Cover



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

- Liberty Planning Area
- NWI Wetlands (16.46 ac)

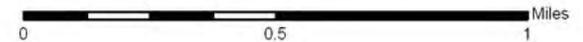
BLM
LOGO

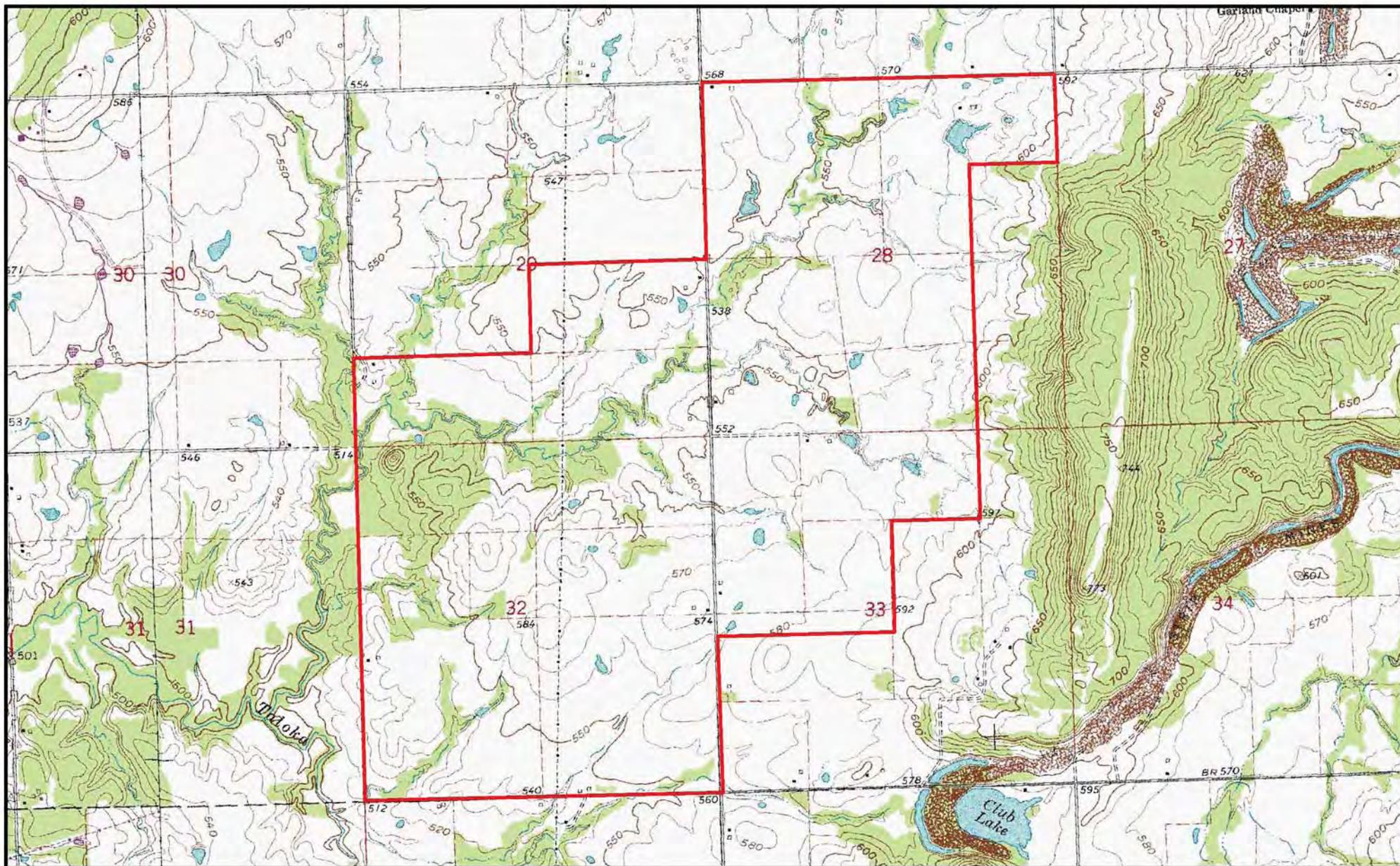
Map X-X: Liberty Area NWI

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
US Fish and Wildlife Service - NWI
Stigler East, OK Quadrangle
2010 USDA NAIP - Haskell County, Oklahoma





Legend

 Liberty Planning Area

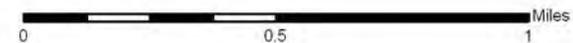
**BLM
LOGO**

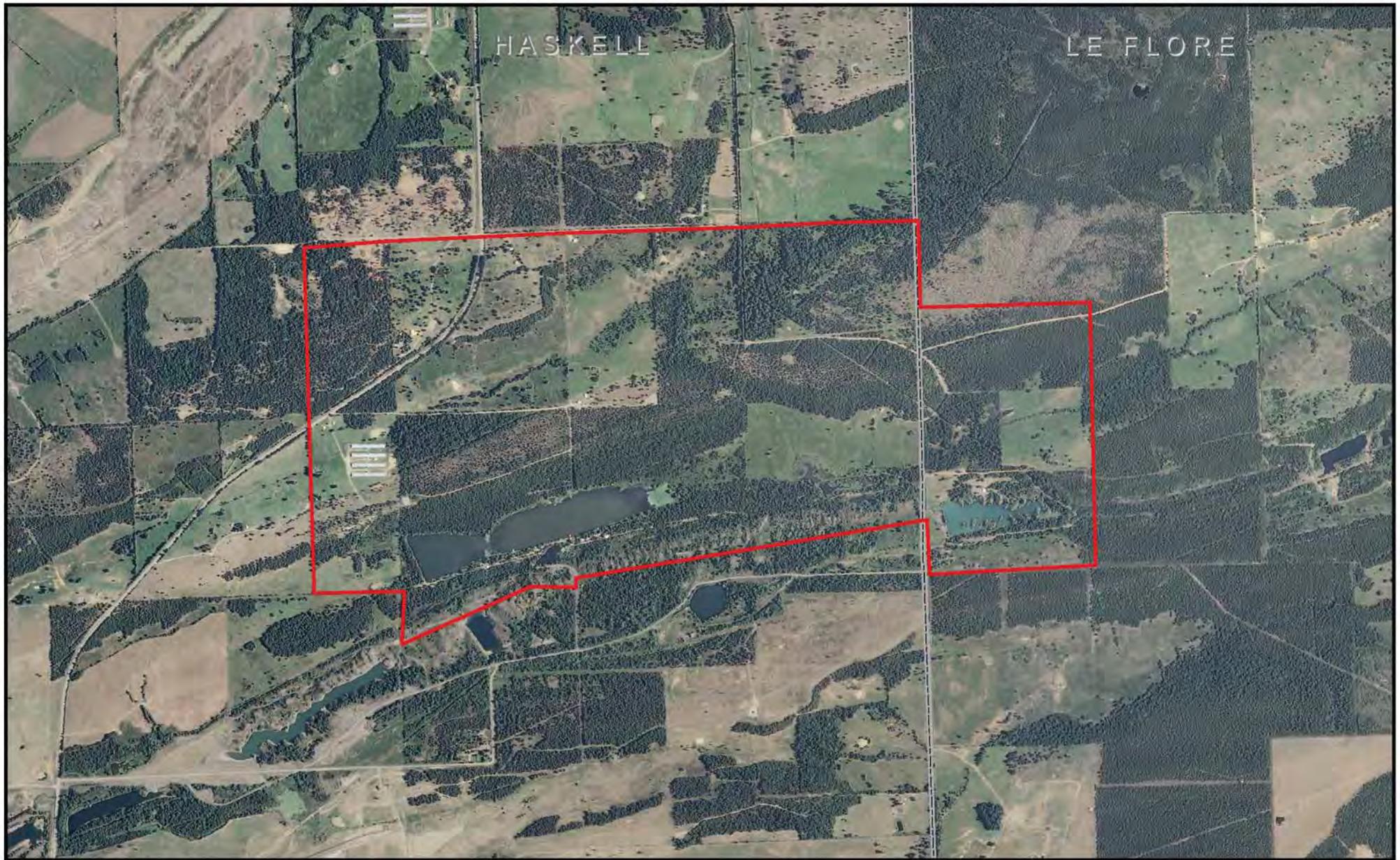
Map X-X: Liberty Area Topography

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
USGS 7.5 Minute Series
Stigler East, OK Quadrangle





Legend

 McCurtain Planning Area

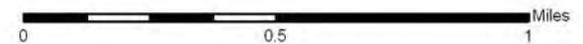
Map X-X: McCurtain Area Aerial Photography

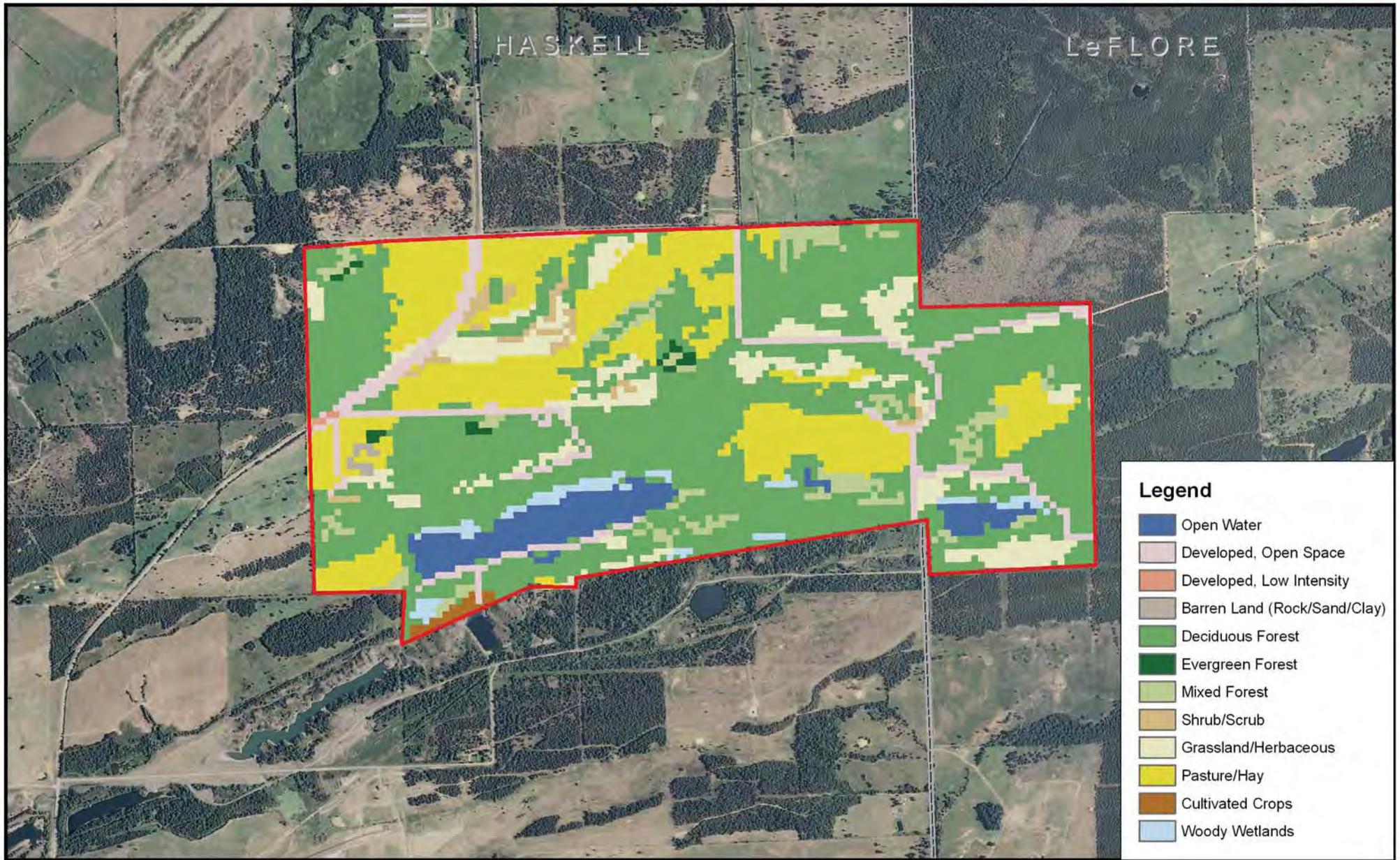
BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
2010 USDA NAIP -
Haskell and Le Flore Counties, Oklahoma





Legend

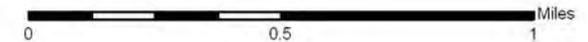
McCurtain Planning Area

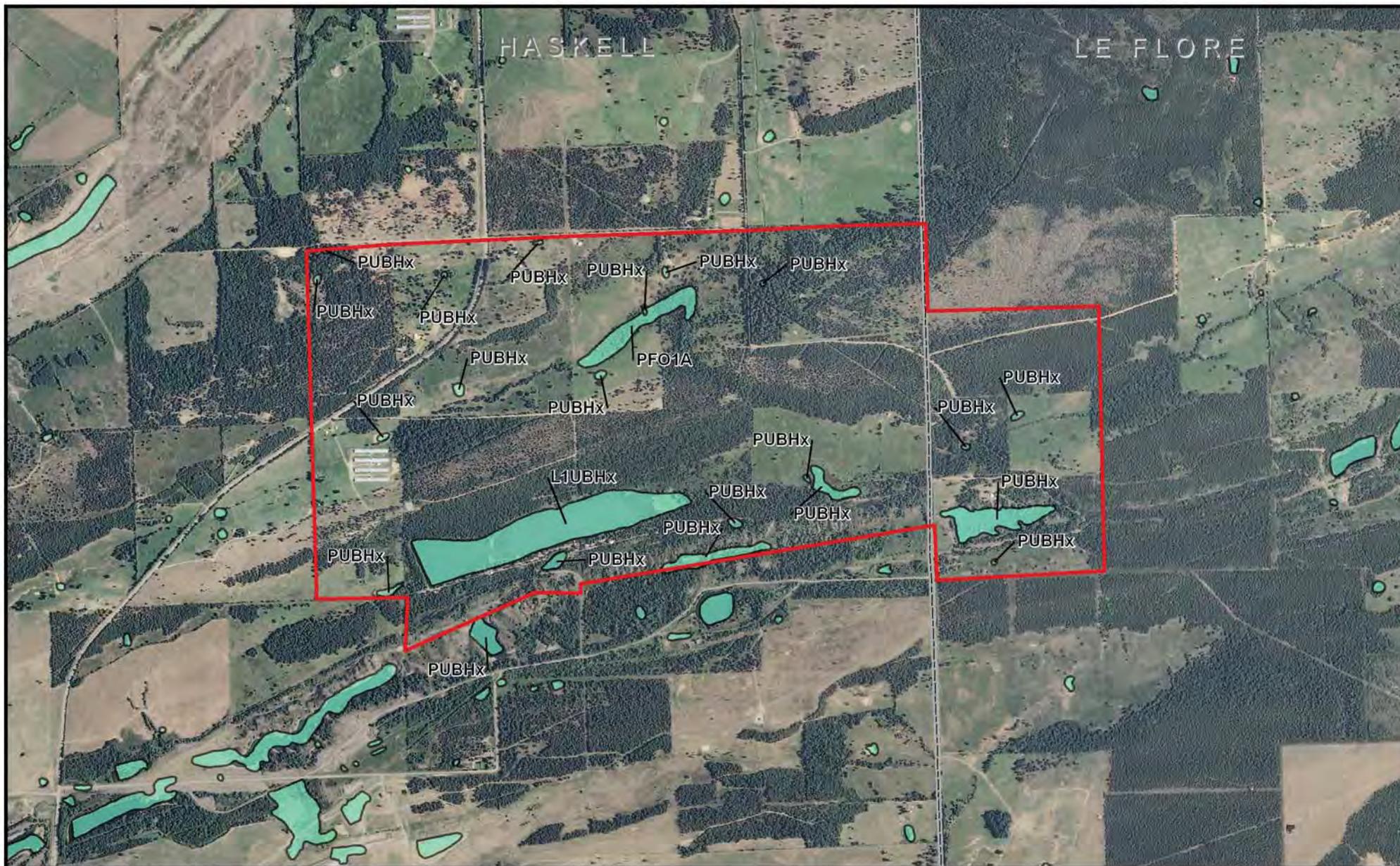
Map X-X: McCurtain Area Land Cover

Source:
2011 BLM
2006 MLRC Land Cover

BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

- McCurtain Planning Area
- NWI Wetlands (84.74 ac)

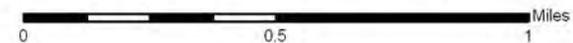
BLM
LOGO

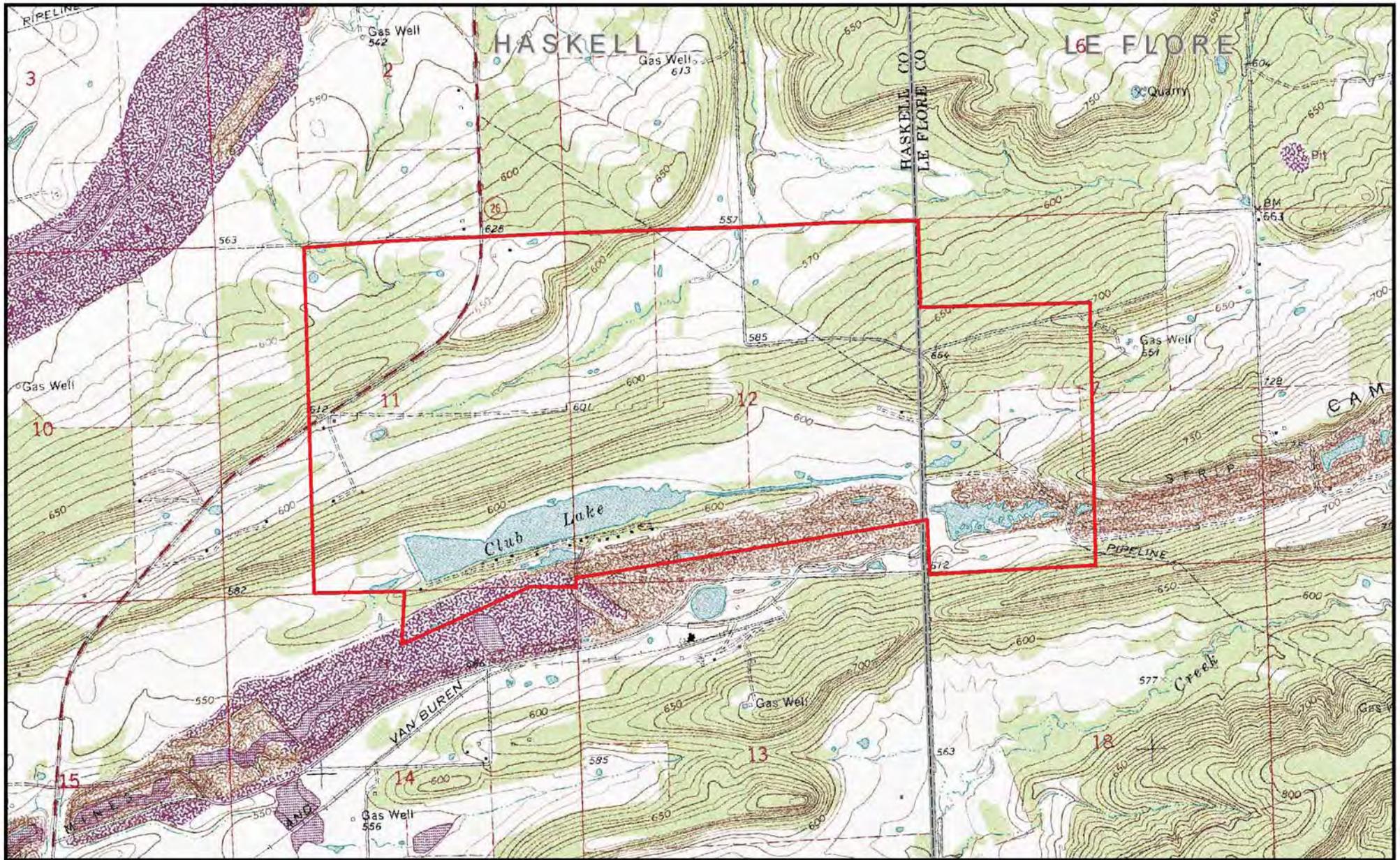
Map X-X: McCurtain Area NWI

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
US Fish and Wildlife Service - NWI
McCurtain, OK Quadrangle
2010 USDA NAIP -
Haskell and Le Flore Counties, Oklahoma





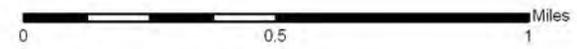
Legend
 McCurtain Planning Area

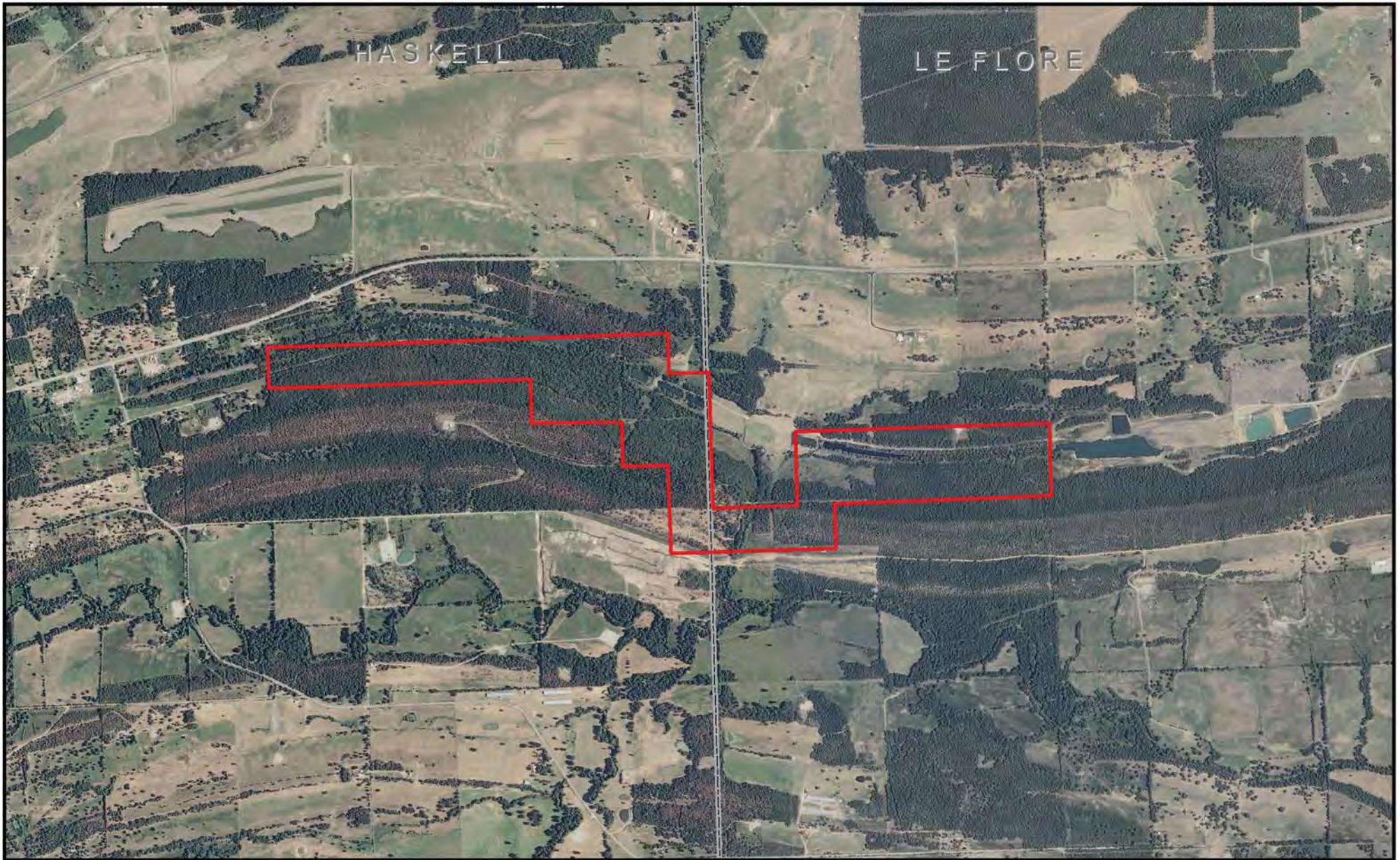
Map X-X: McCurtain Area Topography

Source:
 2011 BLM
 USGS 7.5 Minute Series
 McCurtain, OK Quadrangle

BLM
 LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

 Milton Planning Area

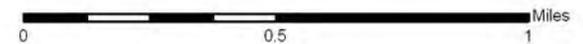
Map X-X: Milton Aerial Photography

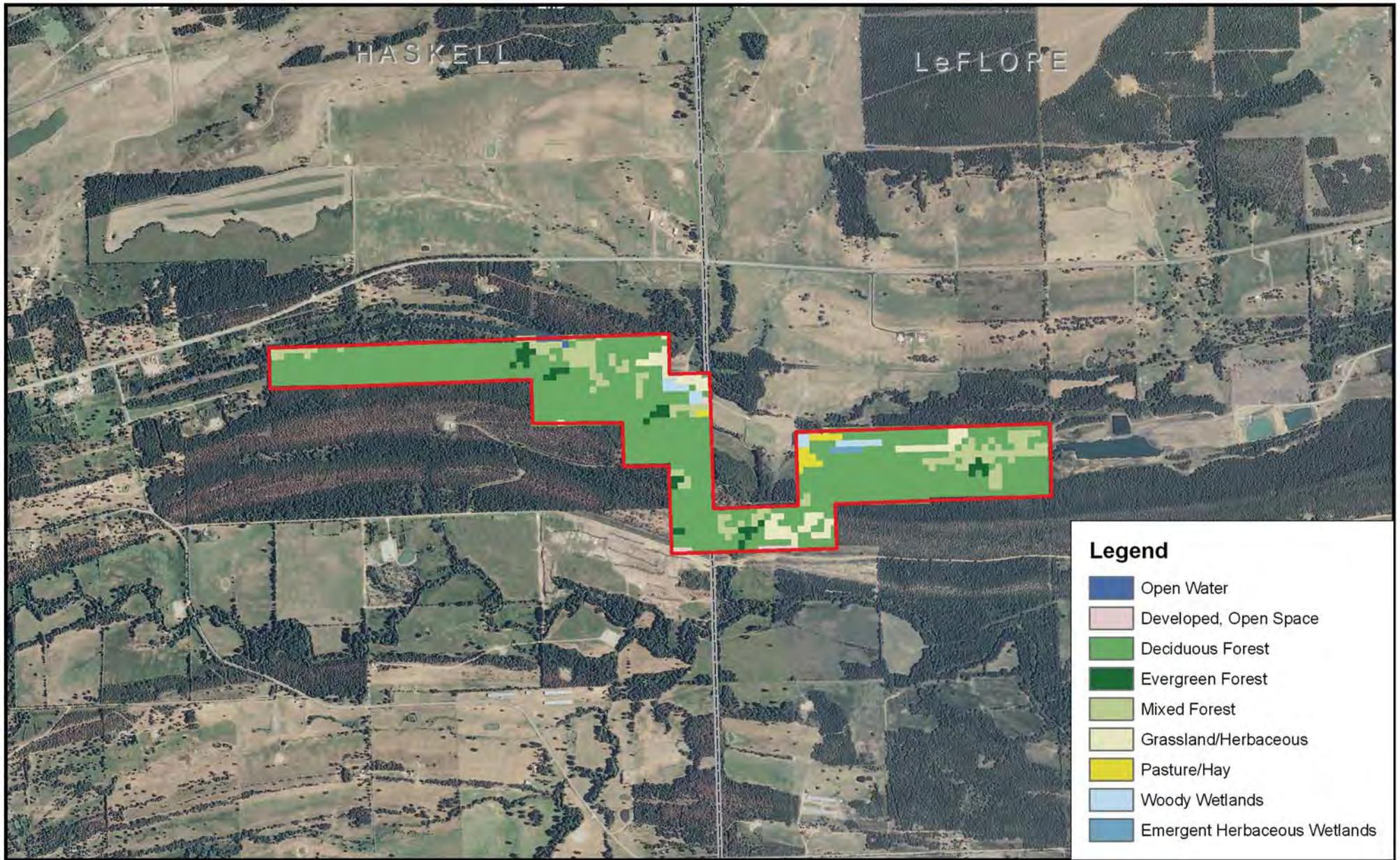
BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
2010 USDA NAIP -
Haskell and Le Flore Counties, Oklahoma





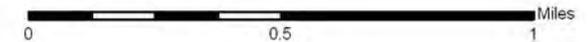
Legend
 Milton Planning Area

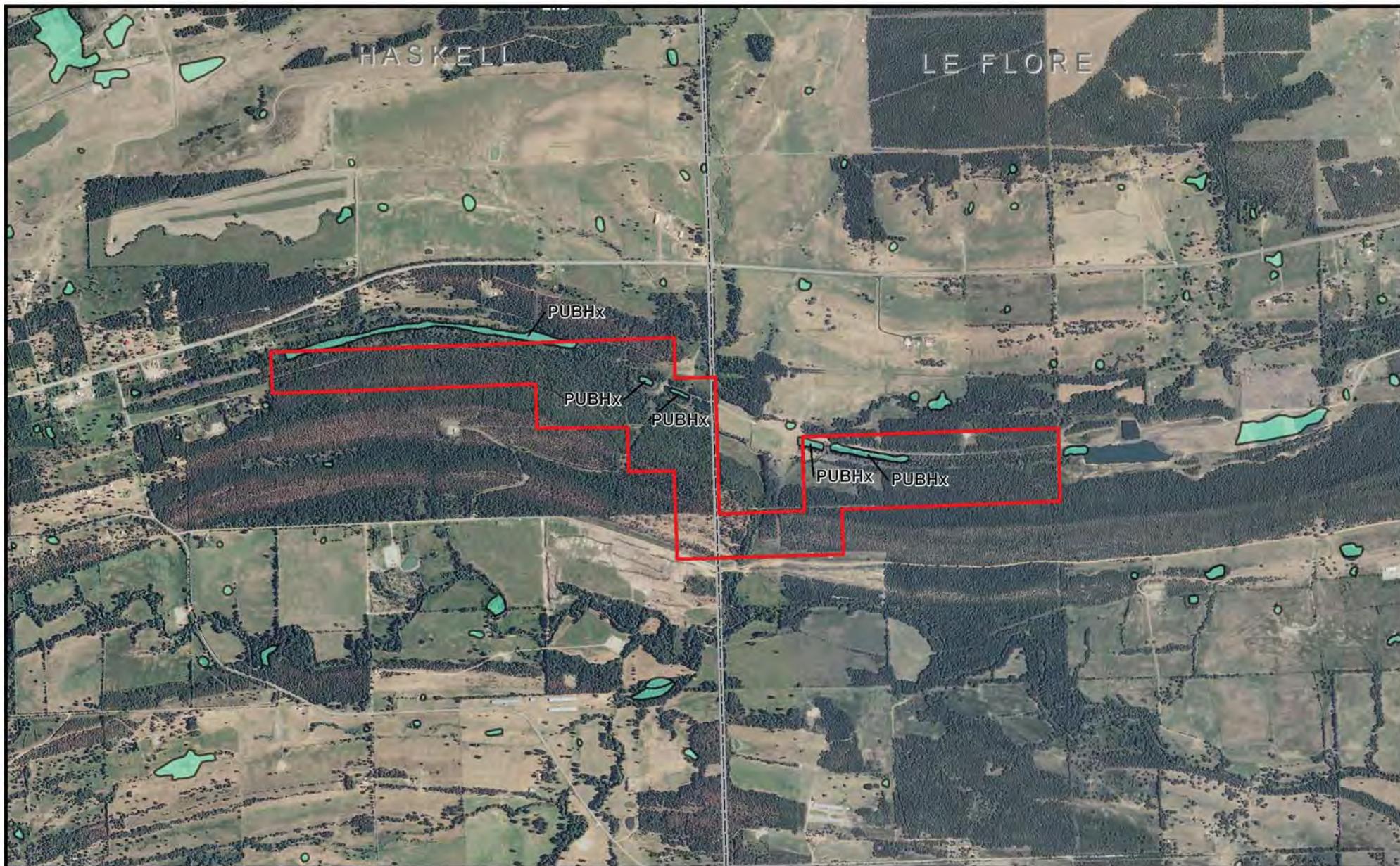
Map X-X: Milton Area Land Cover

Source:
 2011 BLM
 2006 MLRC Land Cover

BLM
 LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

- Milton Planning Area
- NWI Wetlands (5.73 ac)

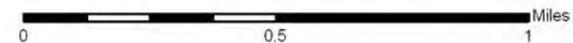
BLM
LOGO

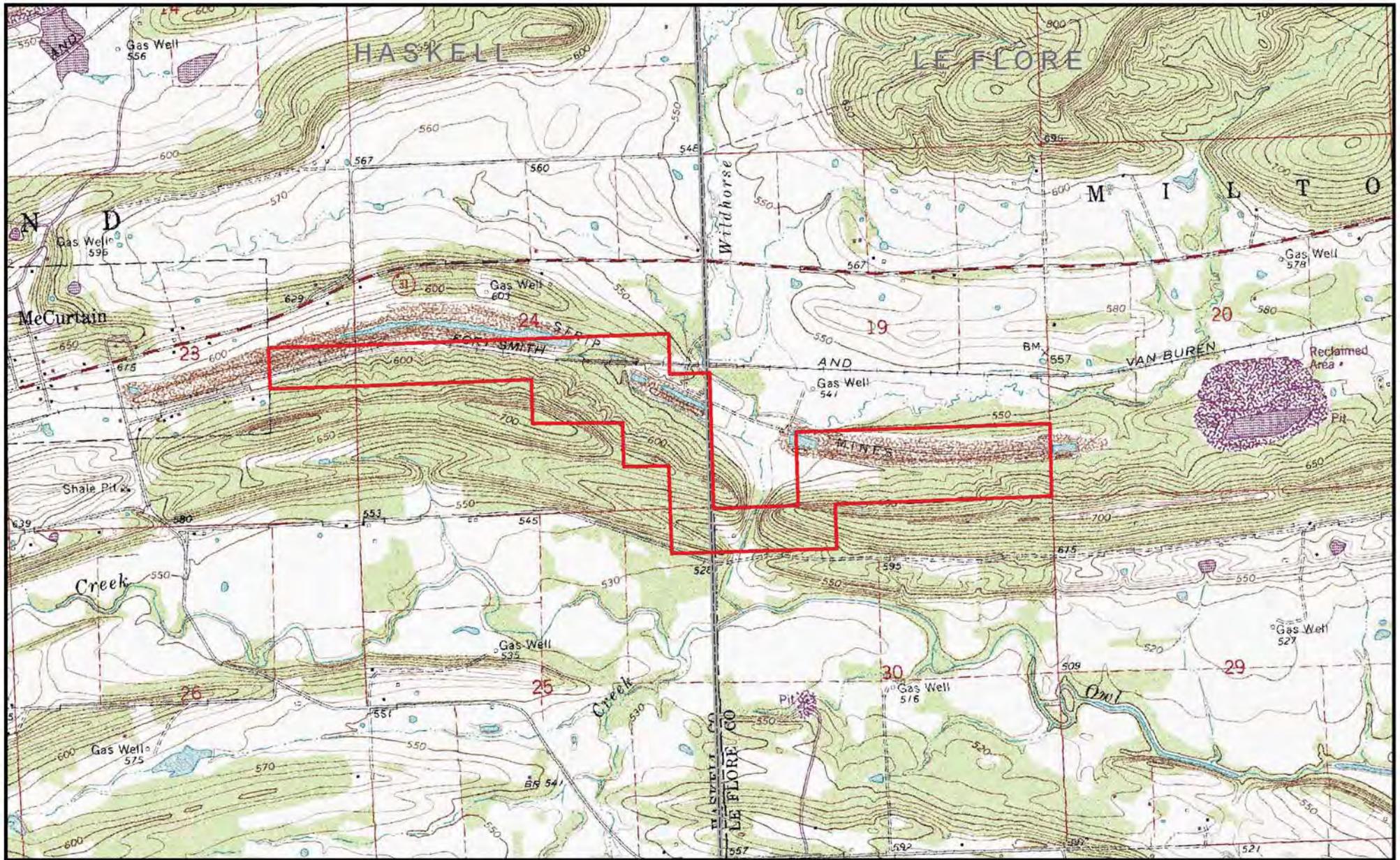
Map X-X: Milton Area NWI

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
US Fish and Wildlife Service - NWI
McCurtain, OK Quadrangle
2010 USDA NAIP -
Haskell and Le Flore Counties, Oklahoma





Legend
 Milton Planning Area

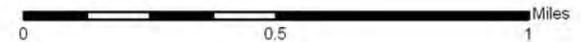
Map X-X: Milton Area Topography

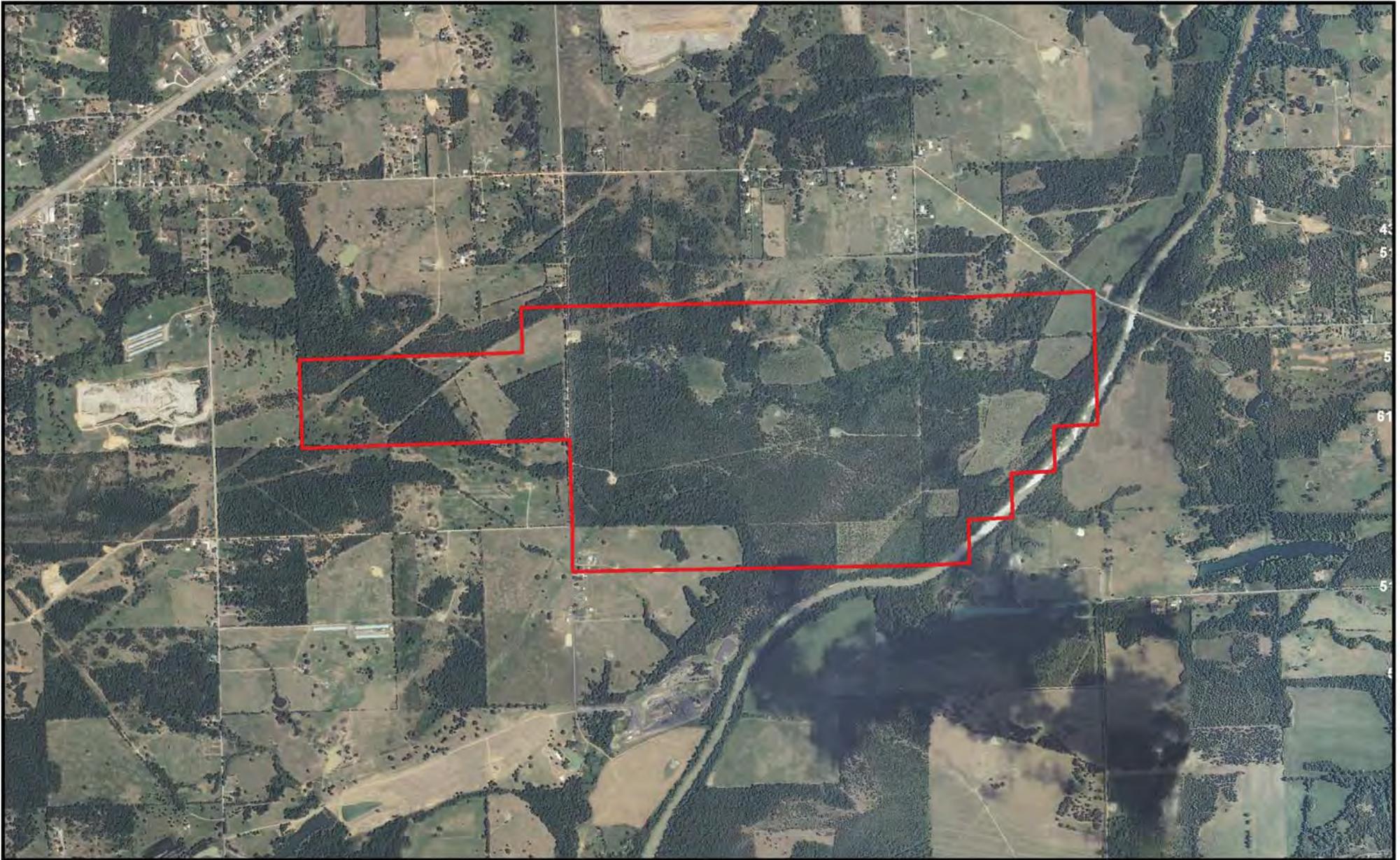
BLM
 LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
 2011 BLM
 USGS 7.5 Minute Series
 McCurtain, OK Quadrangle





Legend

 Spiro Planning Area

Map X-X: Spiro Area Aerial Photography

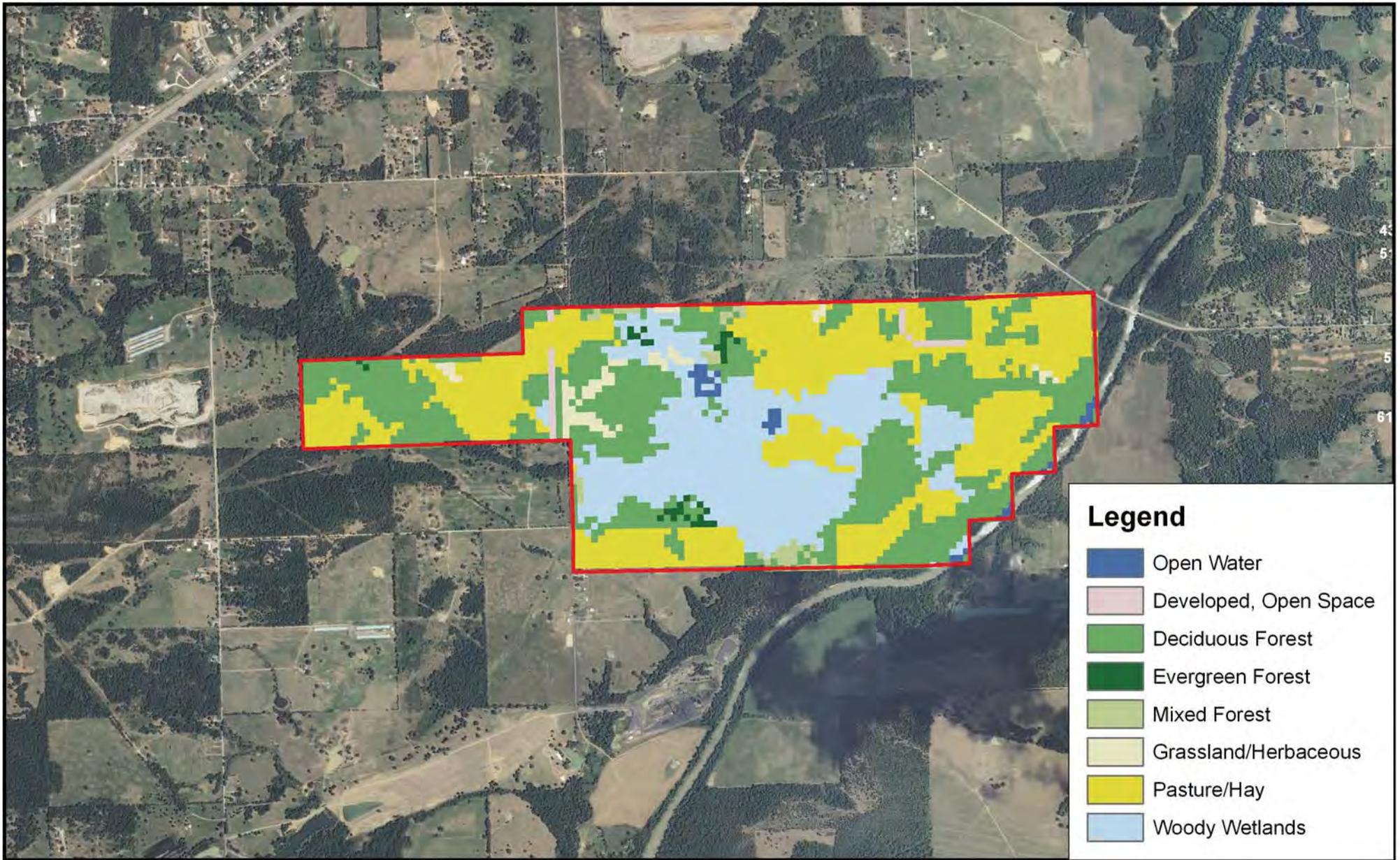
BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
2010 USDA NAIP - Le Flore County, Oklahoma

 Miles



Legend

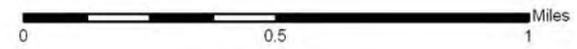
Spiro Planning Area

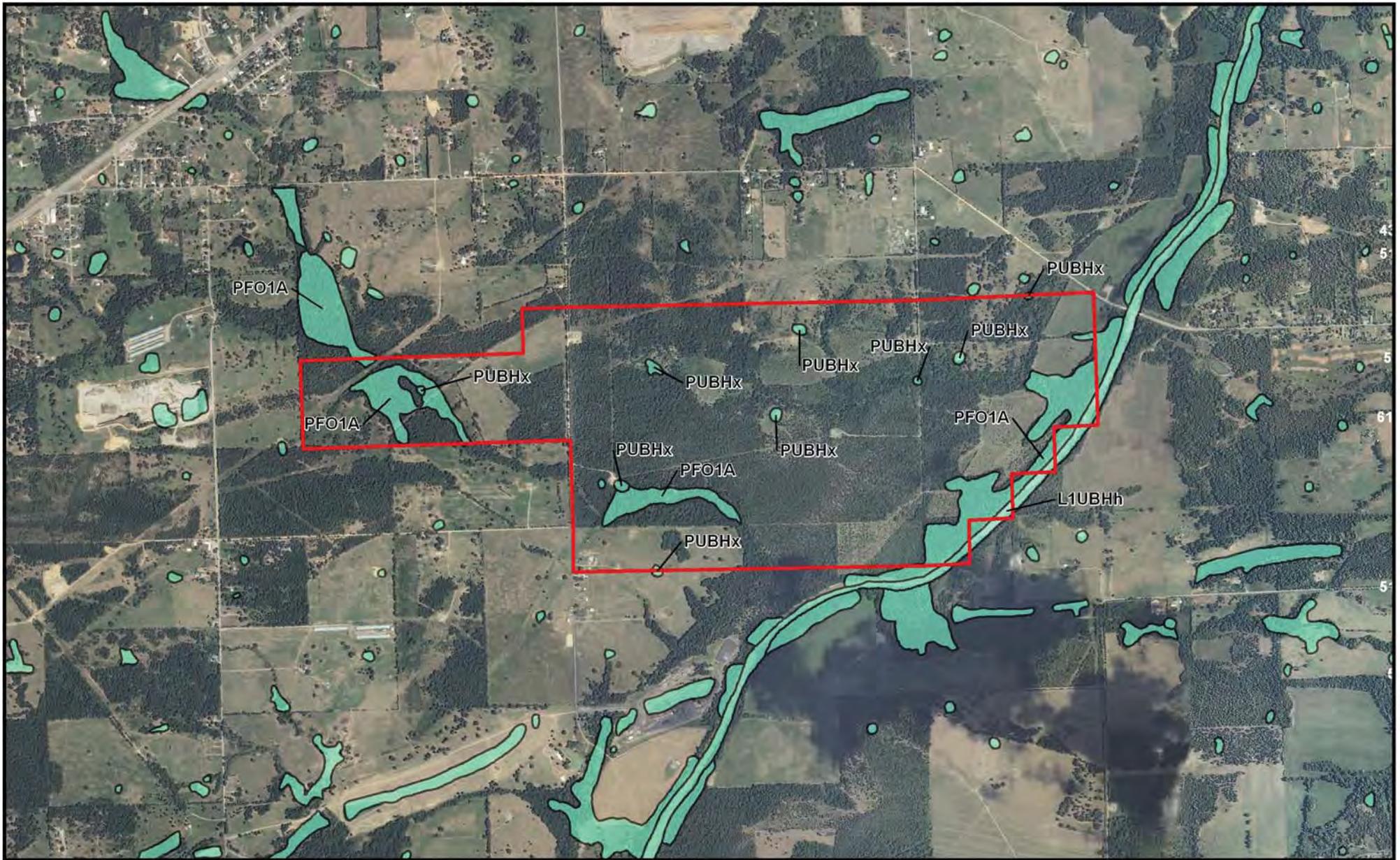
Map X-X: Spiro Area Land Cover

Source:
2011 BLM
2006 MLRC Land Cover



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

- Spiro Planning Area
- NWI Wetlands (76.40 ac)

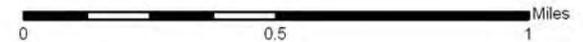


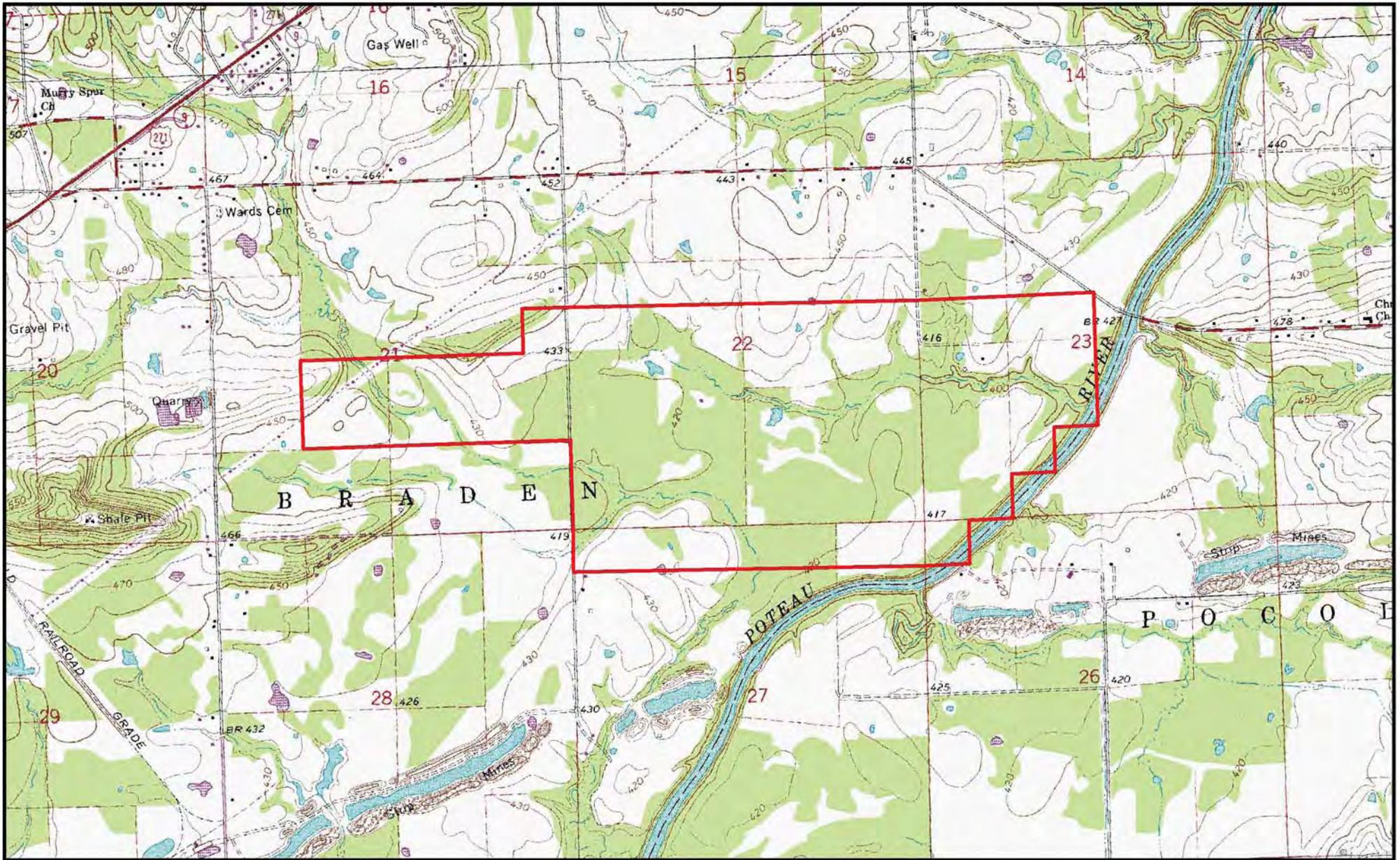
Map X-X: Spiro Area NWI

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
 2011 BLM
 US Fish and Wildlife Service - NWI
 Spiro, OK Quadrangle
 2010 USDA NAIP - Le Flore County, Oklahoma





Legend

 Spiro Planning Area

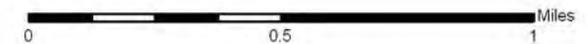
Map X-X: Spiro Area Topography

BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
USGS 7.5 Minute Series
Spiro, OK Quadrangle



March 1, 2012

Dr. Dixie Bounds
Field Supervisor
United States Fish and Wildlife Service
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, Oklahoma 74129

RE: Request for Comment
Threatened and Endangered Species Habitat Assessment
Four Lease Application Areas
Haskell and LeFlore Counties, Oklahoma

Dear Dr. Bounds:

The Bureau of Land Management (BLM) Oklahoma Field Office would like to amend its 1994 Resource Management Plan (RMP) to incorporate two Federal coal lease modifications and two competitive Federal coal leases for lands in Haskell and LeFlore counties, Oklahoma.

Enercon Services, Inc. (ENERCON) recently completed field surveys to identify potentially suitable threatened and endangered species habitat within the four Lease Application Areas (LAAs). United States Fish and Wildlife (USFWS) Official Species Lists for the project areas are included with this letter. We believe that potential habitat exists for the American burying beetle, Indiana bat, winged mapleleaf, scaleshell, and the bald eagle within the LAAs (one of the LAAs (Spiro) includes reaches of the Poteau River).

It is important to note that the only surface mining proposed at this time would occur at the Liberty LAA located in Haskell County. All other LAAs would use underground mining techniques and surface impacts would be minor (e.g. access roads, storm water, etc.). Please see attached maps for specific LAA locations and details.

We would appreciate your comments on conservation measures to minimize and/or avoid potential impacts to any listed species and their habitat that you may know to occur in the above mentioned areas. According to the USFWS Critical Habitat Portal, no designated critical habitat occurs in Haskell or LeFlore counties, your concurrence on this would also be appreciated.

If you have questions or require additional information please feel free to call me at (918) 707-1545 or Charlie Andrews at (214) 205-6174.

Best regards,



Rebecca Carroll
Biologist
Enercon Services, Inc.
rcarroll@enercon.com

Attachments:

USFWS Official Species Lists for LAAs
LAA Maps (17)



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Official Species-list: *Liberty LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Liberty LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 10:18 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0296, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

This list below only addresses federally proposed, listed, or candidate species and federally designated critical habitat. Please contact the appropriate State agencies for information regarding State species of special designation. Also, please feel free to contact the office(s) identified below if you would like information on other important trust resources (such as migratory birds) in your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0296

Project type: Mining

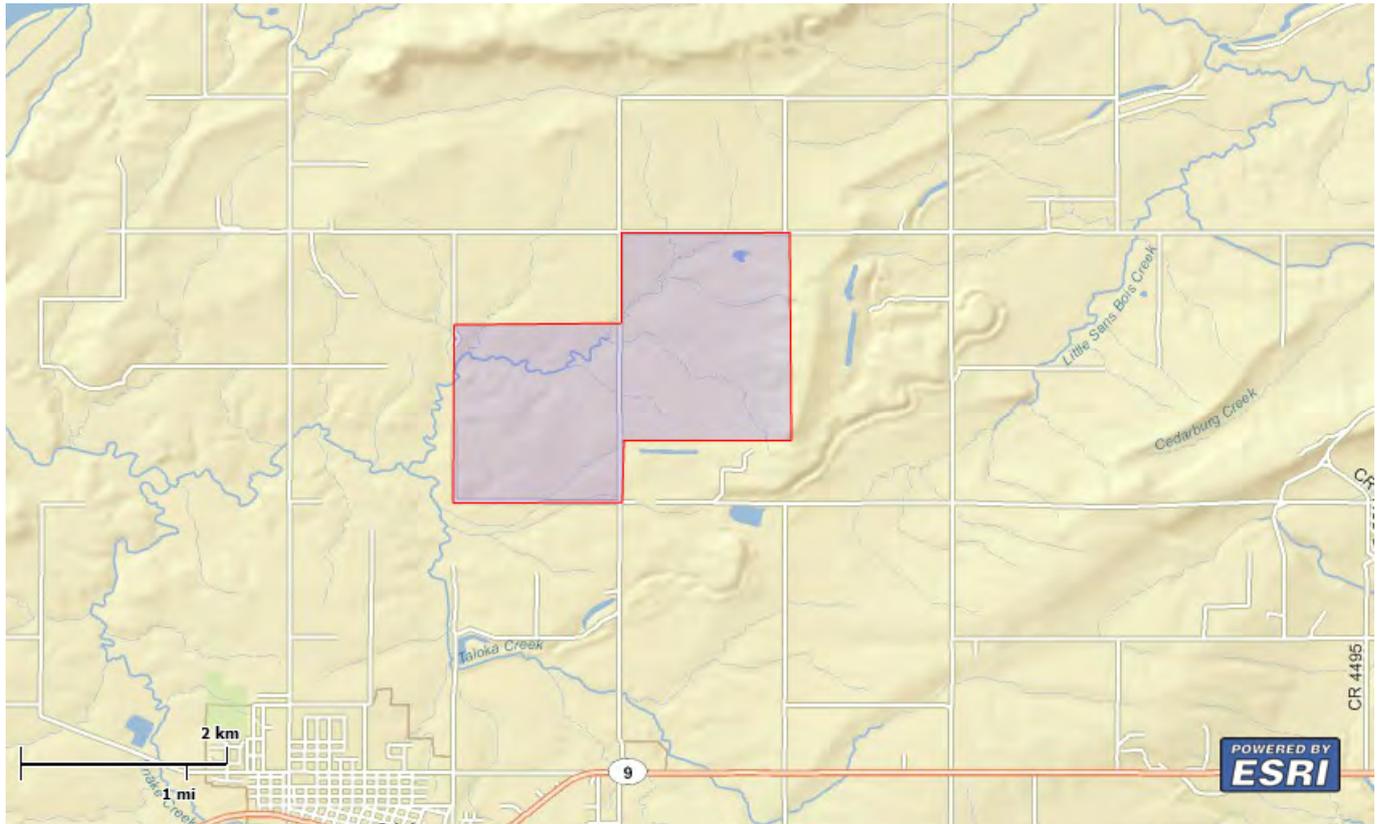
Project Description: Surface coal mining.



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Project location map:



Project coordinates: MULTIPOLYGON (((-95.1148777 35.30871, -95.0971107 35.3088816, -95.0971107 35.3186663, -95.0790863 35.3186663, -95.0789146 35.2963504, -95.0967674 35.2963504, -95.0969391 35.2896556, -95.1149635 35.2895697, -95.1148777 35.30871)))

Project counties: Haskell, OK



United States Department of Interior
Fish and Wildlife Service

Project name: Liberty LAA

Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Official Species-list: *McCurtain LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "McCurtain LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 9:59 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0293, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

This list below only addresses federally proposed, listed, or candidate species and federally designated critical habitat. Please contact the appropriate State agencies for information regarding State species of special designation. Also, please feel free to contact the office(s) identified below if you would like information on other important trust resources (such as migratory birds) in your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0293

Project type: Mining

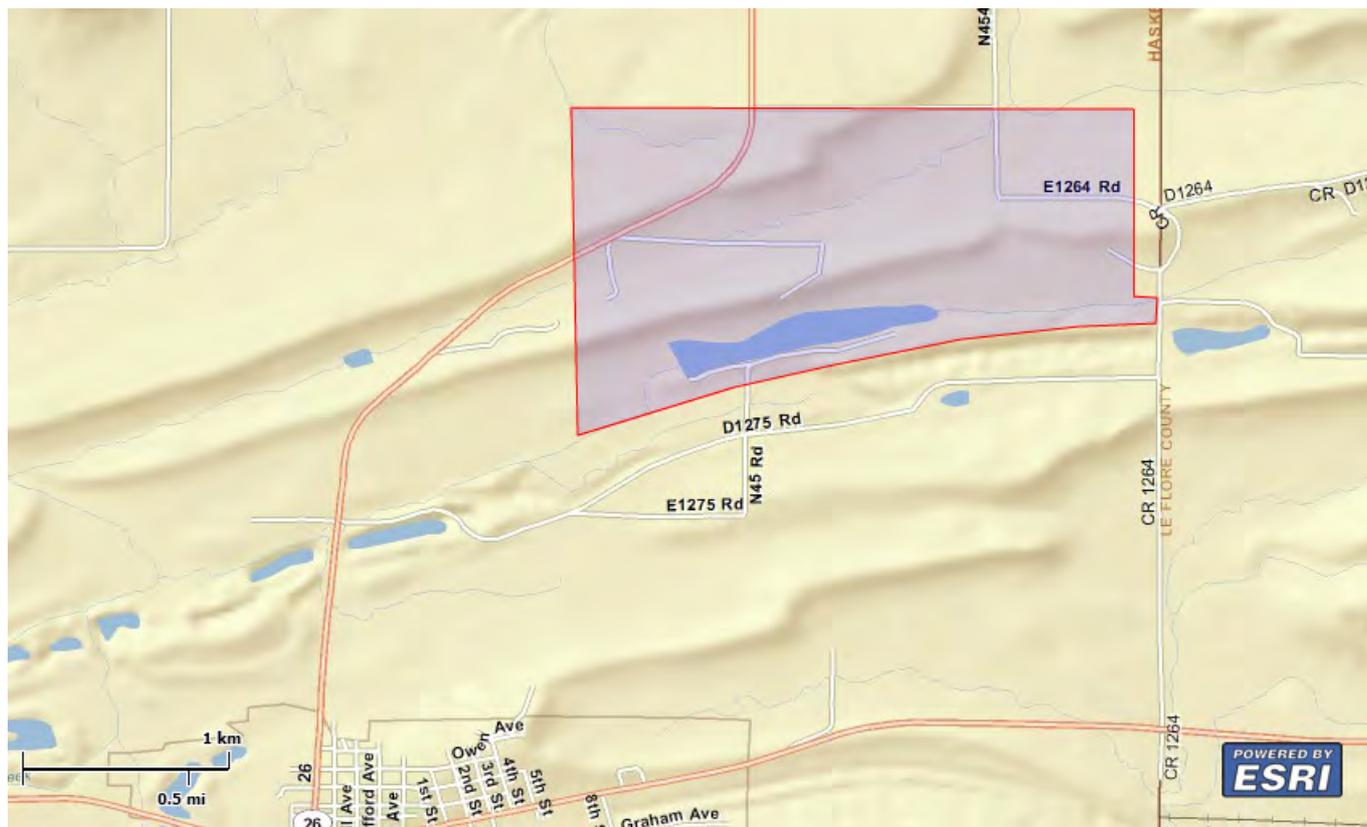
Project Description: Underground coal mining with minimal surface impacts.



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Project location map:



Project coordinates: MULTIPOLYGON (((-94.9293976 35.1886382, -94.9293976 35.178596, -94.9281101 35.1785101, -94.928196 35.1771368, -94.9323158 35.1769652, -94.9385815 35.1762785, -94.9453621 35.1749052, -94.9506836 35.1737036, -94.9590092 35.1711287, -94.9593525 35.188724, -94.9293976 35.1886382)))

Project counties: Haskell, OK



United States Department of Interior
Fish and Wildlife Service

Project name: McCurtain LAA

Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened



United States Department of Interior
Fish and Wildlife Service

Project name: Milton LAA

Official Species-list: *Milton LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Milton LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 10:10 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0294, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

This list below only addresses federally proposed, listed, or candidate species and federally designated critical habitat. Please contact the appropriate State agencies for information regarding State species of special designation. Also, please feel free to contact the office(s) identified below if you would like information on other important trust resources (such as migratory birds) in your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: Milton LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0294

Project type: Mining

Project Description: Underground coal mining with minimal surface impacts.



United States Department of Interior
Fish and Wildlife Service

Project name: Milton LAA

Project coordinates: MULTIPOLYGON (((-94.9497824 35.1528736, -94.9279385 35.1528736, -94.9279385 35.1487537, -94.9099998 35.1487537, -94.9099998 35.1425739, -94.9303417 35.1426597, -94.9303846 35.1458784, -94.9368649 35.1458355, -94.9369936 35.1487966, -94.9499969 35.148625, -94.9497824 35.1528736)))

Project counties: Haskell, OK | Le Flore, OK



Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Indiana bat (*Myotis sodalis*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened

Scaleshell mussel (*Leptodea leptodon*)

Listing Status: Endangered

Winged Mapleleaf (*Quadrula fragosa*)

Population: Entire; except where listed as experimental populations

Listing Status: Endangered



United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

Official Species-list: *Spiro LAA*

Oklahoma Ecological Services Field Office

Following is an official U.S. Fish and Wildlife Service species-list from the Oklahoma Ecological Services Field Office. The species-list identifies listed and proposed species and designated and proposed critical habitat that may be affected by the project "Spiro LAA". You may use this list to meet the requirements of section 7(c) of the Endangered Species Act of 1973, as amended (ESA).

This species-list has been generated by the Service's on-line Information, Planning, and Conservation (IPaC) decision support system based on project type and location information you provided on March 1, 2012, 9:46 AM. This information is summarized below.

Please reference our tracking number, 02EKOK00-2012-SLI-0292, in future reference to this project to assist in expediting the process.

Newer information based on updated surveys, changes in the abundance and distribution of listed species, changed habitat conditions, or other factors could change this list. Please feel free to contact the office(s) identified below if you need more current information or assistance regarding the potential presence of federally proposed, listed, or candidate species, or proposed or designated critical habitat. Please note that under the ESA, a species-list is valid for 90 days. Therefore, the Service recommends that you visit the IPaC site at regular intervals during project planning and implementation for updates to species-lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive this list. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

This list below only addresses federally proposed, listed, or candidate species and federally designated critical habitat. Please contact the appropriate State agencies for information regarding State species of special designation. Also, please feel free to contact the office(s) identified below if you would like information on other important trust resources (such as migratory birds) in your project area.



United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

This Species-list document is provided by:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

9014 EAST 21ST STREET

TULSA, OK 74129

(918) 581-7458

<http://www.fws.gov/southwest/es/Oklahoma/>

TAILS consultation code: 02EKOK00-2012-SLI-0292

Project type: Mining

Project Description: Underground coal mining with minimal surface disturbance.



United States Department of Interior
Fish and Wildlife Service

Project name: Spiro LAA

Project coordinates: MULTIPOLYGON (((-94.56669849 35.23983087, -94.5668488 35.2395679, -94.56672445 35.23987867, -94.56672 35.2398683, -94.56669717 35.23993679, -94.56669849 35.23983087)), ((-94.56669717 35.23993679, -94.56669704 35.23994717, -94.5666771 35.239997, -94.56669717 35.23993679)), ((-94.56669849 35.23983087, -94.5665054 35.2401687, -94.5215302 35.2394821, -94.5210152 35.2365638, -94.52668 35.2312423, -94.5313148 35.2278091, -94.5668488 35.2278091, -94.56669849 35.23983087)), ((-94.56669704 35.23994717, -94.56672445 35.23987867, -94.5668488 35.2401687, -94.5666771 35.241542, -94.56669704 35.23994717)))

Project counties: Le Flore, OK



Endangered Species Act Species-list

American Burying beetle (*Nicrophorus americanus*)

Listing Status: Endangered

Indiana bat (*Myotis sodalis*)

Listing Status: Endangered

Least tern (*Sterna antillarum*)

Population: interior pop.

Listing Status: Endangered

Piping Plover (*Charadrius melodus*)

Population: except Great Lakes watershed

Listing Status: Threatened

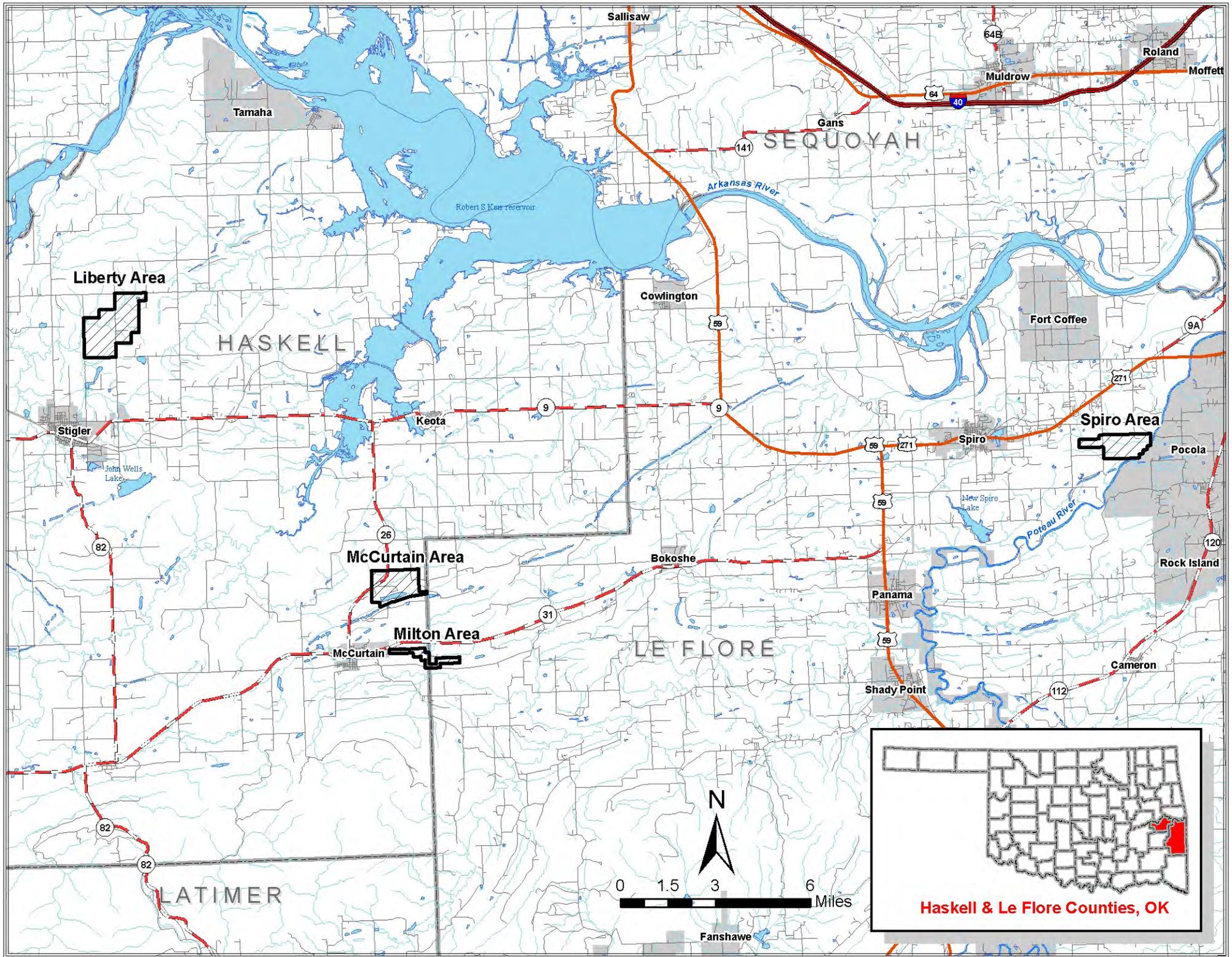
Scaleshell mussel (*Leptodea leptodon*)

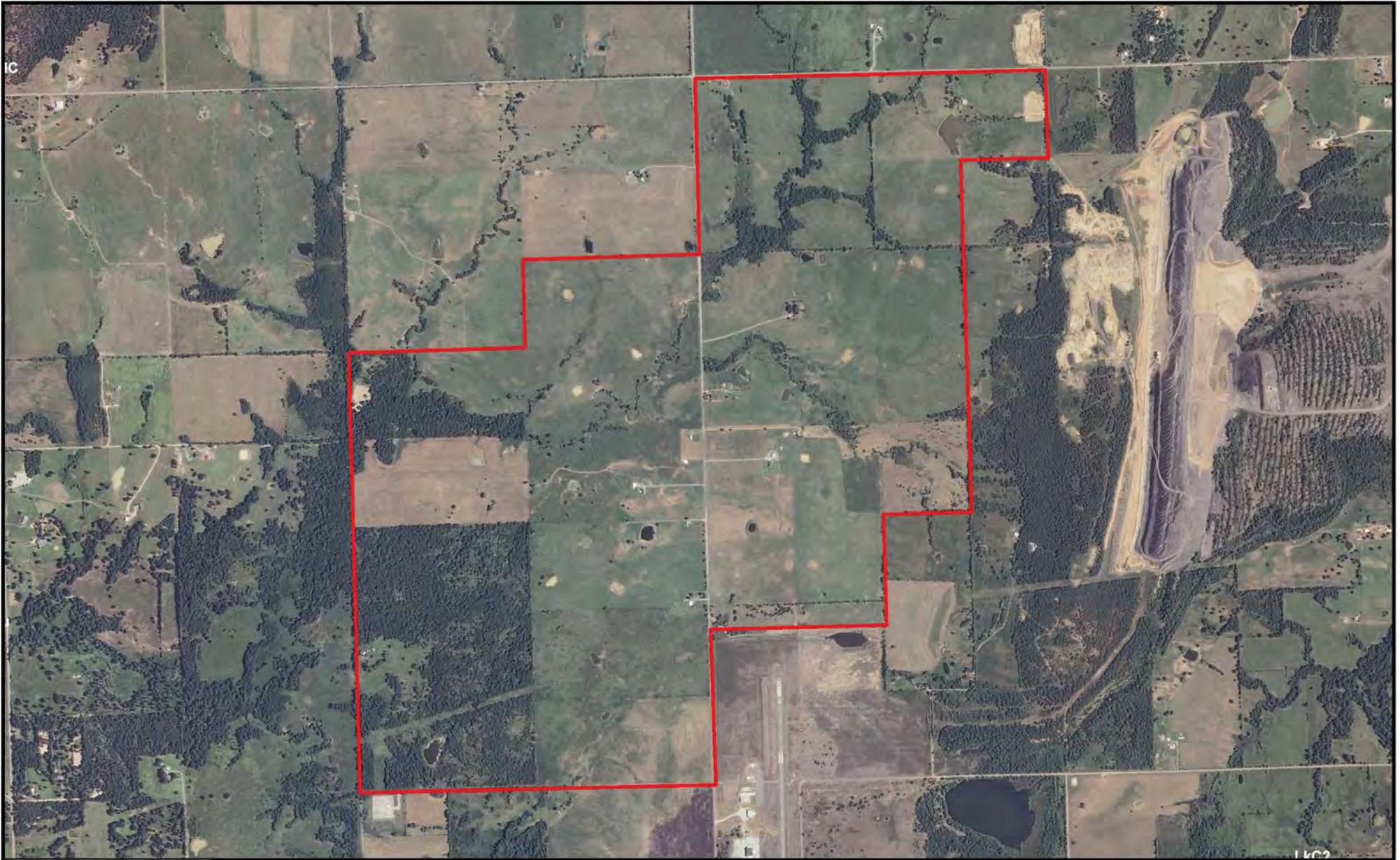
Listing Status: Endangered

Winged Mapleleaf (*Quadrula fragosa*)

Population: Entire; except where listed as experimental populations

Listing Status: Endangered





Legend

 Liberty Planning Area

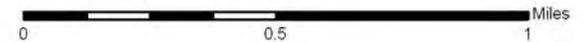
Map X-X: Liberty Area Aerial Photography

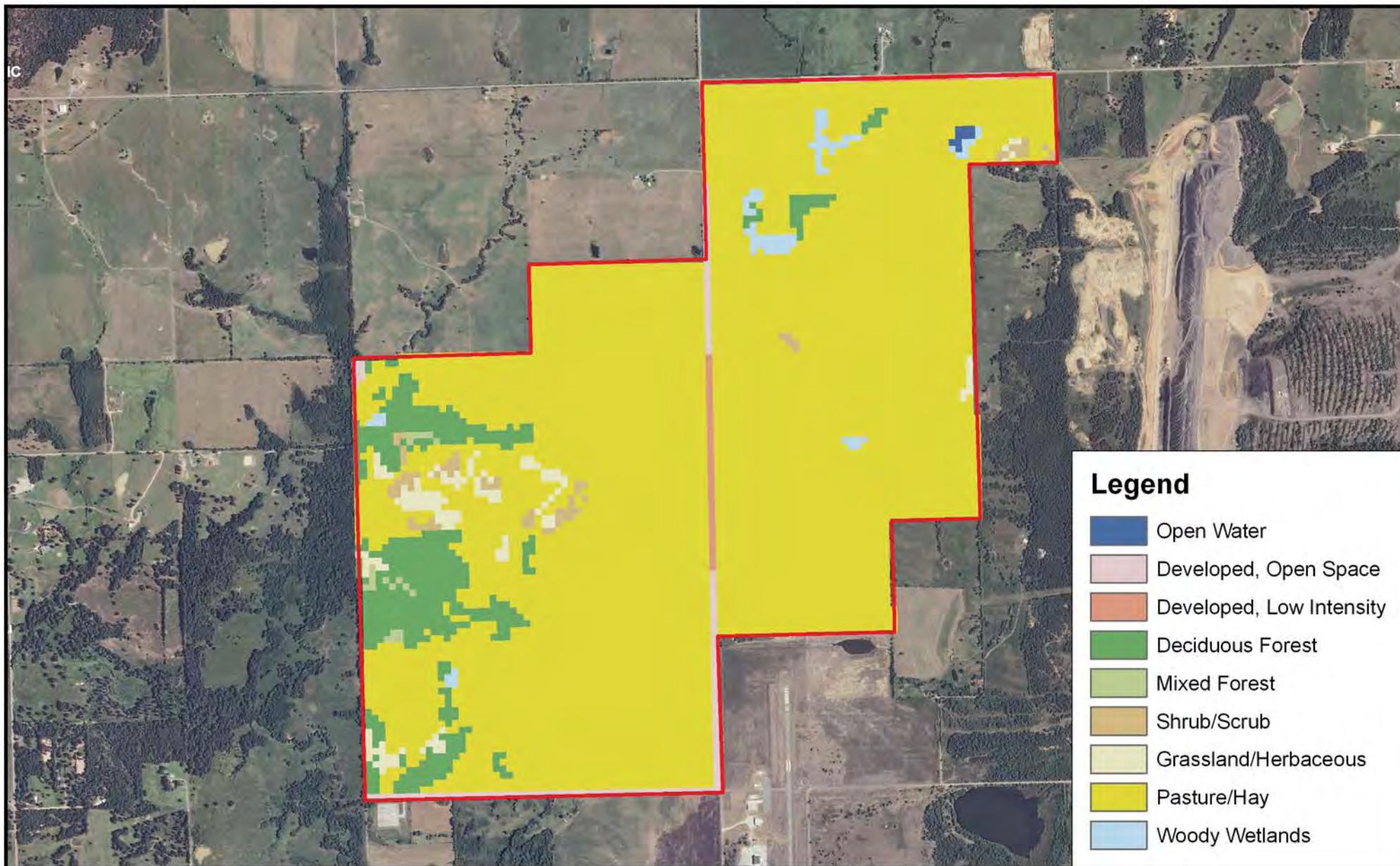
BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/22/11.



Source:
2011 BLM
2010 USDA NAIP
Hakell County, Oklahoma





Legend

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Deciduous Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands

Legend

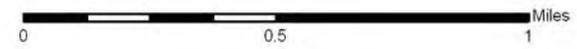
- Liberty Planning Area

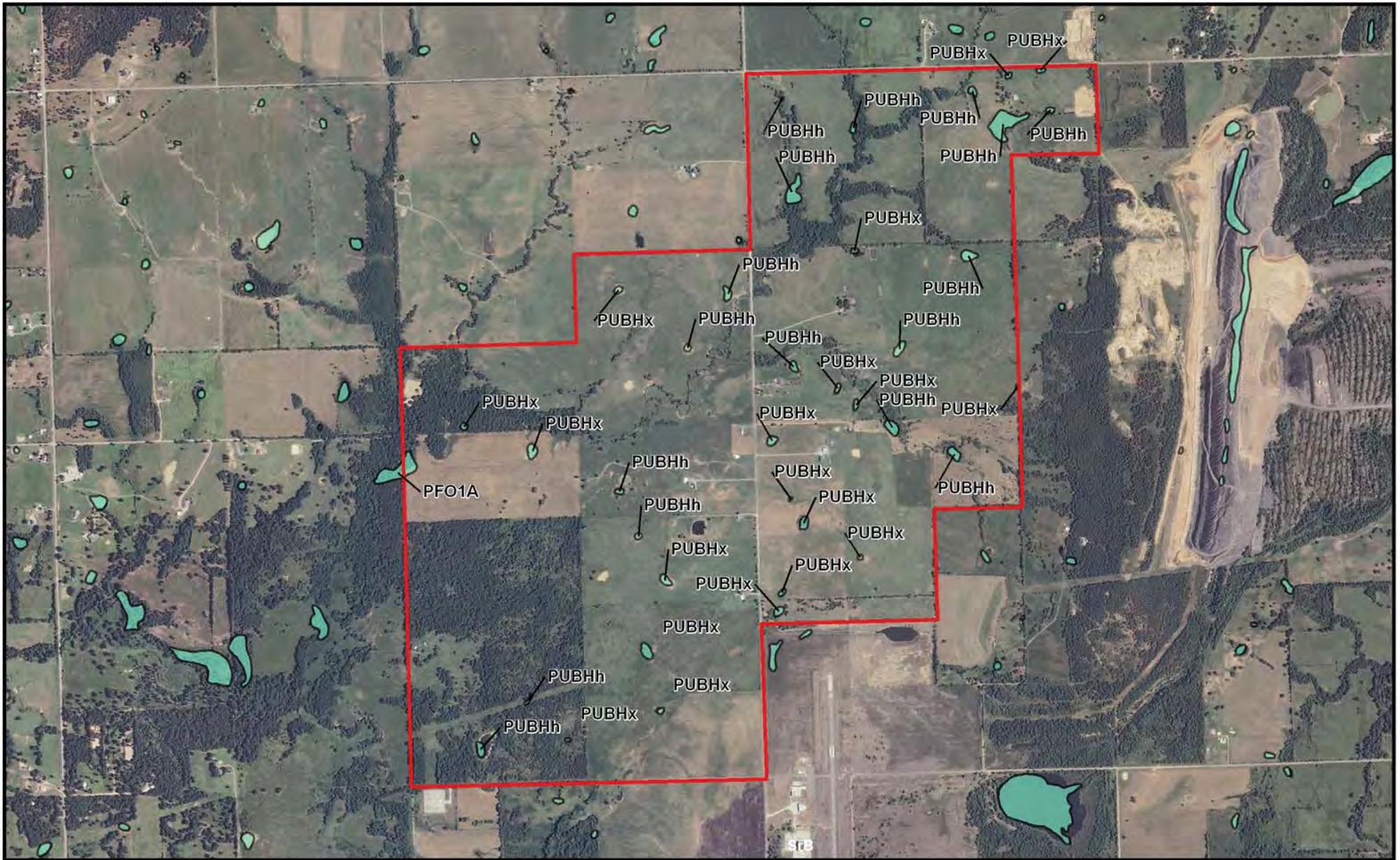
Map X-X: Liberty Area Land Cover

Source:
2011 BLM
2006 MLRC Land Cover



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

- Liberty Planning Area
- NWI Wetlands (16.46 ac)

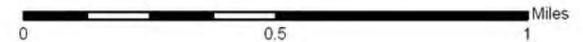


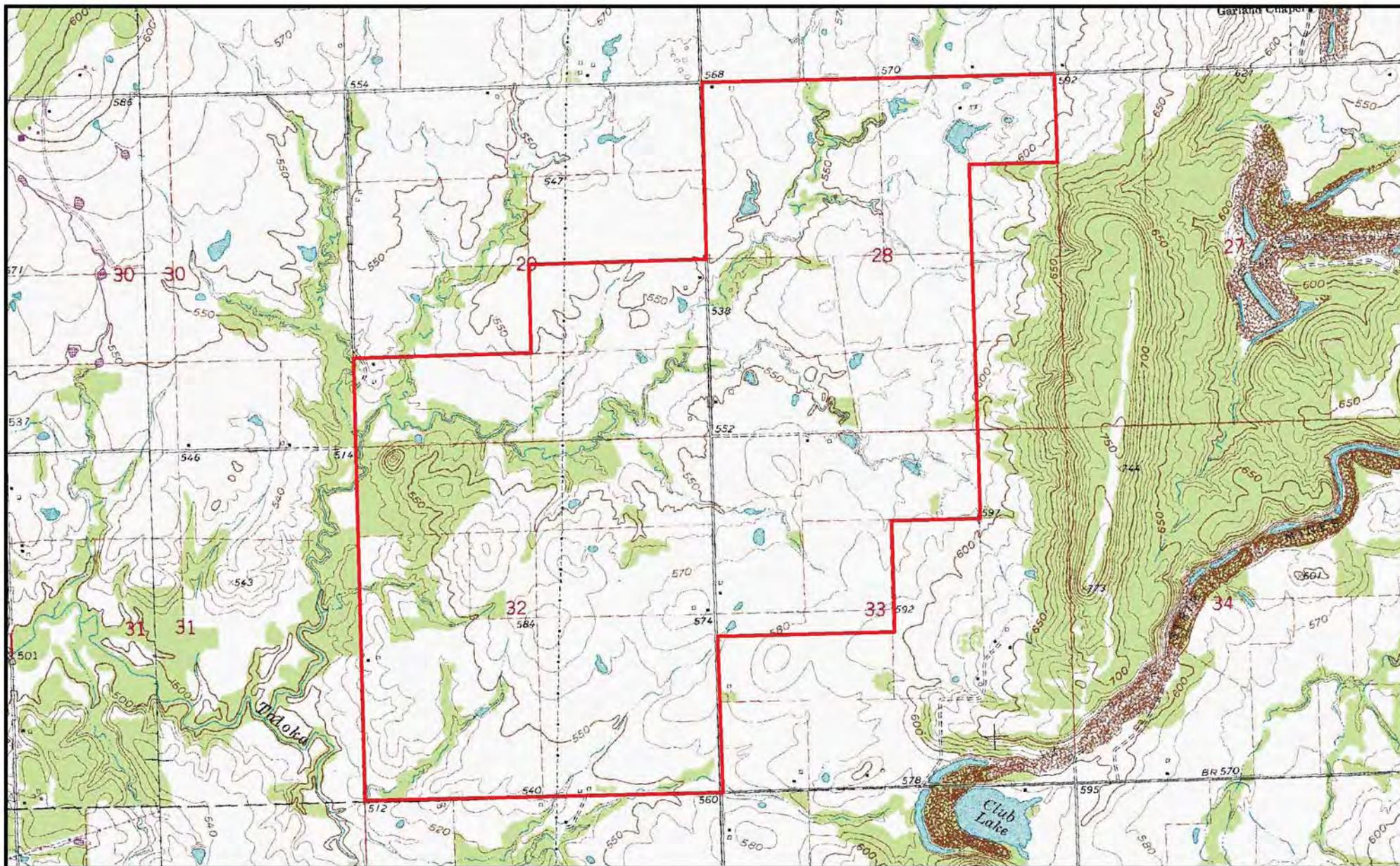
Map X-X: Liberty Area NWI

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
 2011 BLM
 US Fish and Wildlife Service - NWI
 Stigler East, OK Quadrangle
 2010 USDA NAIP - Haskell County, Oklahoma





Legend

 Liberty Planning Area

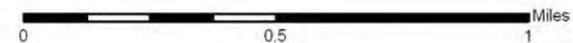
**BLM
LOGO**

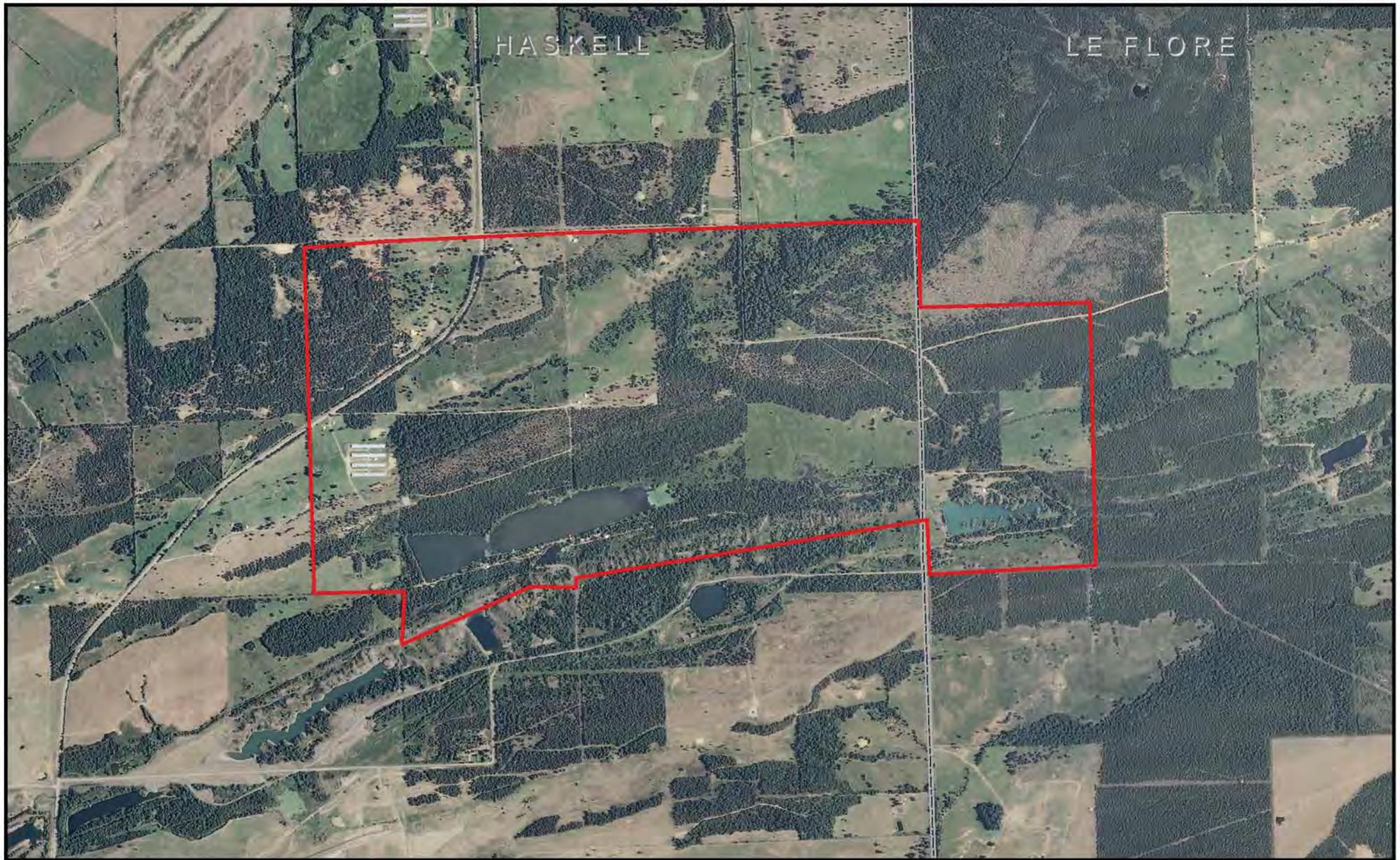
Map X-X: Liberty Area Topography

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
USGS 7.5 Minute Series
Stigler East, OK Quadrangle





Legend

 McCurtain Planning Area

Map X-X: McCurtain Area Aerial Photography

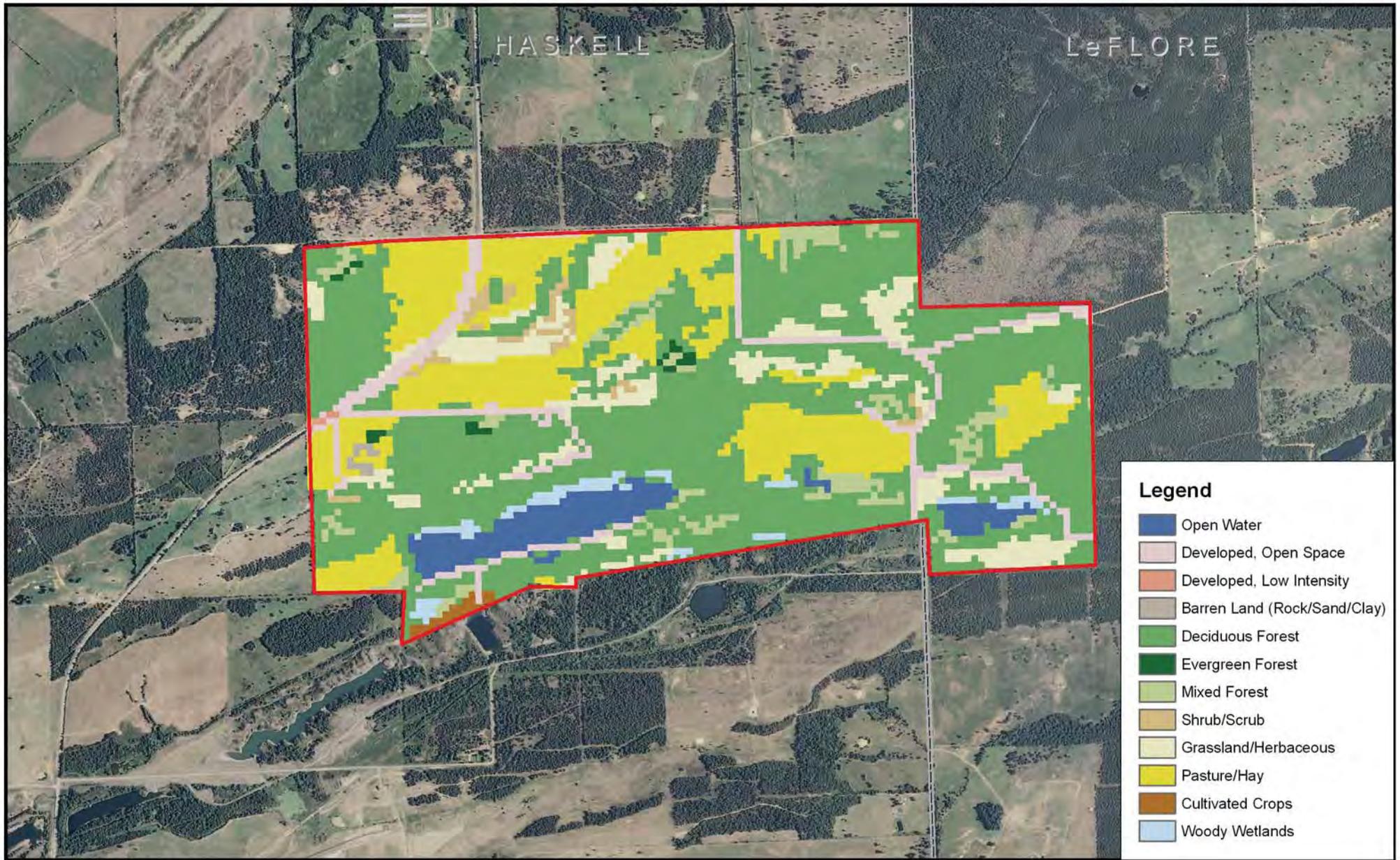
BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
2010 USDA NAIP -
Haskell and Le Flore Counties, Oklahoma

 Miles



Legend

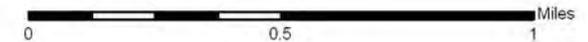
McCurtain Planning Area

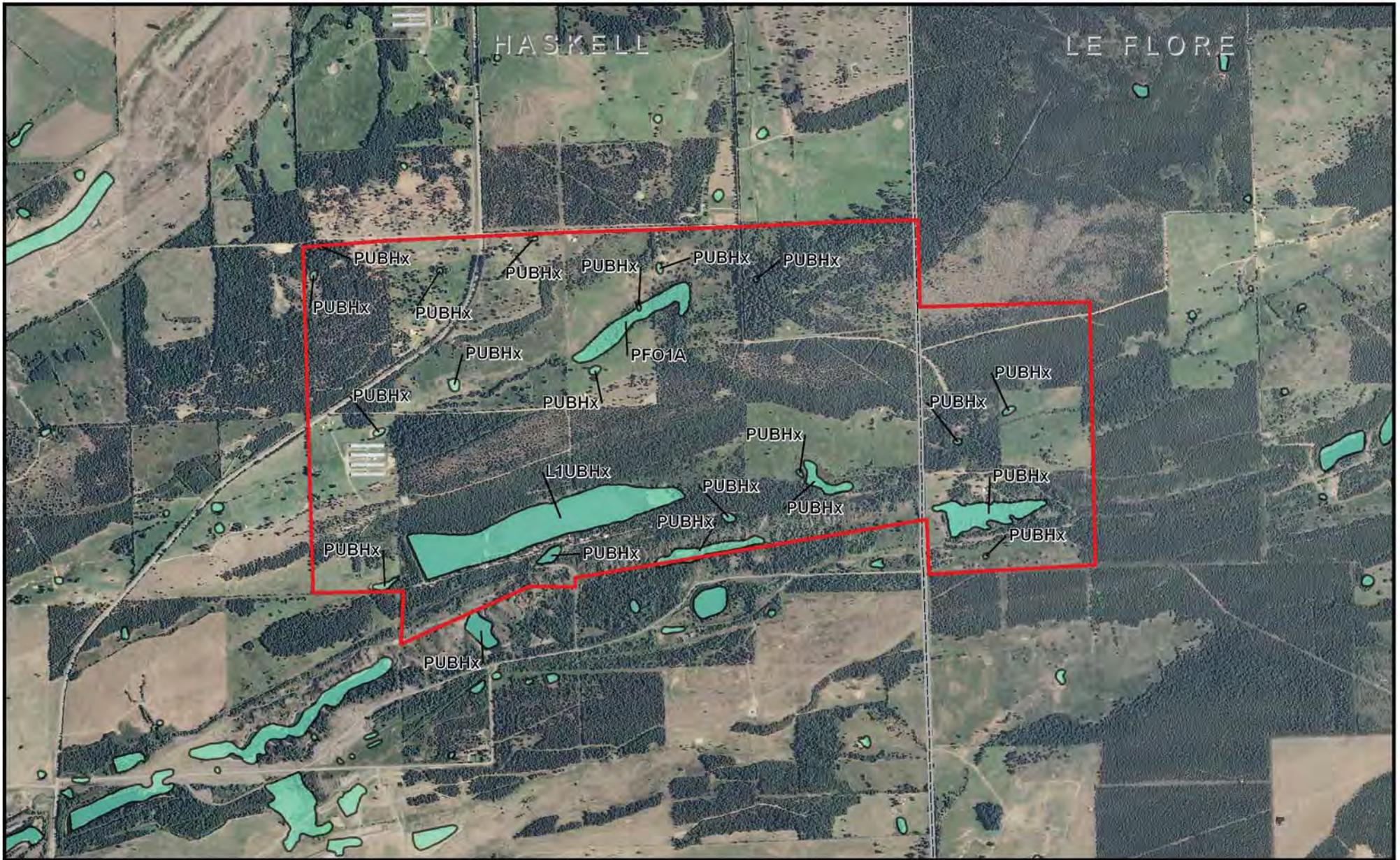
Map X-X: McCurtain Area Land Cover

Source:
2011 BLM
2006 MLRC Land Cover

BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

- McCurtain Planning Area
- NWI Wetlands (84.74 ac)

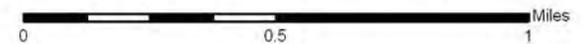


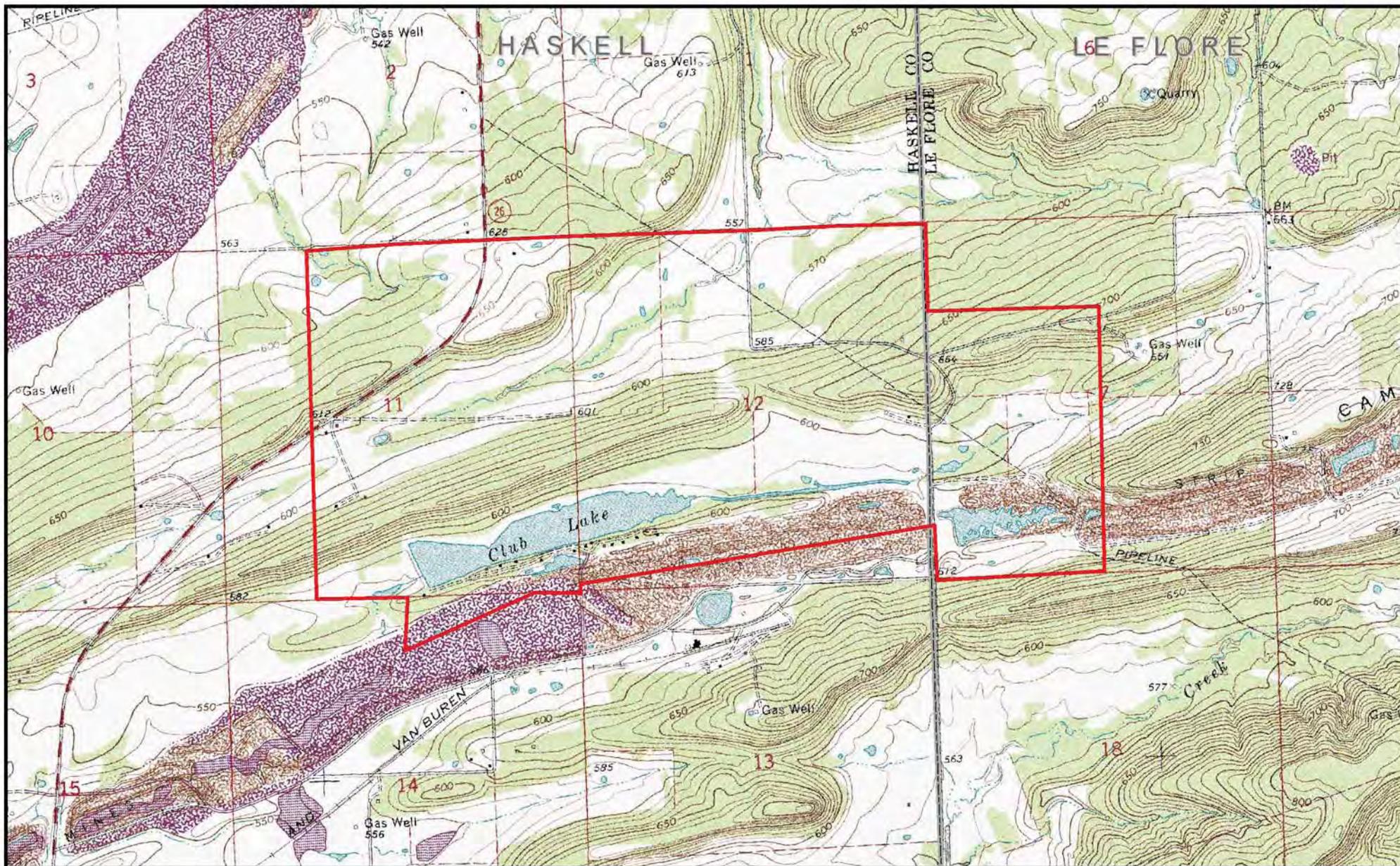
Map X-X: McCurtain Area NWI

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
 2011 BLM
 US Fish and Wildlife Service - NWI
 McCurtain, OK Quadrangle
 2010 USDA NAIP -
 Haskell and Le Flore Counties, Oklahoma





Legend

 McCurtain Planning Area

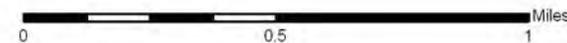
Map X-X: McCurtain Area Topography

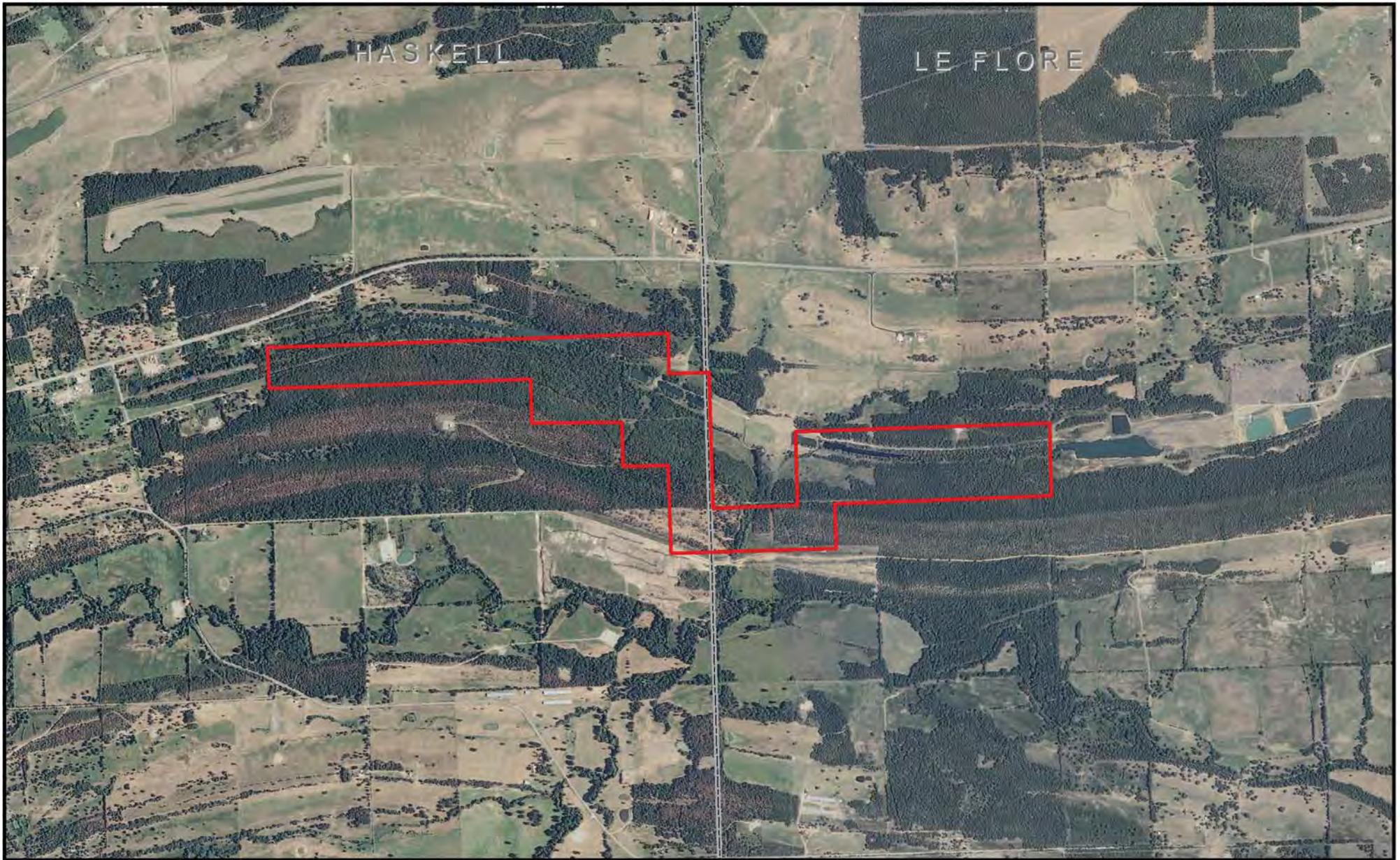
BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
USGS 7.5 Minute Series
McCurtain, OK Quadrangle





Legend

 Milton Planning Area

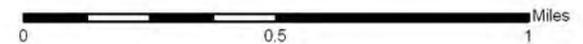
Map X-X: Milton Aerial Photography

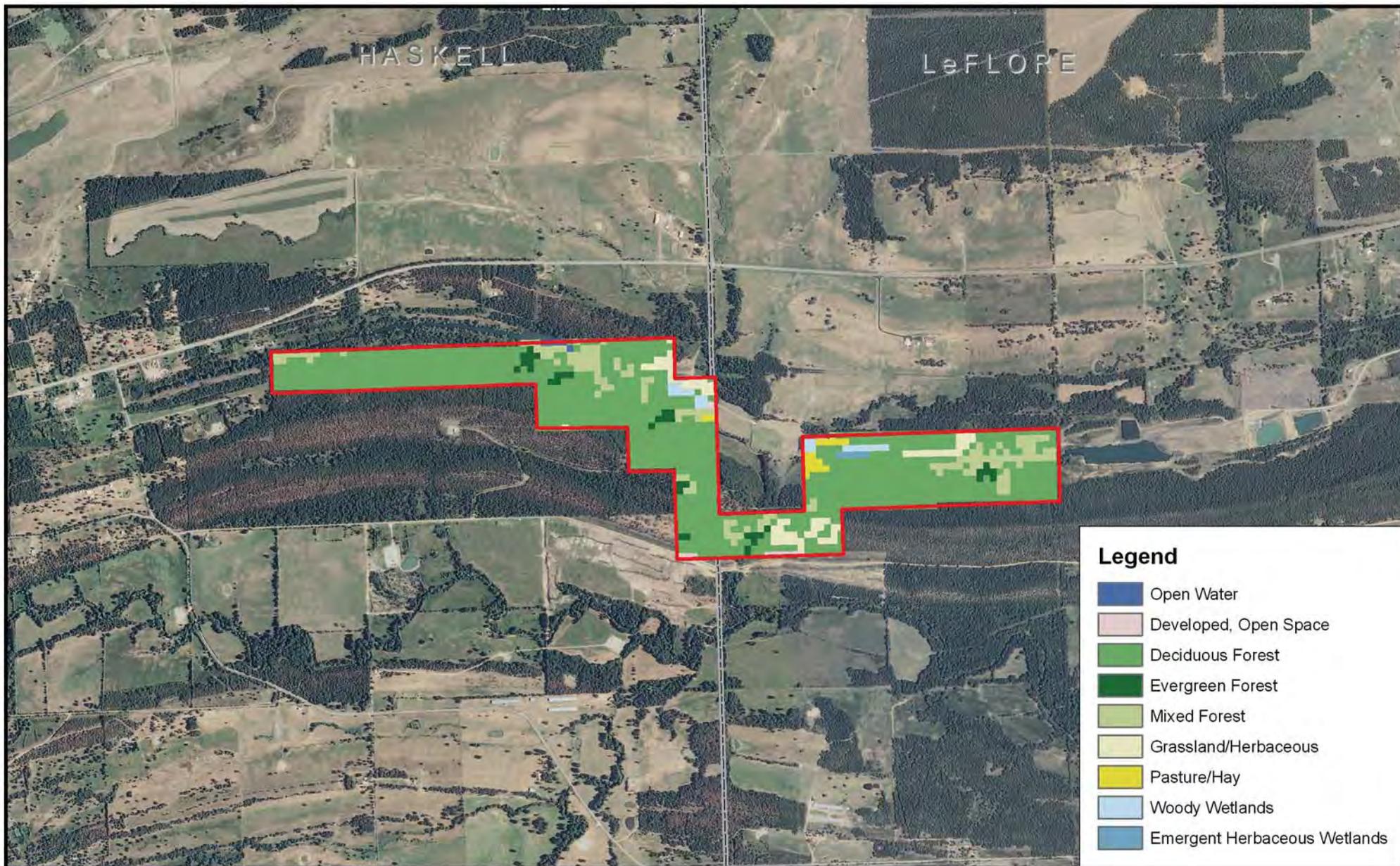
**BLM
LOGO**

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
2010 USDA NAIP -
Haskell and Le Flore Counties, Oklahoma





Legend

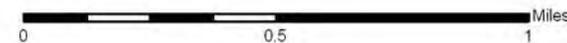
 Milton Planning Area

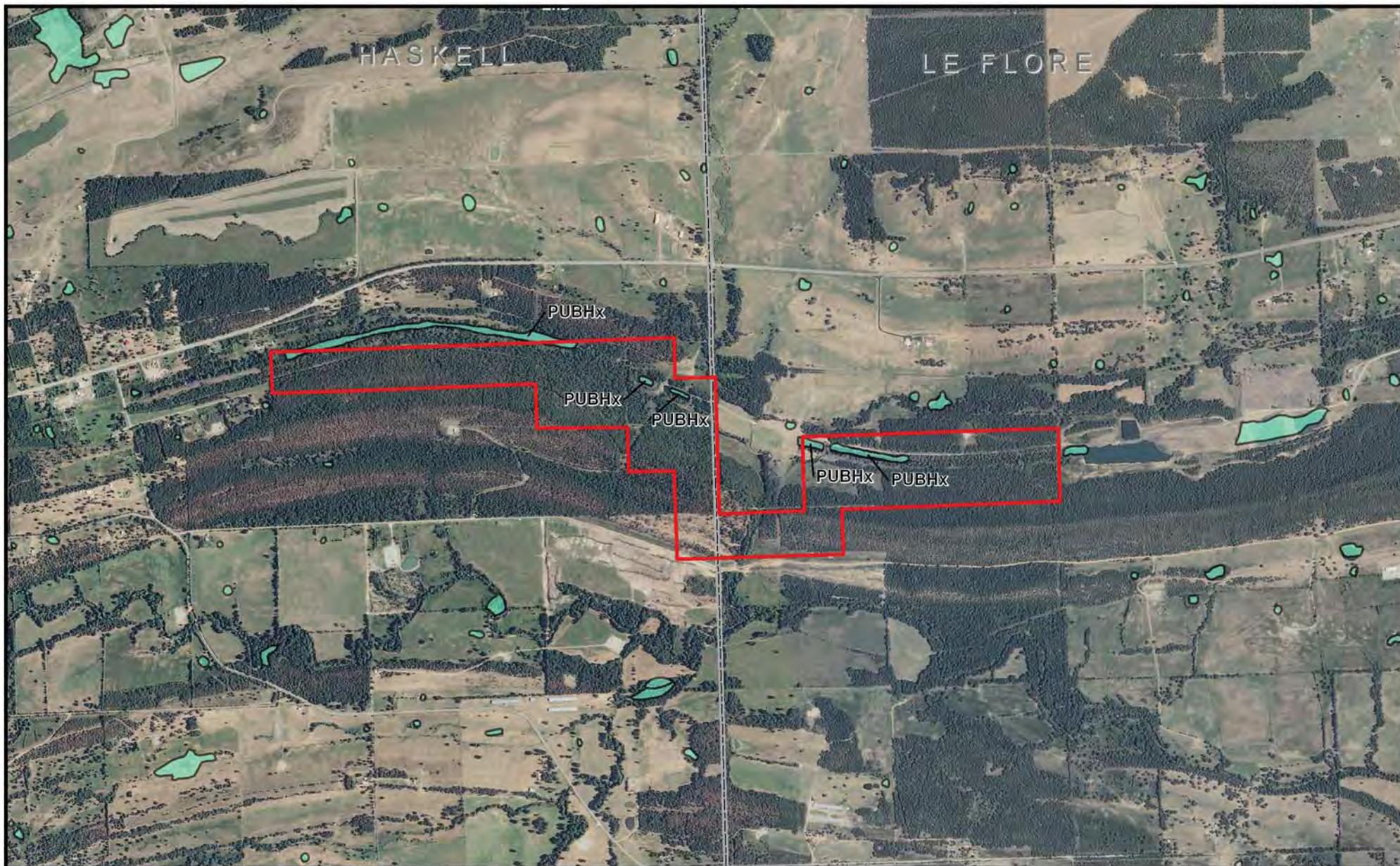
Map X-X: Milton Area Land Cover

Source:
2011 BLM
2006 MLRC Land Cover

BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

- Milton Planning Area
- NWI Wetlands (5.73 ac)

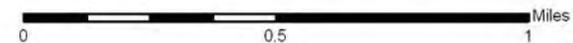
BLM
LOGO

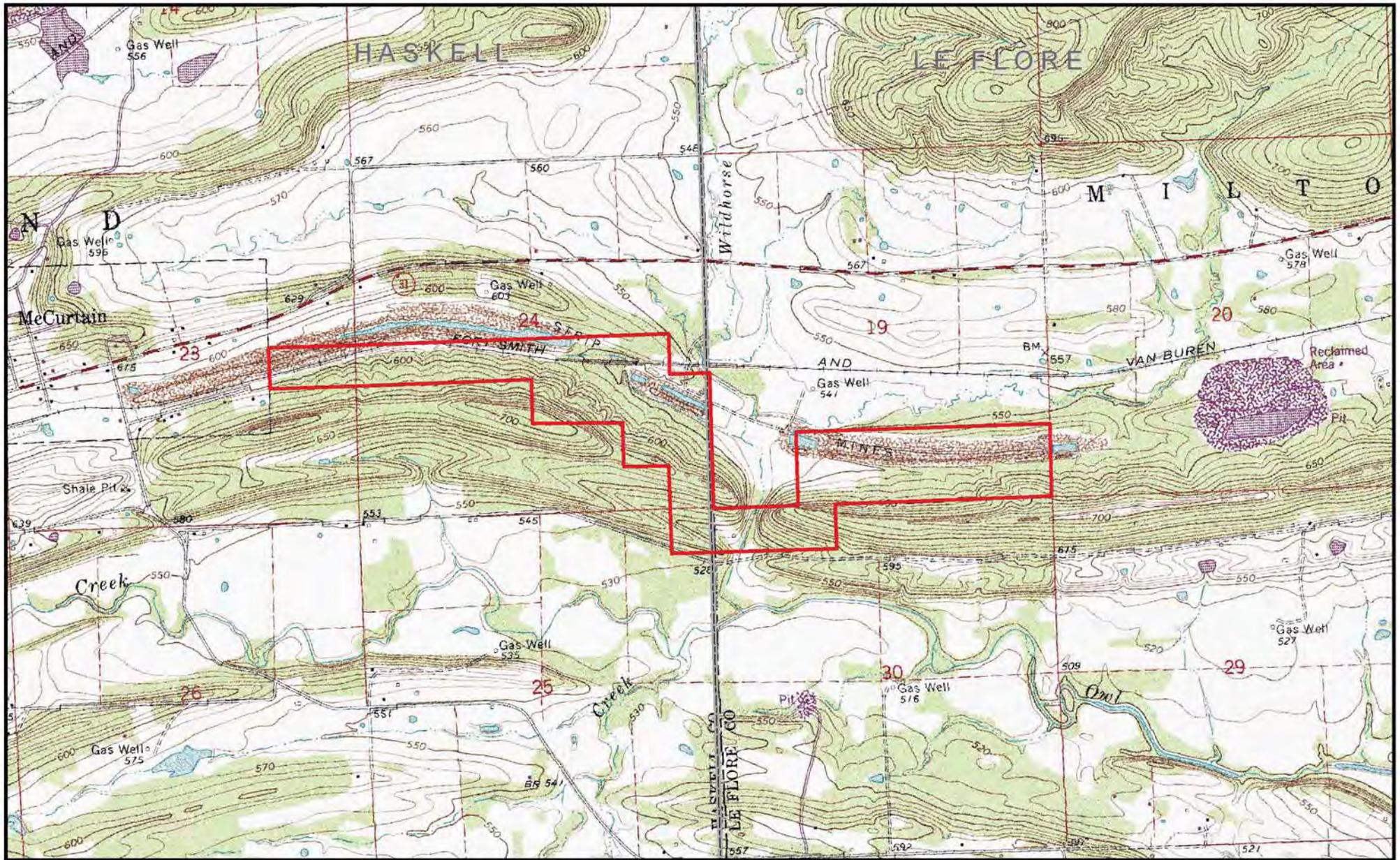
Map X-X: Milton Area NWI

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
US Fish and Wildlife Service - NWI
McCurtain, OK Quadrangle
2010 USDA NAIP -
Haskell and Le Flore Counties, Oklahoma





Legend
 Milton Planning Area

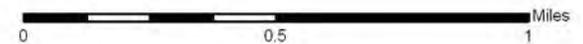
Map X-X: Milton Area Topography

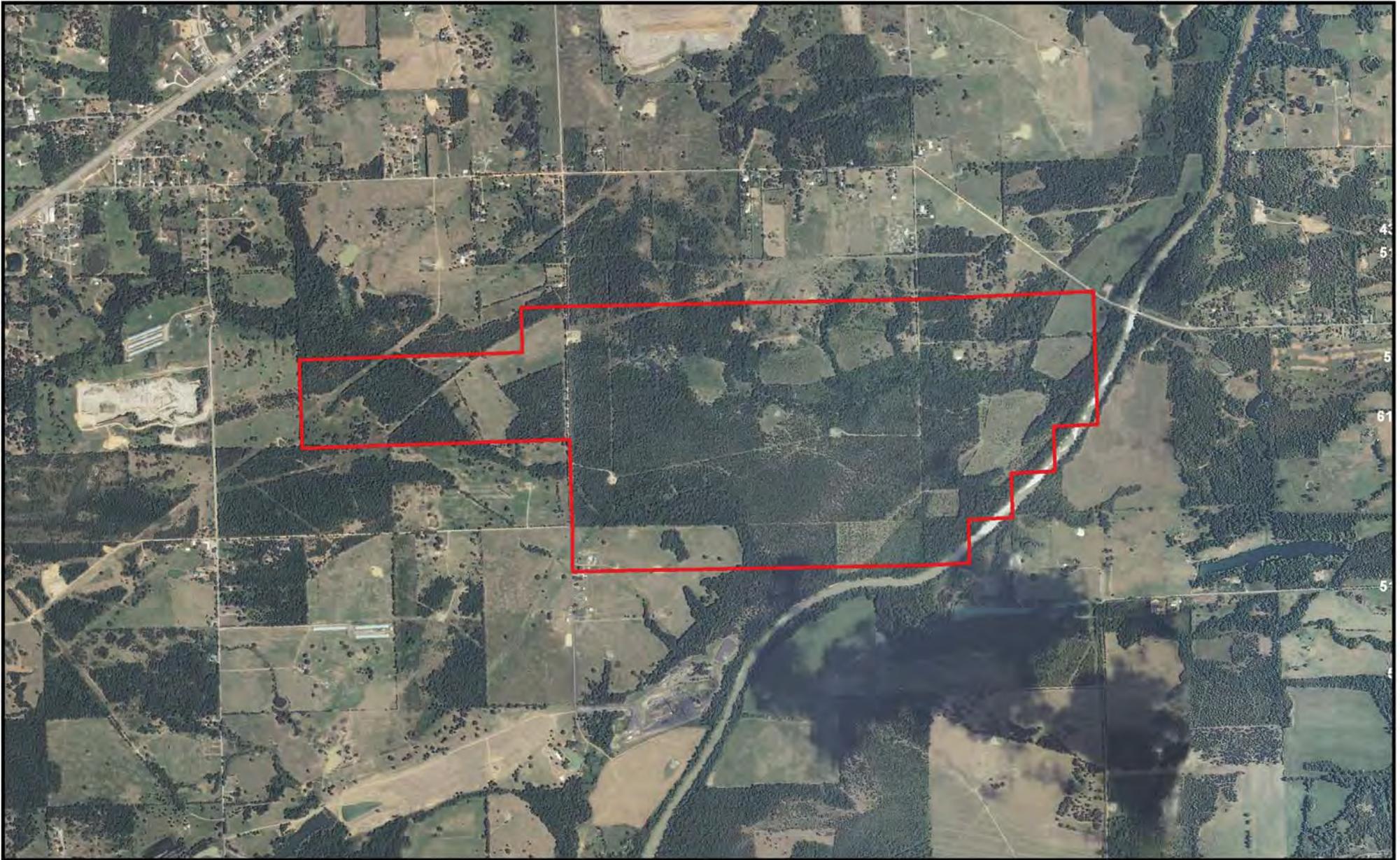
BLM
 LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
 2011 BLM
 USGS 7.5 Minute Series
 McCurtain, OK Quadrangle





Legend

 Spiro Planning Area

Map X-X: Spiro Area Aerial Photography

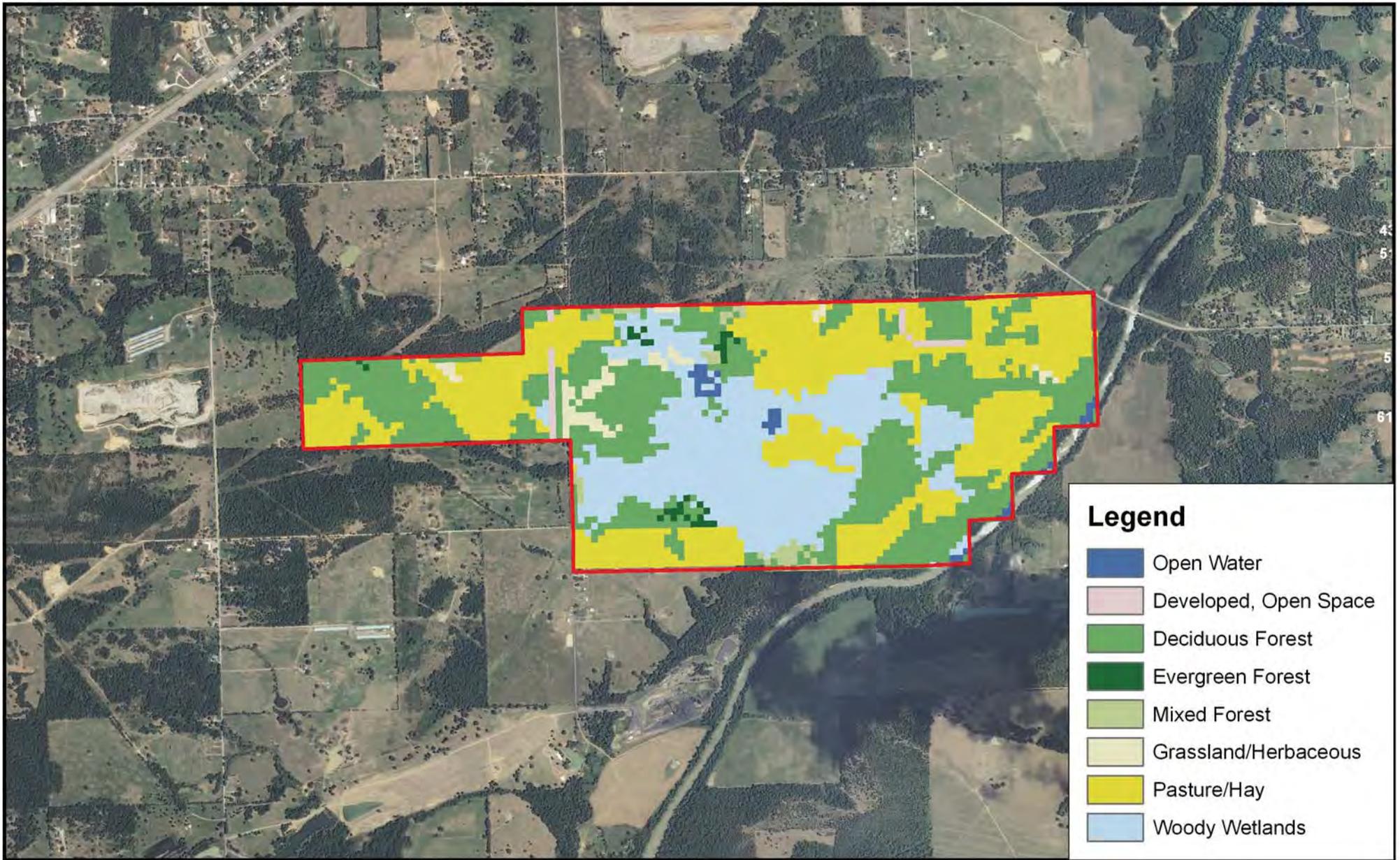
BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
2010 USDA NAIP - Le Flore County, Oklahoma

 Miles



Legend

- Open Water
- Developed, Open Space
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands

Legend

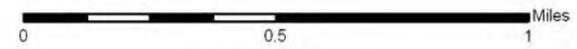
- Spiro Planning Area

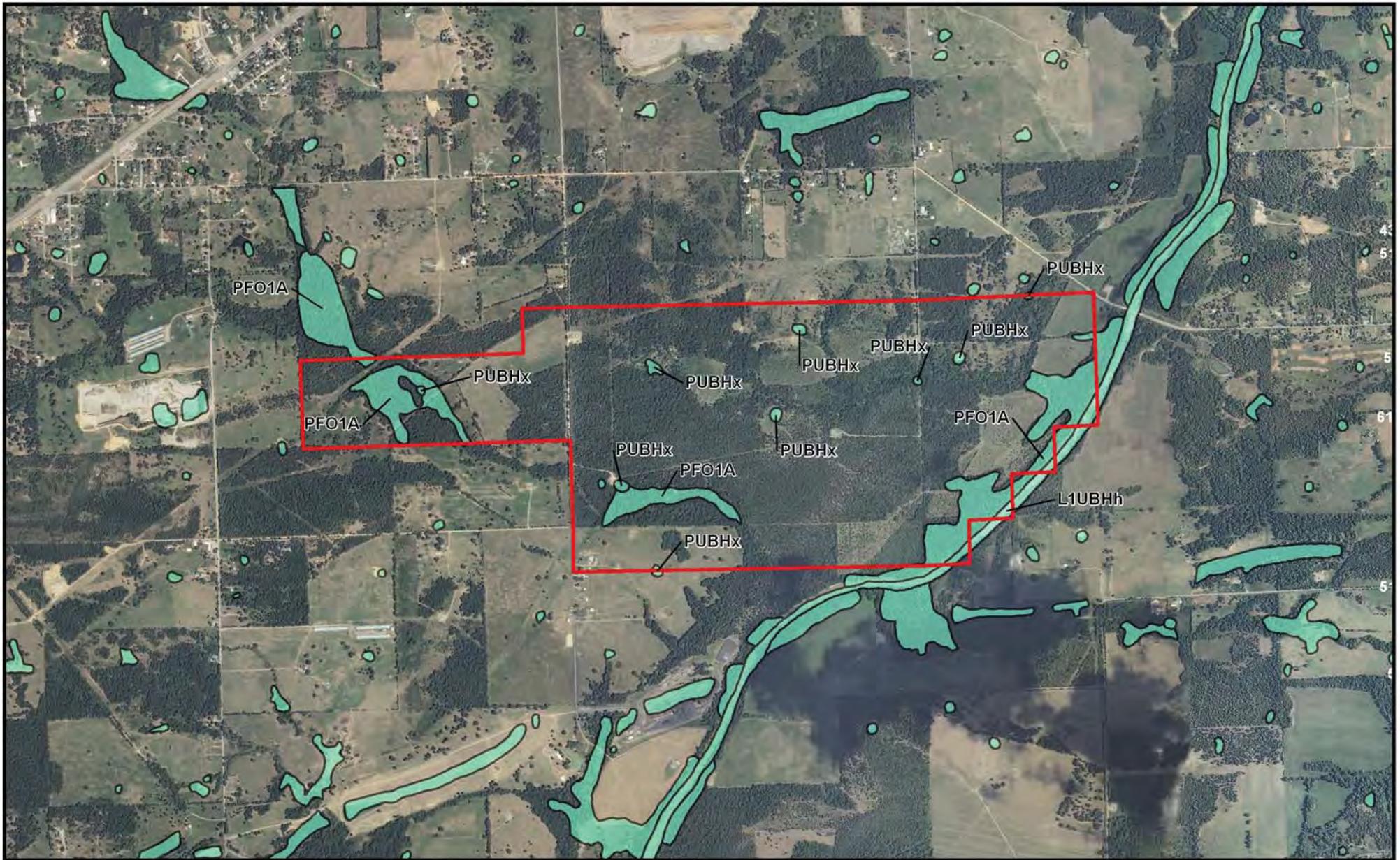
Map X-X: Spiro Area Land Cover

Source:
2011 BLM
2006 MLRC Land Cover



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.





Legend

- Spiro Planning Area
- NWI Wetlands (76.40 ac)

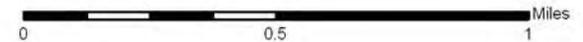
BLM
LOGO

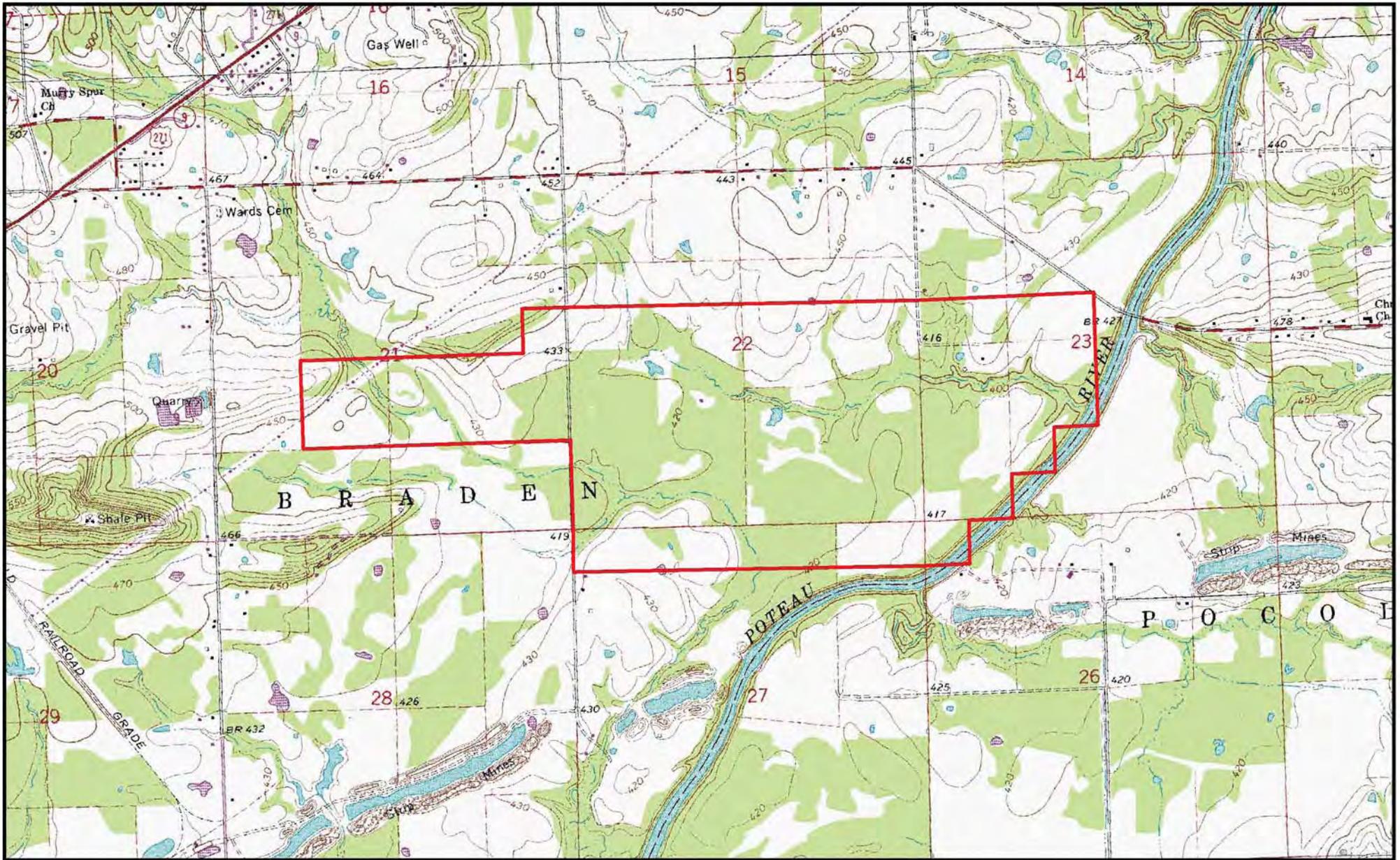
Map X-X: Spiro Area NWI

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
US Fish and Wildlife Service - NWI
Spiro, OK Quadrangle
2010 USDA NAIP - Le Flore County, Oklahoma





Legend

 Spiro Planning Area

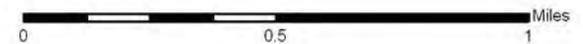
Map X-X: Spiro Area Topography

BLM
LOGO

No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map modified 12/28/11.



Source:
2011 BLM
USGS 7.5 Minute Series
Spiro, OK Quadrangle



Rebecca Carroll

From: Rebecca Carroll
Sent: Sunday, February 19, 2012 6:42 PM
To: 'Sasha Kirk'; 'ian_b@ou.edu'
Subject: ONHI Record Review Request
Attachments: BA_Maps.pdf; USFWS OKFO RMPA_cooperating agency invite_template.pdf

Mr. Butler and/or Ms. Kirk,

I would like to please request a review of occurrence information on listed threatened and endangered species currently in the Oklahoma Natural Heritage Inventory database for proposed project locations in Haskell and LeFlore counties. I have attached aeries, land cover maps, NWI maps, and topographic maps as well as a project description. There are four separate project areas.

Please let me know if you need anything else to process this request.

Thank you!
Rebecca

Rebecca Carroll

Biologist
Enercon Services, Inc.
5100 East Skelly Drive; Suite 450
Tulsa, Oklahoma 74135
Phone: 918.707.1545
Fax: 918.665.7232



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Please consider the environment before printing this e-mail.

Rebecca Carroll

From: Sasha Kirk [sashagkirk@gmail.com]
Sent: Wednesday, March 28, 2012 6:25 PM
To: Rebecca Carroll
Subject: OBS Information Request: 02/19/2012

OBS Ref. 2012-xxx-xxx-xxx

Dear Ms. Carroll,

We have reviewed occurrence information on federal and state threatened, endangered or candidate species, as well as non-regulatory rare species currently in the Oklahoma Natural Heritage Inventory database for the following location you provided:

Milton, OKNM 17902
Sections 23-25, T08N, R22E
Sections 19 & 30, T08N, R23E
Haskell & LeFlore Counties, Oklahoma

Spiro, OKNM 91190
Sections 21-23, 26 & 27, T09N, R26E
LeFlore County, Oklahoma

Liberty, OKNM 124610
Sections 28, 29, 32 & 33, T10N, R21E
Haskell County, Oklahoma

McCurtain, OKNM 108097
Sections 11, 12 & 14, T08N, R22E
Section 07, T08N, R23E
Haskell & LeFlore Counties, Oklahoma

We found no occurrence(s) of relevant species within the project location as described.
If you have any questions about this response, please send me an email, or call us at the number given below.

Although not specific to your project, you may find the following links helpful.

ONHI guide to ranking codes for endangered and threatened species:
http://vmpincol.ou.edu/heritage/ranking_guide.html

Information regarding the Oklahoma Natural Areas Registry:
http://www.oknaturalheritage.ou.edu/registry_faq.htm

--
Sasha Kirk
(for) Ian Butler
Oklahoma Biological Survey
111 East Chesapeake St.
Norman, OK 73019
405.325.1985

Appendix C Air Emission Calculations

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Green House Gas Emissions Estimates

Monthly Diesel Fuel Consumption

	Monthly Consumption	Annual Consumption
Stigler Area	16,400 gallons	196,800 gallons
Milton Area	24,900 gallons	298,800 gallons

GHG Emissions - Stigler

196,800 gallons diesel consumed annually

Emission Factors¹

N ₂ O	0.26 grams per gallon fuel
CH ₄	0.58 grams per gallon fuel

	Fuel Consumed Annually	Emission factor (g/ gal fuel) ¹	grams emitted	pounds emitted	tons emitted annually
N ₂ O	196800	0.26	51168	112.6	0.056
CH ₄	196800	0.58	114144	251.1	0.126

Conversion Factors

1 gram = 0.0022 pounds

1 ton = 2,000 pounds

CO₂ equivalents or Global Warming Potential (from the USEPA website)

N ₂ O	310 pounds CO ₂ equivalent
CH ₄	21 pounds CO ₂ equivalent

	tons emitted annually	tons CO ₂ equivalent
N ₂ O	0.056	17.4
CH ₄	0.126	2.6
sum		20.1

tons CO₂ equivalent
from diesel use at the Stigler Area operation

GHG Emissions - Milton

298,800 gallons diesel consumed annually

Emission Factors¹

N ₂ O	0.26 grams per gallon fuel
CH ₄	0.58 grams per gallon fuel

	Fuel Consumed Annually	Emission factor (g/ gal fuel) ¹	grams emitted	pounds emitted	tons emitted annually
N ₂ O	298800	0.26	77688	170.9	0.085
CH ₄	298800	0.58	173304	381.3	0.191

Conversion Factors

1 gram = 0.0022 pounds

1 ton = 2,000 pounds

CO₂ equivalents or Global Warming Potential (from the USEPA website)

N ₂ O	310 pounds CO ₂ equivalent
CH ₄	21 pounds CO ₂ equivalent

	tons emitted annually	tons CO ₂ equivalent
N ₂ O	0.085	26.5
CH ₄	0.191	4.0
sum		30.5

tons CO₂ equivalent
from diesel use at the Milton Area operation

Based on the 20.1 tons CO₂ equivalent from the Stigler operation and the 30.5 tons CO₂ equivalent from the Milton operation, the total GHG emission estimate from these operations is 50.6 tons CO₂ equivalent.

1 - N₂O and CH₄ emission factors are from Document EPA430-K-08-004, **Direct Emissions from Mobile Combustion Sources** - Appendix A

NEPA0320 Green House Gas Emissions Estimates

Potentially Developable Coal - (planned for Coking)

Alternative B 9,907,943 short tons
 Alternative C 9,719,926 short tons

GHG Emissions - Alternative B - Tons carried forward with unsuitability stipulations.

Emission Factors - Industrial Coking¹

N₂O 40 grams per short ton
 CH₄ 273 grams per short ton
 CO₂ 2531 kilograms per short ton

	Tons Carried Forward	Emission factor (units vary) ¹	kilograms emitted	tons emitted	metric tons emitted
N ₂ O	9,907,943	42	416,133.61	458.58	415.68
CH ₄	9,907,943	289	2,863,395.53	3,155.46	2,860.25
CO ₂	9,907,943	2461	24,383,447,723.00	26,870,559.39	24,356,703.97

Conversion Factors
 1 kilogram = 0.001102 tons
 1 metric ton = 1.10231 tons

CO₂ equivalents or Global Warming Potential (from the USEPA website)

N₂O 310 tons CO₂ equivalent
 CH₄ 21 tons CO₂ equivalent
 CO₂ 1 ton CO₂ equivalent

	metric tons emitted	metric tons CO ₂ equivalent
N ₂ O	415.68	128,859.93
CH ₄	2,860.25	60,065.35
CO ₂	24,356,703.97	24,356,703.97
sum	24,545,629.3	

metric tons CO₂ equivalent from Coking

GHG Emissions - Alternative C - Tons carried forward with multiple-use stipulations.

Emission Factors - Industrial Coking¹

N₂O 40 grams per short ton
 CH₄ 273 grams per short ton
 CO₂ 2531 kilograms per short ton

	Tons Carried Forward	Emission factor (units vary) ¹	kilograms emitted	tons emitted	metric tons emitted
N ₂ O	9,719,926	42	408,236.89	449.88	407.79
CH ₄	9,719,926	289	2,809,058.61	3,095.58	2,805.98
CO ₂	9,719,926	2461	23,920,737,886.00	26,360,653.15	23,894,501.64

Conversion Factors
 1 kilogram = 0.001102 tons
 1 metric ton = 1.10231 tons

CO₂ equivalents or Global Warming Potential (from the USEPA website)

N₂O 310 tons CO₂ equivalent
 CH₄ 21 tons CO₂ equivalent
 CO₂ 1 ton CO₂ equivalent

0.018976391

	metric tons emitted	metric tons CO ₂ equivalent
N ₂ O	407.79	126,414.63
CH ₄	2,805.98	58,925.53
CO ₂	23,894,501.64	23,894,501.64
sum	24,079,841.8	

metric tons CO₂ equivalent from Coking

1 - Emission factors are from USEPA Emissions Factors for Greenhouse Gas Inventories (November 2011), link provided below.
<http://www.epa.gov/climateleadership/documents/emission-factors.pdf>