

# U.S. Department of the Interior

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## Bureau of Land Management

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Decision Record  
Finding of No Significant Impact  
Environmental Assessment  
DOI-BLM-NM-040-2013-13-EA  
July, 2013

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### July 2013 Competitive Oil and Gas Lease Sale

*Pottawatomie, Texas, Beaver, Major, Kay, Blaine,  
Dewey, and Roger Mills Counties, Oklahoma*

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**DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
OKLAHOMA FIELD OFFICE**

**Project: July 2013 Competitive Oil and Gas Lease Sale**

**EA Log Number: DOI-BLM-NM-040-2013-13-EA**

**Location: Pottawatomie, Texas, Beaver, Major, Kay, Blaine, Dewey, & Roger Mills Counties, Oklahoma**

**Finding of No Significant Impact**

Based on the analysis of potential environmental impacts contained in the attached Environmental Assessment (EA), I have determined the Proposed Action Alternative is not expected to have significant impacts on the environment.

The impacts of leasing the fluid minerals estate in the areas described within this EA have been previously analyzed in the Oklahoma Resource Management Plan (RMP), 1994, as amended and the lease stipulations that accompany the tracts proposed for leasing would mitigate the impacts of future development on these tracts. Therefore, preparation of an Environmental Impact Statement (EIS) is not warranted.

Prepared by:

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\_\_\_\_\_ Date: \_\_\_\_\_  
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**Environmental Assessment**  
**July 2013 Competitive Oil and Gas Lease Sale**  
**DOI-BLM-NM-040-2013-13-EA**

## **1.0 INTRODUCTION**

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It is the policy of the Bureau of Land Management (BLM) as derived from various laws, including the Mineral Leasing Act of 1920 (MLA), as amended [30 U.S.C. 181 *et seq.*], and the Federal Land Policy and Management of 1976 (FLPMA), as amended, to make mineral resources available for disposal and to manage for multiple resources which include the development of mineral resources to meet national, regional, and local needs.

The BLM New Mexico State Office (NMSO) conducts a quarterly competitive lease sale to offer available oil and gas lease parcels in New Mexico, Oklahoma, Texas, and Kansas. A Notice of Competitive Lease Sale (NCLS), which lists lease parcels to be offered at the auction, is published by the NMSO at least 90 days before the auction is held. Lease stipulations applicable to each parcel are specified in the Sale Notice. The decision as to which public land and minerals are open for leasing and what leasing stipulations are necessary, based on information available at the time, is made during the land use planning process. Surface management of non-BLM administered land overlaying Federal minerals is determined by the BLM in consultation with the appropriate surface management agency or the private surface owner.

In the process of preparing a lease sale the NMSO sends a draft parcel list to any field offices in which parcels are located. Field office staff then review the legal descriptions of the parcels to determine if they are in areas open to leasing; if new information has become available which might change any analysis conducted during the planning process; if appropriate consultations have been conducted of which potential bidders should be made aware. The parcels nominated for this sale, along with the appropriate stipulations from the Resource Management Plan (RMP), as posted online for a two week public scoping period. Comments received are reviewed and incorporated into the environmental assessment (EA).

Once the draft parcel review is completed and returned to the NMSO, a list of nominated lease parcels with specific, applicable stipulations is made available online to the public through the NCLS. On rare occasions, additional information obtained after the publication of the NCLS may result in deferral of certain parcels prior to the lease sale.

This EA documents the review of sixteen (16) parcels nominated for the July 2013 Competitive Oil and Gas Lease Sale that involved Federal minerals administered by the Oklahoma Field Office (OFO). It serves to verify conformance with the approved land use plan as well as demonstrates the effectiveness of attaching the lease stipulations to specific parcels.

The parcel and applicable stipulations were posted online for a two-week public scoping period beginning on January 28, 2013. Comments were received from the Center for Biological Diversity. In addition, this EA is made available for public review and comment for 30 days beginning on March 1, 2013. Any comments provided prior to the lease sale, including those received from the Center for Biological Diversity, will be considered and incorporated into the EA as appropriate.

## **1.1 Purpose and Need**

The purpose is to provide opportunities for private individuals or companies to explore for and develop oil and gas resources on public lands through a competitive leasing process.

The need for the action is established by the BLM's responsibility under the MLA, as amended, to promote the exploration and development of oil and gas on the public domain. The MLA also establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior, where consistent with the FLPMA, the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, 42 USC 4321 *et seq.*), and other applicable laws, regulations, and policies.

The BLM will decide whether or not to lease the nominated parcels and, if so, under what terms and conditions.

## **1.2 Land Use Plan Conformance**

The applicable land use plan for this action is the Oklahoma Resources Management Plan (RMP) (January 1994), as amended and Final Environmental Impact Statement (FEIS) (October 1993), as amended. The RMP, as amended, described specific split estate tracts in Oklahoma and the stipulations that would be attached to each tract if they were offered for lease. These stipulations which include seasonal timing limitations and other controlled surface use stipulations were designed to minimize or alleviate potential impacts to special resource values. Since the parcels under consideration fall within these areas and the applicable stipulations identified in the RMP would be attached to each parcel, if leased, leasing the parcel would be in conformance with the Oklahoma RMP. Leasing the parcels would also be consistent with the RMPs goals and objectives for natural and cultural resources.

Pursuant to 40 CFR 1508.28 and 1502.21, this EA is tiered to and incorporates by reference the information and analysis contained in the RMP (1994), as amended. While it is unknown precisely when, where, or to what extent well sites or roads would be proposed, the analysis of projected surface disturbance impacts, should a lease be developed, is based on potential well densities listed in the Reasonable Foreseeable Development (RFD) Scenario included in the RMP. While an appropriate level of site-specific analysis of individual wells or roads would occur when a lease holder submits an Application for Permit to Drill (APD), assumptions based on the RFD scenario may be used in the analysis of impacts in this EA.

FLPMA established guidelines to provide for management, protection, development, and enhancement of public lands (Public Law 94-579). Section 103(e) of FLPMA defines public lands as any lands and interest in lands owned by the US, the BLM has no authority over use of the surface by the surface

owner; however, the BLM is required to declare how the federal mineral estate will be managed in the RMP including identification of all appropriate lease stipulations (43 CFR 3101.1 and 43 CFR 1601.0-7(b); BLM Manual Handbook 1601.009 and 1621-1).

### **1.3 Federal, State, or Local Permits, Licenses or Other Consultation Requirements**

Purchasers of oil and gas leases are required to comply with all applicable federal, state, and local laws and regulations, including obtaining all necessary permits required should lease development occur.

OFO biologists reviewed the proposed action and determined it would be in compliance with threatened and endangered species management and consultation guidelines outlined in the Oklahoma RMP biological assessments (BA). No further consultation with US Fish and Wildlife (USFWS) is required at this leasing stage.

Compliance with National Historic Preservation Act (NHPA) Section 106 responsibilities are adhered to by following the BLM Manual 8100, 36 CFR Part 800, 43 CFR Part 7, and the Cultural Resources Handbook H-8100-1 (for New Mexico, Oklahoma, Kansas, and Texas). When draft parcels locations are received by the OFO, cultural resource staff reviews the location for any known cultural resources on BLM records.

Tribal consultations would be completed when specific locations for proposed projects are received, reviewed by the State Historic Preservation Office (SHPO), the Bureau of Indian Affairs (BIA), and specific Tribes. When particular Tribes respond during consultation, that tribe would be directly involved in negotiations with the BLM to determine if the project should be moved, or other mitigation required.

In Section 1835 of the Energy Policy Act of 2005 (43 USC 1508), Congress directed the Secretary of the Interior to review current policies and practices with respect to management of federal subsurface oil and gas development activities and their effects on privately owned surface. The Split Estate Report, submitted in December 2006, documents the findings resulting from consultation on the split estate issue with affected private surface owners, the oil and gas industry, and other interested parties.

NMSO contacts the surface owners and notifies them of the expression of interest and the date the oil and gas rights would be offered for competitive bidding. The BLM would provide the surface owners with its website address so they may obtain additional information related to the oil and gas leasing process, the imposition of any stipulations on that lease parcel, federal and state regulations, and best management practices (BMPs). The surface owners may elect to protest the leasing of the minerals underlying their surface.

If the BLM receives a protest, the parcel would remain on the lease sale. However, the BLM would resolve any protest prior to issuing an oil and gas lease for that parcel. If the protest is upheld, the BLM would return the payments received from the successful bidder for that parcel. After the lease sale has occurred, the BLM would post the results on its website and the surface owner may access the website to learn the results of the lease sale.

## 1.4 Identification of Issues

An internal review of the Proposed Action was conducted by an interdisciplinary team of OFO resource specialists on January 17, 2013, to identify and consider potentially affected resources and associated issues (Table 1). During the meeting, the interdisciplinary team also identified and subsequently addressed any unresolved issues or conflicts related to the Proposed Action.

**Table 1. Potentially affected resources..**

Resources	Not Present On Site	No Impacts	May Be Impacts	Mitigation Necessary
Air Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Watershed Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Water Quality – Surface	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Water Quality – Ground	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cultural or Historical	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Native American Religious Concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Paleontology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Areas of Critical Environmental Concern	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Farmlands, Prime or Unique	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Invasive, Non-native Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Vegetation, Forestry	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Livestock Grazing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened or Endangered Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Special Status Species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildlife/Migratory Birds	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wetlands/Riparian Zones	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wild & Scenic Rivers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wilderness	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visual Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Caves and Karst	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wastes, Hazardous or Solid	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental Justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Public Health and Safety	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Mineral Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rights-of-Way	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wild Horse and Burros	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Several issues were considered during internal scoping but dismissed from detailed analysis because there would be no potentially significant effects related to the issues resulting from any of the alternatives presented below. The following elements are determined by the IDT, following onsite visits, review of the Oklahoma RMP (1994), as amended, and other data sources, to not be present:

- Areas of Environmental Concern
- Livestock Grazing
- Wild Horse and Burros
- Public Health and Safety
- Wild and Scenic Rivers
- Wilderness
- Cave and Karst
- Rights-of-way

## **2.0 PROPOSED ACTION AND ALTERNATIVES**

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### **2.1 Alternative A—No Action**

The BLM NEPA Handbook (H-1790-1) states that for EAs on externally initiated proposed actions, the no action alternative generally means that the action would not take place. In the case of a lease sale, this would mean that an expression of interest to lease (parcel nomination) would be denied or rejected, and the sixteen (16) parcels would not be offered for lease during the July 2013 Competitive Oil and Gas Lease Sale. Surface management and any ongoing oil and gas development on surrounding federal, private, and state leases would continue under current guidelines and practices. The selection of the no action alternative would not prevent these parcels from being nominated in a future lease sale.

### **2.2 Alternative B—Proposed Action**

The Proposed Action would be to lease sixteen (16) nominated parcels of federal minerals covering 4,468.855 acres administered by OFO. The sixteen (16) proposed lease parcels are located on private surface in Pottawatomie, Texas, Beaver, Major, Kay, Blaine, Dewey, and Roger Mills Counties, Oklahoma. Standard terms and conditions as well as stipulations listed in the Oklahoma RMP (1994), as amended, would apply. A complete description of these parcels, including any stipulations, is provided in Table 2.

Eleven of the proposed parcels occur within floodplains. The Army Corp of Engineers No Surface Occupancy stipulation would be attached to parcels -121, -122, -123, -124, -125, -126, -127, -128 and -129. Lease stipulation ORA-1 for Floodplain Protection would be attached to parcels -116 and -120. ORA-1 states that, "All or portions of the lands under this lease lie in and or adjacent to a major watercourse and are subject to periodic flooding. Surface occupancy of these areas will not be allowed without the specific approval, in writing, of the BLM." In addition to ORA-1, the BLM identified the need to attach a Floodplain Protection Lease Notice to these two parcels (Appendix 1). This notice would inform the lessee and operator that surface occupancy of these areas and surface disturbance within up to 200 meters of the outer edge of the floodplain may not be allowed in order to protect the integrity and functionality of the floodplain and associated watercourse. Furthermore, controlled surface use requiring special mitigation measures may be required and will be developed during the application for permit to drill.

Proposed lease parcels -116, -117, -120, and -130 would have ORA-2 Wetland/Riparian Protection stipulations added. ORA-2 is intended for the protection of wetland and/or riparian areas and states that "Surface occupancy of these areas will not be allowed without the specific approval, in writing, of the BLM. Impacts or disturbance to wetlands and riparian habitats which occur on this lease must be avoided or mitigated."

Four proposed parcels are within Lesser Prairie Chicken Habitat (-118, -119, -130, and -131) and would have ORA-3 stipulations added to them. ORA-3 states that no surface occupancy of the lease would occur from February 15 to May 15.

Two lease notices, WO-ESA-7 and WO-NHPH, would also be attached to each parcel. These notices would notify the lease holder that the BLM reserves direction to modify, if necessary, any action proposed on the lease to ensure:

- Threatened, endangered, or other special status species, and their habitats (WO-ESA-7) and
- Historic properties and/or resources protected under the National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Executive Order 13007, or other statutes and executive orders (WO-NHPH)

would not be adversely affected. Under the Endangered Species Act (ESA) of 1973, as amended, Section 7 Consultation with the USFWS would occur if development is proposed on a lease containing habitat suitable for these special status species. Under the National Historic Preservation Act (NHPA) and other authorities, the BLM would undergo consultation with the State Historic Preservation Officer and any interested or affected tribes prior to approving any development activities.

Once sold, the lease purchaser would have the exclusive right to use as much of the leased lands as would be necessary to explore and drill for oil and gas within the lease boundaries, subject to stipulations attached to the lease; restrictions deriving from specific, nondiscretionary statutes; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed (43 CFR 3101). Oil and gas leases are issued for a 10-year period and continue for as long thereafter as oil or gas is produced in paying quantities. If a lease holder fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease, exclusive right to develop the leasehold reverts back to the federal government and the lease can be reoffered in another lease sale.

Drilling of wells on a lease would not be permitted until the lease owner or operator secures approval of a drilling permit and a surface use plan as specified under Onshore Oil and Gas Orders (43 CFR 3162). A permit to drill would not be authorized until site-specific NEPA analysis is conducted.

Standard terms and conditions, stipulations listed in the Oklahoma RMP, and any new stipulations would apply as appropriate to each lease. In addition, site specific mitigation measures and BMPs would be attached as Conditions of Approval (COAs) for each proposed exploration and development activity authorized on a lease.

Table 2. Alternative B—Proposed Action

Parcel	Comments	Acres
<p><b><u>NM-201307-116</u></b>                      T. 0100N, R. 0040E, IM PM, OK                      Sec. 013 Lots 1  <b>Pottawatomie County, OK</b></p>	<p><u>Lease with the following Stipulations:</u>                      ORA-LN-3: Floodplain Management Notice                      ORA-1: Floodplain Protection                      ORA-2:Wetland/Riparian Protection                      WO-ESA-7: Threatened &amp; Endangered Consultation                      WO-NHPA: Tribal and Cultural Resources Consultation</p>	<p>17.700</p>
<p><b><u>NM-201307-117</u></b>                      T. 0010S, R. 0190E, IM PM, OK                      Sec. 001 W2 of Lot 1,2  <b>Texas County, OK</b></p>	<p><u>Lease with the following Stipulations:</u>                      ORA-2:Wetland/Riparian Protection                      WO-ESA-7: Threatened &amp; Endangered Consultation                      WO-NHPA: Tribal and Cultural Resources Consultation</p>	<p>11.505</p>
<p><b><u>NM-201307-118</u></b>                      T. 0010S, R. 0220E, IM PM, OK                      Sec. 001 Lots 1-3  <b>Beaver County, OK</b></p>	<p><u>Lease with the following Stipulations:</u>                      ORA-3: Season of Use Stipulation Lesser Prairie Chicken                      WO-ESA-7: Threatened &amp; Endangered Consultation                      WO-NHPA: Tribal and Cultural Resources Consultation</p>	<p>15.950</p>
<p><b><u>NM-201307-119</u></b>                      T. 0010S, R. 0220E, IM PM, OK                      Sec. 003 Lots 1,2  <b>Beaver County, OK</b></p>	<p><u>Lease with the following Stipulations:</u>                      ORA-3: Season of Use – Lesser Prairie Chicken                      WO-ESA-7: Threatened &amp; Endangered Consultation                      WO-NHPA: Tribal and Cultural Resources Consultation</p>	<p>16.000</p>
<p><b><u>NM-201307-120</u></b>                      T. 0200N, R. 0100W, IM PM, OK                      Sec. 025 Lots 4  <b>Major County, OK</b></p>	<p><u>Lease with the following Stipulations:</u>                      ORA-LN-3: Floodplain Management Notice                      ORA-1: Floodplain Protection                      ORA-2:Wetland/Riparian Protection                      WO-ESA-7: Threatened &amp; Endangered Consultation                      WO-NHPA: Tribal and Cultural Resources Consultation</p>	<p>21.900</p>
<p><b><u>NM-201307-121</u></b>                      T. 0270N, R. 0030E, IM PM, OK                      Sec. 001 Lots 10;                      T.0270N, R. 0040E, IM, PM, OK                      Sec. 006 Lots 1-5;                      006 S2NE, SENW, SE;                      007 Lots 4-7                      007 N2NE;                      018 NENE  <b>Kay County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b>                      Army Corp of Engineers—Kaw Lake    <u>Lease with the following Stipulations:</u>                      (NSO) COE (OK) SS1-A (1-17): No Surface Occupancy                      WO-NHPA: Tribal and Cultural Resources Consultation</p>	<p>748.500</p>

Parcel	Comments	Acres
<p><b><u>NM-201307-122</u></b></p> <p>T. 0270N, R. 0040E, IM PM, OK Sec. 030 Lots 4-8; 030 SENW, NESW 030 N2SESW, SWSESW, N2SESESW 031 N2NE</p> <p><b>Kay County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b> Army Corp of Engineers—Kaw Lake</p> <p><u>Lease with the following Stipulations:</u> (NSO) COE (OK) SS1-A (1-17): No Surface Occupancy WO-NHPA: Tribal and Cultural Resources Consultation</p>	379.760
<p><b><u>NM-201307-123</u></b></p> <p>T. 0190N, R. 0130W, IM PM, OK Sec. 004 S2</p> <p><b>Blaine County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b> Army Corp of Engineers—Canton Lake</p> <p><u>Lease with the following Stipulations:</u> COE-SS1-A (CANTON LAKE): No Surface Occupancy WO-NHPA: Tribal and Cultural Resources Consultation</p>	320.000
<p><b><u>NM-201307-124</u></b></p> <p>T. 0190N, R. 0130W, IM PM, OK Sec. 010 W2, SWSE; 010 S2NWSE</p> <p><b>Blaine County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b> Army Corp of Engineers—Canton Lake</p> <p><u>Lease with the following Stipulations:</u> COE-SS1-A (CANTON LAKE): No Surface Occupancy</p>	380.000
<p><b><u>NM-201307-125</u></b></p> <p>T. 0190N, R. 0140W, IM PM, OK Sec. 002 Lots 1-6; 002 S2N2, N2S2, S2SW</p> <p><b>Dewey County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b> Army Corp of Engineers—Canton Lake</p> <p><u>Lease with the following Stipulations:</u> COE-SS1-A (CANTON LAKE): No Surface Occupancy</p>	628.920
<p><b><u>NM-201307-126</u></b></p> <p>T. 0190N, R. 0140W, IM PM, OK Sec. 006 Lots 1-14; 006 S2N2, SENW, NESW, N2SE; 007 N2NE 008 N2, SE</p> <p><b>Dewey County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b> Army Corp of Engineers—Canton Lake</p> <p><u>Lease with the following Stipulations:</u> COE-SS1-A (CANTON LAKE): No Surface Occupancy</p>	1147.690

Parcel	Comments	Acres
<p><b><u>NM-201307-127</u></b></p> <p>T. 0190N, R. 0140W, IM PM, OK Sec. 015 Lots 1-3; 015 S2NE, N2NW, SENW</p> <p><b>Dewey County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b> Army Corp of Engineers—Canton Lake</p> <p><u>Lease with the following Stipulations:</u> COE-SS1-A (CANTON LAKE): No Surface Occupancy</p>	<p>267.180</p>
<p><b><u>NM-201307-128</u></b></p> <p>T. 0190N, R. 0150W, IM PM, OK Sec. 010 N2NE;</p> <p><b>Dewey County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b> Army Corp of Engineers—Canton Lake</p> <p><u>Lease with the following Stipulations:</u> COE-SS1-A (CANTON LAKE): No Surface Occupancy</p>	<p>80.000</p>
<p><b><u>NM-201307-129</u></b></p> <p>T. 0190N, R. 0150W, IM PM, OK Sec. 011 N2N2NE, SENENE; 012 Lots 1-4; 012 NWNW</p> <p><b>Dewey County, OK</b></p>	<p><b><u>Other Surface Management (OSM):</u></b> Army Corp of Engineers—Canton Lake</p> <p><u>Lease with the following Stipulations:</u> COE-SS1-A (CANTON LAKE): No Surface Occupancy</p>	<p>153.750</p>
<p><b><u>NM-201307-130</u></b></p> <p>T. 0150N, R. 0240W, IM PM, OK Sec. 031 S2NE, SE</p> <p><b>Roger Mills County, OK</b></p>	<p><u>Lease with the following Stipulations:</u> ORA-2:Wetland/Riparian Protection ORA-3: Season of Use – Lesser Prairie Chicken WO-ESA-7: Threatened &amp; Endangered Consultation WO-NHPA: Tribal and Cultural Resources Consultation</p>	<p>240.000</p>
<p><b><u>NM-201307-131</u></b></p> <p>T. 0140N, R. 0250W, IM PM, OK Sec. 001 SWSW</p> <p><b>Roger Mills County, OK</b></p>	<p><u>Lease with the following Stipulations:</u> ORA-3: Season of Use – Lesser Prairie Chicken WO-ESA-7: Threatened &amp; Endangered Consultation WO-NHPA: Tribal and Cultural Resources Consultation</p>	<p>40.000</p>

### **3.0 DESCRIPTION OF AFFECTED ENVIRONMENT**

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This section describes the environment that would be affected by implementation of the alternatives described in Section 2.0. Aspects of the affected environment described in this section focus on the relevant resources and issues. Only those elements of the affected environment that have potential to be significantly impacted are described in detail.

#### ***Pottawatomie County (Parcel -116)***

The proposed lease parcel is in the northeast portion of Pottawatomie County at an elevation of about 960 feet above sea level. Pottawatomie County is in the central part of Oklahoma. The county is bounded on the west by Cleveland and Oklahoma Counties, on the north by Lincoln County, on the east by Okfuskee and Seminole Counties, and on the south by Pontotoc and McClain Counties. The county has an area of 803 square miles (513,920 acres).

The county is characterized by sandstone ridges and shale valleys traversed by many narrow streams. The elevation of the county averages about 1,000 feet above sea level. The slopes range from nearly level to strongly sloping in most of the county.

The county has a well distributed system of highways, including Interstate 40, U.S. Highways 177 and 9, and several state highways. A fairly good network of all-weather roads is maintained by the county.

#### ***Texas County (Parcel -117)***

The proposed lease parcel is in the extreme southwestern corner of Texas County, right on the county line at an elevation of about 2,900 feet. Texas County is in the central part of the Oklahoma Panhandle. It is bounded by the State of Kansas on the north and by the State of Texas on the south. Cimarron County forms the western boundary and Beaver County forms the eastern boundary. Texas County has an area of 2,041 square miles (1,306,240). It is the second largest county in the state.

About two-thirds of the county consists of upland plains that are nearly level. The rest is made up mainly of eroded, rough breaks and narrow flood plains along streams. There are three separate areas of sandhills. The general slope of the county is toward the east, with an average fall of about 16 feet per mile. The elevation is about 3,800 feet in the western part of the county but drops to 2,600 feet in the eastern part.

Texas County is serviced by four U.S. Highways (54, 56, 64, and 412), as well as four State Highways (3, 94, 95, and 136). In addition, numerous county roads exist several of which are maintained for all-weather use. The Guymon Municipal Airport is a city-owned, public-use airport located west of the City of Guymon.

#### ***Beaver County (Parcels -118 and -119)***

The proposed lease parcels are in the extreme southern part of Beaver County, right on the county line at an elevation of 2,880 feet above sea level. Beaver County is in the eastern part of the Oklahoma Panhandle. The county is bounded on the north by Kansas and on the south by Texas. Adjacent counties

in Oklahoma are Texas County on the west and Harper and Ellis Counties on the east. The county has an area of 1,817 square miles (1,162,829 acres).

Topography ranges from the nearly level flood plains along the Beaver and Cimarron Rivers to the broad, level high plains in the northwestern and southwestern parts of the county. Elevation ranges from about 2,000 feet along the Cimarron River near the northeast edge of the county to over 2,900 feet near the Texas State line in the southwestern part of the county.

The county is served by an airport facility located at Beaver. It is also served by four Federal highways (64, 83, 270, and 412), two State highways (3 and 23), and numerous county roads. Some of the county roads have been surfaced and are suitable for all-weather travel.

### ***Major County (Parcel -120)***

Major County is in the northwestern part of Oklahoma bounded by Woods and Alfalfa Counties in the north; Garfield to the east; Kingfisher, Blaine, and Dewey Counties to the south; and Woodward to the west. The county has an area of 954.99 square miles (611,193).

Major County is characterized by erosional uplands, valleys, breaks, and sand dunes. The North Canadian and Cimarron Rivers create the largest valleys in the county. Sand dunes are found north of the North Canadian and Cimarron Rivers, while escarpments as much as 175 feet above the valley floor traverse from the northwestern part of the county through the south-central part. The broad valley of the Cimarron River contains smooth, nearly level soils on the bottom land. Elevation ranges from 1,100 feet in the southeast to 1,820 feet in the western part of the county generally sloping to the southeast.

Three U.S. Highways pass through Major County, including U.S. 60, 281, and 412, along with two State Highways (8 and 58). Numerous county roads have been constructed and maintained for all-weather use.

### ***Kay County (Parcels -121 and -122)***

The proposed parcels are in the eastern half of Kay County underlying a portion of Canton Lake. Elevations of the proposed parcel are between 1,000 feet and 1,050 feet above sea level. Kay County is in the north-central part of Oklahoma. It is bounded on the south by Noble County, on the east by Osage County, on the west by Grant County, and on the north by the state of Kansas. It has an area of 945 square miles (604,852 acres).

Topography ranges from nearly level flood plains along the rivers to steep uplands. The steeper slopes and stony areas are mainly confined to the eastern part of the county. The general slope is towards the south and southeast. Elevation ranges from about 920 feet, where the Arkansas River leaves the southeastern part of the county, to about 1,290 feet in the northeastern part of the county.

The county is served by the Burlington Northern/Santa Fe railroad and by airport facilities at Ponca City, Newkirk, and Blackwell. It is also served by Interstate 35, which extends along the western portion of the county, by three federal highways, by two State highways, and numerous county roads. Some of the county roads have been surfaced and are suitable for all-weather travel.

### ***Blaine County (Parcels -123 and -124)***

The proposed lease parcels are in the northwest corner of Blaine County at an elevation of about 1,630 feet above sea level. Portions of the parcels underlay Canton Lake and are entirely within an Oklahoma Department of Wildlife State Game Management Area. Blaine County is in the west-central part of Oklahoma bounded on the north by Major County; the east by Kingfisher County; the south by Canadian and Caddo Counties; and the west by Custer and Dewey Counties. It has an area of 928.42 square miles (594,189 acres).

The northeastern part of the county is gently sloping plain. This escarpment has been dissected by the tributaries of the Cimarron River. West of the North Canadian River is an eastward sloping plain ending in the bottom of the North Canadian valley. The southwestern part of the county slopes westward into the valley of the North Canadian River. Dune topography can be found on the northeast valley wall of the North and South Canadian Rivers. Elevation ranges from 1,900 feet in the northwestern part to 1,100 feet in the northeastern part of the county.

One U.S. Highway (270/281), four State Highways (3, 8, 51, and 58), and numerous county roads exist within Blaine County. Many of the county roads are maintained to meet all-weather needs.

### ***Dewey (Parcels -125, -126, -127, -128 and -129)***

The proposed lease parcels are in the northeast corner of Dewey County at an elevation of about 1,630 feet above sea level. Like the parcels in Blain County, portions of the parcels underlay Canton Lake and are entirely within an Oklahoma Department of Wildlife State Game Management Area. The proposed lease parcels are in the extreme northeastern corner of Dewey County at about 1,600 feet elevation. Dewey County is located in west-central Oklahoma and is bordered by Woodward and Major counties on the north, Blaine County on the east, Custer County on the south, and Ellis and Roger Mills counties on the west. Dewey County is comprised of 999.48 square miles (639,667 acres) of land and water.

In the area drained by the South Canadian River and its tributaries, the topography ranges from level uplands, flood plains, and terraces to rough, broken canyons and dunes. The flood plains and terraces along the South Canadian River are paralleled by irregular, rough, red sandstone canyons and bluffs. The adjacent high areas consist of isolated flats and rolling hills. Broad areas mantled with sandy deposits occur in the eastern part of the county; in the west-central part; and in the extreme northwestern part. In the northeastern and north-central parts of the county drained by the North Canadian River, the topography is similar to that near the South Canadian River, except that the rough broken land bordering the flood plains and terraces is less distinct. In the southern part of the county, there is less variation in the topography than in other parts. Elevation ranges from 1,600 feet in the northeast to 2,300 feet about sea level in the west.

The county is served by U.S. Highways 60, 183, 270, and 281; State Highways 3, 34, 47, and 51; and numerous county roads. Some of the county roads have been surfaced and are suitable for all-weather travel.

### ***Roger Mills (Parcels -130 and -131)***

Roger Mills County is a western border county, lying about midway between the northern and southern State lines. The Canadian River forms the northern boundary of the county, separating it from Ellis County. Dewey and Custer Counties adjoin it on the east, Beckham County on the south and on the west by Texas. The county is about 36 miles long from east to west, and averages about 32 miles wide from the north to south. It has an area of 1,135 square miles (726,400 acres).

Roger Mills County lies within the Great Plains and its topographic features are the result of erosion and grading. Its general slope is toward the east. It includes areas of smooth upland remnants of a former high plain which covered the entire region, and two areas of lowland, the products of erosion, lying along the two main streams. Elevation ranges from 2,600 feet at Antelope Hills in the northwestern part of the county to 1,700 feet in the southeastern part where the Washita River flows into Custer County.

U.S. Highway 283, seven State Highways (6, 30, 33, 34, 47, 47A, and 152) and numerous county roads pass through the county. Some of the county roads have been surfaced and are suitable for all-weather travel.

### **3.1 Air Quality**

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality nationwide, including six "criteria" air pollutants. These criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> & PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>) and lead (Pb). EPA has established National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. The NAAQS are protective of human health and the environment. EPA has approved Oklahoma's State Implementation Plan and the state enforces state and federal air quality regulations on all public and private lands within the state, except for tribal lands. The EPA has not designated any non-attainment areas within Oklahoma.

The proposed lease parcels are within a Class II air quality area as designated by EPA. There are three classifications of areas that attain NAAQS, Class I, Class II and Class III. Congress established certain national parks and wilderness areas as mandatory Class I areas where only a small amount of air quality degradation is allowed. All other areas of the US are designated as Class II, which allow a moderate amount of air quality degradation. No areas of the US have been designated Class III, which would allow more air quality degradation. The primary sources of air pollution in each county are dust from blowing wind on disturbed or exposed soil; exhaust emissions from motorized equipment; oil and gas development, production and distribution; agriculture; and manufacturing.

The Wichita Mountains Wilderness Area is the only designated Class I area in Oklahoma, which is >100 miles from the nearest proposed parcel. Class I areas are afforded the highest level of protection by the Clean Air Act and include all international parks, national wilderness areas and national memorial parks >5,000 acres, and national parks >6,000 acres in size which were in existence on August 7, 1977.

Air quality in a given region can be measured by its Air Quality Index value. The air quality index (AQI) is reported according to a 500-point scale for each of the major criteria air pollutants, with the worst

denominator determining the ranking. For example, if an area has a CO value of 132 on a given day and all other pollutants are below 50, the AQI for that day would be 132. The AQI scale breaks down into six categories: good (AQI<50), moderate (50-100), unhealthy for sensitive groups (100-150), unhealthy (>150), very unhealthy and hazardous. The AQI is a national index, the air quality rating and the associated level of health concern is the same everywhere in the country. The AQI is an important indicator for populations sensitive to air quality changes.

### Current Pollution concentrations

For western Oklahoma, no lead monitoring data is available, however, lead concentrations are expected to be low in rural areas are therefore not monitored. “Design Concentrations” are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. The 2011 design concentrations of criteria pollutants are listed in Table 3.

**Table 3. 2011 Design Concentrations of Criteria Pollutants in Western and Eastern Oklahoma (EPA 2012)**

Pollutant	Design Value	Averaging period	NAAQS
O <sub>3</sub>	0.070 ppm (western)	8-hour	0.075 ppm <sup>1</sup>
	0.077 ppm (eastern)		
PM <sub>2.5</sub>	9.5 µg/m <sup>3</sup> (western)	Annual	12.0 µg/m <sup>3,2</sup>
	10.8 µg/m <sup>3</sup> (eastern)		
PM <sub>2.5</sub>	20.0 µg/m <sup>3</sup> (western)	24-hour	35 µg/m <sup>3,3</sup>
	23.0 µg/m <sup>3</sup> (eastern)		
PM <sub>10</sub>	0 exceedances/year (western)	24-hour	150 µg/m <sup>3,5</sup>
	2 exceedances/year (eastern)		
Pb	No data available (western)	Rolling 3-month average	0.15 µg/m <sup>3</sup>
	0.01 µg/m <sup>3</sup> (eastern)		
NO <sub>2</sub>	10 ppb (western)	Annual	53 ppb
	9 ppb (eastern)		
NO <sub>2</sub>	49 ppb (western)	1-hour	100 ppb <sup>3</sup>
	No data available (eastern)		
SO <sub>2</sub>	5 ppb (western)	1-hour	75 ppb <sup>6</sup>
	65 ppb (eastern)		
CO	1.0 ppm (western)	8-hour	9 ppm <sup>4</sup>
	1.4 ppm (eastern)		
CO	1.3 ppm (western)	1-hour	35 ppm <sup>4</sup>

<sup>1</sup> Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years

<sup>2</sup> Annual mean, averaged over 3 years

<sup>3</sup> 98th percentile, averaged over 3 years

<sup>4</sup> Not to be exceeded more than once per year

<sup>5</sup> Not to be exceeded more than once per year on average over 3 years

<sup>6</sup> 99<sup>th</sup> percentile of 1-hour daily maximum concentrations, averaged over 3 years

Mean AQI values for western Oklahoma were generally in the good range (AQI<50) in 2011, with 73 percent of the days classified as “good,” 25 percent classified as “moderate,” and 2 percent classified as

“unhealthy for sensitive groups.” For eastern Oklahoma, mean AQI values were generally in the moderate range (AQI =54) for 2011 with 45 percent of the days classified as “good,” 48 percent classified as “moderate,” 7 percent classified as “unhealthy for sensitive groups,” and 1 day was classified as “unhealthy” (Table 4).

**Table 4. Mean and Max AQI Values (EPA 2012a)**

	Median AQI	Max AQI
Western OK	42	119
Eastern OK	54	158

The air quality index in eastern Oklahoma annually reaches “unhealthy for sensitive groups” on a number of days, while in western Oklahoma the “unhealthy for sensitive groups” is less likely to occur. Over the past decade, there is no trend to the number of days that are classified “unhealthy for sensitive groups” and “unhealthy” (Table 5). In eastern Oklahoma, less than two days per year have been classified as “unhealthy,” while zero days have been classified as “unhealthy” in western Oklahoma.

**Table 5. Number of Days Classified as “Unhealthy for Sensitive Groups” and “Unhealthy” (EPA 2012a)**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Western OK	0	4	0	4	3	0	0	0	0	7
Eastern OK	26	22	19	27	26	7	15	5	3	22

### 3.2 Climate

Oklahoma’s climate ranges from humid subtropical in the east to semi-arid in the west. Warm, moist air moving northward from the Gulf of Mexico often exerts much influence, particularly over the southern and eastern portions of the state, where humidity, cloudiness and precipitation are resultantly greater than in the western and northern sections. Summers are long and usually quite hot. Winters are short and less severe than those of the more northern Plains states. Periods of extreme cold are infrequent, and those lasting more than a few days are rare.

The mean annual temperature over the state ranges from 62°F along the Red River to about 58°F along the northern border. It then decreases westward to 56°F in Cimarron County. Temperatures of 90°F or greater occur, on average about 60-65 days per year in the western panhandle and the northeast corner of the state. The average is about 115 days in southwest Oklahoma and about 85 days in the southeast. Temperatures of 100°F or higher occur, frequently during some years, from May through September, but very rarely in April and October. With 30-40 days at or above 100°F, western Oklahoma experiences more extreme summer temperatures than elsewhere in the state. Both the Panhandle and eastern Oklahoma average about 15 days above the century mark. The increased humidity in the east, however, adds to that section of the state’s summertime misery.

Temperatures of 32°F or less occur an average of 60 days per year in the southeast. This value increases to about 110 days per year where the panhandle joins the rest of the state, and to about 140 days in the western panhandle.

The dominant feature of the spatial distribution of rainfall across Oklahoma is a sharp decrease in rainfall from east to west. Although precipitation is quite variable on a year-to-year basis, average annual precipitation ranges from about 17 inches in the far western panhandle to about 56 inches in the far southeast. Only the summer months of July and August see a substantial relaxation of this distribution. Average annual snowfall increases from less than two inches in the extreme southeast to nearly 30 inches in the western panhandle. The frequency of snow events also increases sharply along the same gradient.

Tornados are a particular hazard in Oklahoma. Since 1950, an average of 52 tornados have been observed annually within the state's borders. Tornados occur at any time of the year, but are most frequent during springtime.

The prevailing winds are from the south to southeast throughout most of the state from the spring through autumn months. These prevailing winds typically are from the south to southwest in far western Oklahoma including the panhandle. The winter wind regime is roughly equally split between northerly and southerly winds.

In addition to the air quality information in the Oklahoma RMP, new information about greenhouse gases (GHGs) and their effects on national and global climate conditions has emerged since the RMP was prepared. Global mean surface temperatures have increased nearly 0.8°C (1.4°F) from 1880 to 2012 (Goddard Institute for Space Studies, 20113). 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.

GHGs that are included in the US GHG Inventory are: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). CO<sub>2</sub> and CH<sub>4</sub> 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 CO<sub>2</sub>; CH<sub>4</sub>, N<sub>2</sub>O; 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 CO<sub>2</sub> concentrations to increase dramatically, and are likely to contribute to overall climatic changes. Increasing CO<sub>2</sub> 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 increase 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 lease parcel and subsequent actions of oil and gas development.

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 CO<sub>2</sub> and CH<sub>4</sub>) 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.

### **3.3 Soils**

Oklahoma’s varied climate and topography have combined to produce broad differences in state soils. In the eastern part of the state soils have been developed where leaching is intense, and conditions are humid. These conditions have produced soils low in phosphorus and potassium, while at the same time being moderately to strongly acidic. Western soils, being developed in an area of lesser rainfall are usually light red in color, less leached than eastern soils, moderately acidic, and low in phosphorous and nitrogen. Soils in the panhandle of Oklahoma contain large amounts of lime, are neutral to alkaline at the surface, with accumulations of calcium carbonate found at shallow depths. Nitrogen levels tend to be low, but do not contribute to being as much of a limiting factor in production and management as wind erosion.

The Natural Resource Conservation Service (NRCS) has surveyed the soils in the proposed parcel areas. The soil map units represented in the proposed lease parcels are in Appendix 3. A total of 43 different soil types were identified.

The NRCS has also assigned a wind erodibility index value to each soil type. The value indicates the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion. Six index values were identified from the 16 proposed parcels ranging from 38 to 220 tons per year (Table 6). The higher the value indicates higher susceptibility and more tons per acre lost per year from wind, with the highest value being 330.

**Table 6. Wind erodibility index value for each soil type and associated parcels.**

Index Value	Soils	Parcels	Acres	Percent of Total Acreage
No rating	Water	-116, -121, -122, -123, -125, -126, -127, -129	459.5	10.3
38	PuA, 1	-116, -118	4.6	0.1
48	Pm, Dc, CeB, Wa, NeC2	-118, -119, -121, -122, -127	90.1	2.0
56	21, Ca, Lo, Rb, NeC, QwE, VaA, VaB, VaC, VaD, WbC, WoC, WwC	-116, -121, -122, -125, -127, -128, -129, -130, -131	821.8	18.4
86	Ad, Br, Ca, CsA, EfB, EfC, EfD, EfE, Et, Lc, Ln, MaB, MfB2, MfD, MnE, Mp, No, Ps, ShA, ShB, ShC, Sp, Wa, WdB, Ya, Yf	-117, -121, -122, -123, -124, -125, -126, -127, -128, -129, -130	1897.7	42.4
134	15, Bf, DxB, DxC, Lm, Ls, PpB, PpC, PrB, PrC, Pt, Sa, Wt	-116, -120, -121, -123, -124, -125, -126, -127, -129	538.4	12.0
220	NcC, TrD, Tv	-120, -123, -124, -125, -126, -128	663.2	14.8

The NRCS has also assigned an erosion Factor K, which indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised USLE to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Nine values were identified for the proposed lease parcels ranging from .15 to .49 (Table 7).

**Table 7. Factor K values of the soil types in the proposed lease parcels.**

Factor K	Soils	Parcels	Acres	Percent of Total Acreage
No rating	Water	-116, -121, -122, -123, -125, -126, -127, -129	459.5	10.3
.15	NcC, PpB, PpC, PrB, PrC, Pt, TrD, Tv,	-120, -123, -124, -125, -126, -127, -128	1109.6	24.8
.17	15, Bf, Lm, Ls, Sa, Wt	-116, -120, -121, -123, -125, -129	57.8	1.3
.20	Ca, DxB, DxC, MfB2, MfD, Ps, Wa, WdB, Ya, Yf	-121, -123, -124, -126, -127	508	11.4
.24	Ca, EfB, EfC, EfD, EfE, Et, MnE, ShA, ShB, ShC,	-121, -123, -124, -125, -126, -129, -130	392	8.8
.28	Ln, Sp	-126, -127, -129	228.5	5.1
.32	Ad, Ca, CsA, Dc, MaB, Mp, Pm, PuA	-117, -118, -119, -121, -123, -125, -126, -127, -128, -129,	598.5	13.4
.37	1, 21, Br, CeB, Lc, Lo, QwE, Rb, VaA, VaB, VaC, VaD, Wa, WbC, WoC, WwC	-116, -121, -122, -125, -126, -127, -130, -131,	1080.5	24.1
.43	No	-130	14.0	0.3
.49	NeC, NeC2, Wa	-121, -122	26.9	0.6

## **3.4 Water Resources**

### **3.4.1 Surface water**

Oklahoma's abundant surface water resources include rivers, streams, and man-made reservoirs. Oklahoma has 12 major river basins: the Main Stem of the Arkansas, Salt Fork of the Arkansas, Cimarron, Verdigris, Neosho, Illinois, North Canadian, Deep Fork, Red-main stem, North Fork Red, and the Washita.

Precipitation is the source of virtually all surface water in the State. The entire state is drained by the Arkansas and Red Rivers and their tributaries. A large number of reservoirs, lakes, and ponds have been constructed on rivers and streams for flood control and to provide a dependable supply of surface water for municipalities, irrigation, recreation, and generation of electricity. About 80 percent of all water used by municipalities and industries is taken from surface water sources. The State reservoirs with the largest volume of water are Texoma, Eufaula, Grand, Broken Bow, Tenkiller, and Keystone Lakes. The McLellan-Kerr Arkansas River Navigation System provides year round ocean access for barge traffic as far north as Tulsa's Port of Catoosa.

#### ***Pottawatomie County***

The major streams of the county including the North Canadian River, Little River, Salt Creek, and Canadian River enter from the west and generally flow eastward to the Arkansas River. Approximately 3.6 acres of the proposed parcel is covered by the North Canadian River about 0.75 miles east of the junction of the North Canadian River and Rock Creek. Pottawatomie County is dotted with an abundance of small water bodies and two recreation lakes (Shawnee Reservoir and Tecumseh Lake). There are three mapped water bodies <0.5 miles from the proposed parcel and fourteen mapped water bodies greater than 0.5 miles but less than 1.0 mile from the proposed lease parcel.

#### ***Texas County***

The Beaver River is the principal stream in the county. It enters the southwestern corner of the county, flows northeast to about the center, and then flows eastward into Beaver County. Its main tributaries are Goff Creek, which drains the northwestern part of the county; Coldwater and Frisco Creeks, which drain the southern part; and Palo Duro Creek, which drains the southeastern corner. There are several small creeks, but these provide limited drainage. More than 500 farm ponds and small unnamed water bodies provide water for livestock. A few springs along the Beaver River and some of the creeks—principally Palo Duro and Coldwater—also provide water for such use.

Chiquita Creek lies about 300 feet to the west of proposed parcel -117. The proposed parcel is >10 miles south of the Beaver River. There are three mapped water bodies <0.5 miles from the proposed parcel and three mapped water bodies greater than 0.5 miles but less than 1.0 mile from the proposed lease parcel.

#### ***Beaver***

The county drains mainly eastward at a grade of about 10 to 20 feet per mile. The Beaver River accounts for about three-fourths of the drainage, and the Cimarron River accounts for the remaining one-fourth.

The Beaver and Cimarron Rivers contain flowing water in wet periods but cease flowing in dry periods. Most of the streams that originate in the upland plains, such as the Kiowa, Camp, Duck Pond, Clear, Willow, and Jackson Creeks in the southern part of the county, are spring fed. These streams carry water for a considerable part of the year, but cease during dry periods.

Proposed parcels -118 and -119 are east of Clear Creek about 3.3 and 1.3 miles, respectively. They are also 1.6 and 3.0 miles northwest of Duck Pond Creek. Both parcels are >20 miles south of the Beaver or Cimarron Rivers. There are two mapped water bodies <0.5 miles from -118 and two mapped water bodies greater than 0.5 miles but less than 1.0 mile from the proposed parcel. There are one mapped water body <0.5 miles from -119 and five mapped water bodies >0.5 miles but <1.0 mile from the proposed parcel.

### ***Major***

The county is dissected in the northern and eastern parts by the Cimarron River and in the southwestern corner by the North Canadian River.

Hoyle Creek bisects proposed lease parcel -120 through the length of the parcel. Hoyle Creek intersects with Cimarron River about 2.8 miles south of the proposed parcel. The Cimarron River passes within 1.0 mile of the proposed parcel to the west. There are no mapped water bodies <0.5 miles from -120 and three mapped water bodies greater than 0.5 miles but less than 1.0 mile from the proposed parcel.

### ***Kay County***

Drainage over the county as a whole is good, and practically every square mile of land is either traversed by a drainage way or drained by a perceptible slope toward some small stream. In the more level areas in the western and northwestern parts of the county drainage is not as well established and water stands on the surface for some time after heavy rains.

The entire county is drained by the Arkansas River and its tributaries, the more important of which are the Salt Fork of the Arkansas, the Chikaskia River, and Beaver, Bois d'Arc, Duck, Bitter and Deer Creeks. The streams have fairly rapid currents and are actively cutting their channels deeper. Bear Creek passes through proposed parcel -121 and Wildcat and Coon Creeks pass through proposed parcel -122 each smaller tributaries of the Arkansas River that drain into Kaw Lake through the parcels. Sweetwater, Cat, and Possum Creeks pass within 1 mile of the proposed parcels draining into Kaw Lake.

Approximately 100.9 acres (13.5%) of proposed parcel -121 and 200.6 acres (52.8%) of proposed parcel -122 underlie Kaw Lake. The reservoir covers approximately 17,040 acres and is the seventh largest lake in Oklahoma by surface area. At normal levels the lake holds 428,600 acre-feet of water, the ninth largest lake in capacity in Oklahoma. A 9,466 foot long and 121 feet high dam was constructed across the Arkansas River to create the reservoir.

There are five mapped water bodies <0.5 miles from -121 and 14 mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcel. There are four mapped water bodies <0.5 miles

from -122 and 21 mapped water bodies greater than 0.5 miles but less than 1.0 mile from the proposed parcel.

### ***Blaine County***

Blaine County is drained by the Cimarron River and its tributaries in the northeastern section and by the Canadian River in the southwestern part. The highland between these two valleys is drained by the North Canadian River. The Cimarron, North Canadian, and South Canadian Rivers flow south-eastward through the county. Canton Lake is a man-made lake created in 1948 by the US Army Corps of Engineers that straddles Blaine and Dewey Counties. An earthen structure about 68 feet high and 15,140 feet long dammed the North Canadian River to create a 383,000 acre-foot reservoir as a recreation and municipal resource. Approximately 0.6 acres of Canton Lake covers proposed parcel -123 and -124 is <300 feet east of the high water line.

There are two mapped water bodies <0.5 miles from proposed parcels -123 and -124, including Canton Lake and nine mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcels. Sand Creek, about 2.5 miles east of the proposed parcels, is the next closest stream to the parcels.

### ***Dewey County***

Dewey County is drained by the North Canadian River and its tributaries in the northeastern part. The central and eastern portion is drained by South Canadian and the extreme southern and southwestern part by the tributaries of the Washita River. The North Canadian River passes through a one-mile stretch of proposed parcel -126, a 0.5 mile stretch of -127, and a 0.3 mile stretch of -129. Approximately 30.2 acres of the three proposed parcels are covered by water from the North Canadian River. Proposed parcel -128 is about 0.2 miles south of the North Canadian River.

Several ponds and small springs exist throughout the county and contribute to the flow of some of the larger creeks. Canton Lake is in the northeastern corner of the county and crosses into the northwest corner of Blaine County (see description under Blaine County). Approximately 123.6 acres of proposed parcel -125 underlies Canton Lake. Proposed parcel -127 is <0.2 miles south of the most western edge of Canton Lake, while parcels -126, -128, and -129 are >1.0 mile west of Canton Lake.

There are two mapped water bodies <0.5 miles from proposed parcel -125 and two mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcel. There are three mapped water bodies <0.5 miles from proposed parcel -126 and three mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcel. There are no mapped water bodies <0.5 miles from proposed parcel -127 and two mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcel. There are two mapped water bodies <0.5 miles from proposed parcel -128 and four mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcel. There is one mapped water body <0.5 miles from proposed parcel -129 and no mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcel.

**Roger Mills County**

Approximately three-fourths of the county is drained by the easterly flowing Washita River, which flows through the central part. The Canadian River drains a strip averaging about 5-6 miles wide along the northern boundary. Sweetwater Creek drains a small tract in the southwestern part of the county, and small areas along the southern boundary are drained by other tributaries into the Red River.

Proposed parcel -130 lies about 0.3 miles east of the Washita River, while -131 lies about 0.3 miles west of the River. There is one mapped water body (<1.0 acre) within proposed parcel -130, six mapped water bodies <0.5 miles from the proposed parcel, and four mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcel. There is one mapped water body <0.5 miles from proposed parcel -131 and seven mapped water bodies more than 0.5 miles but less than 1.0 mile from the proposed parcel.

**Watersheds of the Proposed Parcels**

The sixteen proposed parcels lie within seven HUC 8 watersheds (Table 8) as designated by EPA. Each watershed has undergone water quality assessments, which begins with water quality standards that were adopted by the State and approved by EPA under the Clean Water Act. Where possible, state, tribes and other jurisdictions identify pollutants or stressors causing water quality impairment that prevent the waters from meeting the criteria adopted by the states to protect designated uses. Causes of impairment include chemical contaminants (such as PCBs, metals, and oxygen-depleting substances), physical conditions (such as elevated temperature, excessive siltation, or alterations of habitat), and biological contaminants (such as bacteria and noxious aquatic weeds).

**Table 8. Watersheds of the proposed lease parcels.**

<b>Watershed</b>	<b>Parcel</b>	<b>Acres</b>	<b>Watershed Impairments</b>	<b>Nearest Impaired Water</b>
Lower North Canadian (HUC 8 11100302)	-116	17.700	<i>Cadmium</i> , Color, <b>Enterococcus Bacteria</b> , pH, Sulfates, Thallium, Dieldrin, Oil and Grease, <b>Turbidity</b> , Chloride, Fecal Coliform, Lead, Nitrates, Dissolved Oxygen, Selenium, E. Coli, Sedimentation/Siltation, Total Dissolved Solids (TDS)	North Canadian River crosses through parcel (≈0.3 mile stretch)
Palo Duro (HUC 8 11100104)	-117	11.505	Enterococcus Bacteria, Sulfates, Turbidity, Fecal Coliform, Dissolved Oxygen, Selenium, E. Coli, TDS	Palo Duro Creek >6.0 miles east
Lower Beaver (HUC 8 11100201)	-118, -119	31.950	Enterococcus Bacteria, Fish bioassessments, Sulfates, Thallium, Chloride, Fecal Coliform, Lead, E. Coli, Sedimentation/Siltation, TDS	Duck Pond Creek >4.0 miles west

Watershed	Parcel	Acres	Watershed Impairments	Nearest Impaired Water
Lower Cimarron-Skeleton (HUC 8 11050002)	-120	21.900	Enterococcus Bacteria, Sulfates, Thallium, Chlorophyll-A, Turbidity, Chloride, Fecal Coliform, Chlorpyrifos, Nitrates, Dissolved Oxygen, Selenium, E. Coli, Sedimentation/Siltation, TDS	Cimarron River >1.0 miles east
Kaw Lake (HUC 8 11060001)	-121, -122	1128.260	<i>Color</i> , Enterococcus Bacteria, Sulfates, <b>Turbidity</b> , Fecal Coliform, <b>Dissolved Oxygen</b> , E. Coli, TDS	Bear Creek passes through -121 (≈0.3 mile stretch) and Coon Creek passes through -122 (≈0.9 mile stretch); Upper Kaw Lake within both parcels (301.5 acres)
Middle North Canadian (HUC 8 11100301)	-123, -124, -125, -126, -127, -128, -129	2977.540	Cadmium, <b>Enterococcus Bacteria</b> , Fish Bioassessments, Sulfates, <b>Thallium</b> , Dieldrin, Oil and Grease, <b>Turbidity</b> , Fecal Coliform, Lead, Dissolved Oxygen, E. Coli	North Canadian River passes through -126 (≈1.0 mile stretch), -127 (≈0.5 mile stretch), -129 (≈0.3 mile stretch) and is 0.2 miles north of -128; Canton Lake within -123 and -125 (124.2 acres) and <300 feet west of -124
Washita Headwaters (HUC 8 11130301)	-130, -131	280.000	Enterococcus Bacteria, Fish Bioassessments, Sulfates, Thallium, Turbidity, Fecal Coliform, Lead, E. Coli, Sedimentation/Siltation, TDS	Washita River >0.3 miles west of -130 and >0.3 miles east of -131

*Italicized words:* Previously impaired in proposed parcel, but currently meeting standards

**Bold words:** Reason for impairment in proposed parcel

### 3.4.2 Groundwater

Groundwater can be found throughout most of the state and is considered one of the states' most valuable resources. Groundwater supplied 18 percent of the state's drinking water. About 14.7% of the state's fresh groundwater withdrawals were for public water supply system uses. Reported domestic groundwater withdrawals in 2000 accounted for 3.3 percent of total withdrawals from the state's aquifers. Irrigation accounted for 74.5 percent of groundwater withdrawal and is the largest single use of freshwater in the state in 2000. Industrial, mining, and power generation accounted for 1.6 percent of groundwater withdrawals in 2000 (EPA 2009).

The Oklahoma Water Resources Board (OWRB) lists twenty-one major aquifers in Oklahoma. There are two types: alluvial and terrace aquifers and bedrock aquifers. Alluvial and terrace aquifers consist of sand and gravel along major rivers, including the North Canadian and Cimarron Rivers. Bedrock aquifers, such as the Central Oklahoma, the Rush Springs, Ogallala, and the Ozark Plateau aquifers, cover large areas of the state and consist of hardened materials ranging from sandstone to limestone and gypsum. Large areas of the state generally contain local, low yield aquifers or do not produce groundwater (EPA 2009).

Naturally occurring salt water is found at several localities in the alluvial and terrace aquifers, especially in the western part of the State, and saltwater has intruded from deeper layers into the aquifers along the Cimarron and Salt Fork of the Arkansas River. Nitrate is the most commonly reported contaminant in Oklahoma and is usually associated with land application of chemical fertilizers for crop production and the operation of animal feeding operations which produce large amounts of animal water. The three alluvial and terrace aquifers underlying the 10 proposed parcels have been identified by the OWRB as having very high groundwater vulnerability. The alluvial and terrace deposits along the major rivers are especially vulnerable because they consists of coarse-grained sediments which allow easy infiltration of surface waters and because the availability of water make them attractive sites for agriculture (EPA 2009). Fifteen of the proposed parcels are within one of five major or minor aquifers, while one parcel is not within any aquifer (Table 9).

**Table 9. Aquifers underlying the proposed lease parcels.**

<b>Aquifer</b>	<b>Parcel</b>	<b>Acres</b>	<b>Type</b>
North Canadian River (major)	-116, -123, -124, -125, -126, -127, -128, -129	2995.24	Alluvial and Terrace
Ogallala (major)	-117, -118, -119	43.45	Bedrock
Cimarron River (major)	-120	21.90	Alluvial and Terrace
Washita (major)	-131	240.00	Alluvial and Terrace
North Central Oklahoma (minor)	-121, -122	1128.26	Bedrock
Not in a major or minor aquifer	-130	240.00	--

Freshwater stored in Oklahoma’s aquifers results from downward movement of precipitation and surface waters that enter each aquifer at its recharge area. The system is dynamic; aquifers are recharged continually by percolation down to the water table. The rate of ground-water movement in the state’s aquifers is highly variable, probably three to one hundred feet per year in most aquifers, and may reach one hundred to one thousand feet (or more) per year, where the rock is highly porous, cavernous, or fractured (EPA 2009).

Long term groundwater level declines have not been as serious in Oklahoma as in surrounding states. Severe drought conditions in recent years are affecting the state’s aquifers’ ability to recover from earlier and continuing declines. When there is an increase in rainfall water levels in most alluvial aquifers can recover more quickly from declines, while the bedrock aquifers do not responded as quickly to precipitation they can maintain or experience minimal increased water level changes. Probably the greatest protection against overuse of groundwater has come from the permit system operated by OWRB to limit withdrawals (EPA 2009).

### **3.5 Floodplains, Wetlands, Riparian Areas**

#### **3.5.1 Floodplains**

For administrative purposes, the 100-year floodplain serves as the basis for floodplain management for Federal actions. These are in general relatively narrow areas along natural drainage ways that carry large quantities of runoff following periods of high precipitation.

Flooding does occur through the state and varies widely, but generally increases from west to east. Flood damages vary according to floodplain use and extent of development. Many towns and cities in Oklahoma are located in floodplains and have historically experienced flood damages.

Proposed lease parcels -116, -120, -121, -122, -123, -124, -125, -126, -127, -128 and -129 lie within a mapped floodplain. Parcel -117, -118, -119, -130, and -131 are not within a mapped floodplain.

### 3.5.2 Wetlands, Riparian Areas

Wetland habitats provide important wintering and migration habitat for several species of Migratory Birds. Wetlands also provide a link between land and water and are some of the most productive ecosystems in the world. Executive Order (EO) 11990 on the Protection of Wetlands provides opportunity for early review of Federal agency plans regarding new construction in wetland areas. Under EO 11990, each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency’s responsibilities for conduction federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating and licensing activities.

The U.S. Fish and Wildlife (USFWS) National Wetlands Inventory database was accessed to determine if wetlands or wetland issues exist within the proposed parcels (Table 10).

**Table 10. Wetland areas or issues within the proposed lease parcels.**

Parcel	Wetland Area/Issues
-116	Freshwater Forested/Shrub Wetland, Riverine, Freshwater Pond
-120	Freshwater Forested/Shrub Wetland
-121, -122, -123, -125	Freshwater Emergent Wetland, Lake, Freshwater Forested/Shrub Wetland
-124, -129	Forested/Shrub Riparian Wetland
-126	Freshwater Forested/Shrub Wetland, Forested/Shrub Riparian Wetland
-127	Freshwater Forested/Shrub Wetland, Freshwater Emergent Wetland, Riverine Wetland
-128	Forested/Shrub Riparian, Riverine, Freshwater Forested/Shrub Wetland, Freshwater Emergent Wetland
-117, -118, -119, -130, -131	Not in a wetland area

### 3.6 Farmlands, Prime or Unique

The Farmland Protection Policy Act (FPPA), Public Law 97-98, as amended, directs Federal agencies to identify and take into account the adverse effects of Federal programs on the preservation of farmland. The FPPA is intended to minimize the extent Federal programs have on the conversion of farmland to nonagricultural uses. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed crops, and is also available for these uses. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. Unique farmland is land other than prime

farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop.

The NRCS Web Soil Survey and Soils Data system identified 43 different soil types within the 16 proposed lease parcels. Twenty-one soil types were identified as “Not Prime Farmland,” totaling 2595.7 acres or 58.0 percent of the total acreage of all proposed lease parcels. Twenty-two soil types were identified as “All areas are prime farmland,” totaling 1879.6 acres or 42 percent of the total acreage of all proposed lease parcels. See Appendix 3 for soils classified as “Not prime farmland” or “All areas prime farmland” along with the associated parcels and acreages.

## **3.7 Heritage Resources**

### **3.7.1 Cultural Resources**

Approximately 19,000 archeological sites are recorded in Oklahoma and over 2,500 historic properties in the state are listed on the National Register of Historic Places.

To comply with Section 106 of the National Historic Preservation Act (NHPA), as amended, a cultural resources background review was conducted. A Class I cultural resource review was done on each parcel and no historic properties were identified, although some parcels have known archeological sites within them. No properties of concern were within the area of potential effect (APE). A section 106 review at the lease sale stage is helpful in that it is a first look at parcels to see if concerns about historic properties are warranted, and possibly to determine if a parcel should be withdrawn from the lease sale process due to concerns about historic properties.

### **3.7.2 Paleontology**

The extent, if any, of paleontological resources within the APE are unknown. During the APD phase, site-specific surveys would be completed and included with the cultural resource report and include statements on any new paleontological material discovered during inventory. These reports are reviewed and new fossil material is reported to paleontologists.

### **3.7.3 Native American Religious Concerns**

Traditional Cultural Properties (TCPs) are places that have cultural values that transcend the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites. Native American communities are most likely to identify TCPs, although TCPs are not restricted to those associations. Some TCPs are well known, while others may only be known to a small group of traditional practitioners, or otherwise only vaguely known.

There are several pieces of legislation or Executive Orders that should be considered when evaluating Native American religious concerns. These govern the protection, access and use of sacred sites, possession of sacred items, protection and treatment of human remains, and the protection of archaeological resources ascribed with religious or historic importance. These include the following:

- The American Indian Religious Freedom Act of 1978 (AIRFA; 42 USC 1996, P.L. 95-431 Stat. 469).
- Executive Order 13007 (24 May 1996).
- The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA; 25 USC 3001, P.L. 101-601).
- The Archaeological Resources Protection Act of 1979 (ARPA; 16 USC 470, Public Law 96-95).

For the Proposed Action, identification of TCPs were limited to reviewing existing published and unpublished literature, and BLM tribal consultation efforts specific to this proposed. The tribes replied with no concerns and the literature review did not indicate any TCPs. No TCPs are known to exist within the APE.

### **3.8 Invasive, Non-native Species**

Noxious weeds can have a disastrous impact on biodiversity and natural ecosystems. Noxious weeds affect native plant species by out-competing native vegetation for light, water and soil nutrients. Noxious weeds cause \$2 to \$3 million in estimated losses to producers annually. These losses are attributed to: (1) decreased quality of agricultural products due to high levels of competition from noxious weeds; (2) decreased quantity of agricultural products due to noxious weed infestations; and (3) costs to control and/or prevent the spread of noxious weeds.

The State of Oklahoma has listed three noxious weeds and has them as a public nuisance in all counties across the state and mandated that they be treated, controlled, and eradicated. The three plants are: musk thistle (*Carduus nutans*), Scotch thistle (*Onopordum acanthium*), and Canada thistle (*Cirsium arvense*).

- Musk thistle can be found on all types of land except deserts, dense forests, high mountains, coastal areas, and newly cultivated fields. It is most often described as occurring on disturbed sites and waste areas, and along roads.
- Cotton thistle prefers habitats with dry summers, growing best in sandy, sandy clay and calcareous soils which are rich in ammonium salts. It grows in ruderal places, as well as dry pastures and disturbed fields and prefers natural areas, disturbed sites, roadsides, fields and especially sites with fertile soils, agricultural areas range/grasslands, riparian zones, scrub/shrublands valleys and plains along with water courses.
- Canada thistle is most common in open, mesophytic areas and grows in a wide variety of soils, including sand dunes, but is most abundant in clayey soils. Disturbance is necessary for initial establishment, but once established it can rapidly spread by both rhizomes and seeds.

Suitable habitat, in the form of disturbed sites, roadsides, fields, and agricultural areas, occurs on all of the proposed lease parcels. There is potential that all three plants may be present on the proposed parcels, although the extent is unknown.

### 3.9 Vegetation

Oklahoma’s ecological diversity is strongly related to its varied climate, terrain, geology, soil, and land use. In Oklahoma, forests cover most of the Ozark Plateau and the Ouchita Mountains; they become progressively more stunted and open westward. Southern pine forests, typical of Gulf Coastal Plains, occur in the southeast. Tall grass prairie, mixed grass prairie, and short grass prairie are native to central and western Oklahoma. Mesquite and other xeric plants characterize the dry southwest. Much of Oklahoma’s natural vegetation has been lost to overgrazing, burning, logging, erosion, and cultivation. Today, the state is a mosaic of grazing land, cropland, woodland, forest, and abandoned farmland. Wheat and alfalfa are the main crops. Grain sorghum is well adapted to sandy soils. Soybeans are becoming increasingly common on eastern plains and on moister parts of the prairie. Cotton is now concentrated on irrigated farmland in the southwest. Corn, once a major Oklahoma crops, has declined in importance due to soil depletion and periodic droughts.

Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. A Roman numeral hierarchical scheme has been adopted for different levels of ecological regions. Level I is the coarsest level, dividing North American into 15 ecological regions. Level II divided the continent into 52 regions. At level III, the continental U.S. contains 104 regions whereas the conterminous U.S. has 48. Level IV ecoregions are further subdivisions of level III ecoregions. In Oklahoma, there are 12 level III ecoregions and 46 level IV ecoregions; all but 12 of the level IV ecoregions continue into ecologically similar parts of adjacent states. Table 11 describes the level IV ecoregions covering the proposed lease parcels.

**Table 11. Ecoregion the proposed lease parcels.**

Parcels	Level III Ecoregion (EPA region)	Level IV Ecoregion (EPA region)	Description of Level IV Ecoregion
-116	Cross Timbers (25)	Northern Cross Timbers (29a)	Naturally covered by a mosaic of oak savanna, scrubby oak forest, eastern redcedar, and tall grass prairie. Native on porous, coarse-textured soils derived from sandstone are post oak, blackjack oak, and understory grasses. Tall grass prairie naturally occurs on fine-textured soils derived from limestone or shale. Today livestock farming is the main land use; cropland is less extensive than in the Central Great Plains ecoregion and rangeland is less widespread in the High Plains ecoregion.
-117, -118, -119	High Plains (28)	Canadian/Cimarron High Plains (28a)	Natural vegetation is short grass prairie that is distinct from the mixed grass and tall grass prairies of moister ecoregions to the east; it is adapted to the ecoregion’s limited, erratic precipitation and high evaporation rates. Today groundwater-irrigated cropland, mainly growing wheat and grain sorghum, is extensive. Rangeland is found on land that is too sandy or too rugged for farming; it has been widely overgrazed.
-120, -127, -122 (32 acres), -123 (217 acres), -124 (287 acres), -125 (519 acres)	Central Great Plains (27)	Prairie Tableland (27d)	Natural vegetation is mixed grass prairie; it is distinct from the sand sagebrush-bluestem prairie of other ecoregions. It has a greater natural vegetation density, less rainfall variability, less evaporation, and receives more precipitation than neighboring ecoregions.
-121, -122 (357 acres)	Flint Hills (28)	Flint Hills (28a)	Rangeland and grassland predominate. Extensive cropland and major hydrological modifications do not occur.

Parcels	Level III Ecoregion (EPA region)	Level IV Ecoregion (EPA region)	Description of Level IV Ecoregion
-123 (98 acres), -124 (91 acres), -125 (108 acres), -126 (60 acres)	Central Great Plains (27)	Pleistocene Sand Dunes (27i)	Sandy soils support sagebrush-bluestem prairie, but where moisture is sufficient, oak savanna stabilizes dunes. Grazing is the most common land use, but irrigated cropland is found on soils that can retain sufficient moisture. Local overgrazing has occurred, promoting wind erosion.
-128, -129, -130, -131	Central Great Plains (27)	Rolling Red Hills (27q)	Upland natural vegetation is mostly mixed grass prairie. In addition, shinnery grows on sand flats and hills in the west, and short grass prairie is found on high elevation, sandy sites in the northwest. Eastern redcedar is becoming increasingly widespread on uplands. Ravines are wooded. During the 1930s, drought and poor soil conservation practices contributed to widespread farm abandonment. Subsequently, many areas have been planted with introduced forage grasses and converted into managed grasslands. The ecoregion is mostly used as rangeland, but cropland occur on suitable, nearly level sites.

### 3.10 Wildlife

#### 3.10.1 Threatened and Endangered Species

The purpose of the Endangered Species Act (ESA) is to ensure that federal agencies and departments use their authorities to protect and conserve endangered and threatened species. Section 7 of the ESA requires that federal agencies prevent or modify any projects authorized, funded, or carried out by the agencies that are "likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of critical habitat of such species."

Five birds and two fish species, federally listed as endangered, threatened, or as rare species of special concern occur or have the potential to occur within Pottawatomie, Texas, Beaver, Major, Kay, Blaine and Dewey Counties, Oklahoma (Table 12).

**Table 12. Federal and State Listed Threatened and Endangered Species and Species of Concern.**

Scientific Name	Federal Status	County	Habitat/Distribution
<b>Birds</b>			
<i>Charadrius melodus</i> Piping plover	Threatened	Pottawatomie, Texas, Beaver, Major, Kay, Blaine, Dewey, Roger Mills	<i>Habitat:</i> Mudflats, sandy beaches and shallow wetlands with sparse vegetation. They may be found along the margins of lakes and large rivers where there is exposed (bare) sand or mud.  <i>Distribution:</i> Two nesting records for in the OK panhandle. Normally a spring (April - early May) and fall (last week of July – late September) migrant throughout the state occurring across the main body of the state with recent records from Woodward, Alfalfa, Oklahoma, Cleveland, Tulsa and Washington Counties.

Scientific Name	Federal Status	County	Habitat/Distribution
<b>Birds (Continued)</b>			
<i>Tympanuchus pallidicinctus</i> Lesser Prairie-Chicken (LPC)	Proposed Threatened	Texas, Beaver, Dewey, Roger Mills	<i>Habitat:</i> Sand shinnery and sand sagebrush native rangelands of northwest OK  <i>Distribution:</i> Found in southeastern CO, southwestern KS, northwestern OK, Eastern NM, and TX Panhandle.
<i>Grus Americana</i> Whooping Crane	Endangered	Pottawatomie, Texas, Beaver, Major, Kay, Blaine, Dewey, Roger Mills	<i>Habitat:</i> Typically found in shallow wetlands, marshes, the margins of ponds and lakes, sandbars and shorelines of shallow rivers, wet prairies, and crop fields near wetlands while passing through OK each spring and fall during migration.  <i>Distribution:</i> Pass through the western half of OK – most sightings occur west of I-35 and east of Guymon in the panhandle. The migratory population consists of approximately 270 birds nesting in northern Canada and winter along the Gulf Coast of Texas.  Critical Habitat: Salt Plains National Wildlife Refuge, for use during the fall and spring migrations.
<i>Sterna antillarum</i> Interior Least Tern	Endangered	Pottawatomie, Texas, Beaver, Major, Kay, Blaine, Dewey, Roger Mills	<i>Habitat:</i> Live along large rivers and may be found hunting fish in shallow wetlands and the margins of ponds and lakes. They require bare sand and gravel for nesting; nest in small colonies of two to 20 pairs along large rivers on sand bars and scoured bends.  <i>Distribution:</i> Rare species found in OK during late spring and summer breeding seasons (mid-May - late August). In OK, they may be found on portions of the Arkansas, Cimarron, Canadian and Red Rivers. Colonies occur on salt flats such as the large one at Salt Plains National Wildlife Refuge.
<i>Vireo atricapilla</i> Black-Capped Vireo	Endangered	Blaine	<i>Habitat:</i> Found in low brushy thickets of deciduous trees such as oaks, redbuds and plums. Thickets are often found on thin, rocky soils that slow or stunt the growth of trees maintaining the low thickets vireos prefer.  <i>Distribution:</i> Two known in OK: 1 large population (>2,000 birds) in the Wichita Mountains of northern Comanche County and 1 small population (<30 birds) located in the canyon lands of northern Blaine County north of Watonga.

Scientific Name	Federal Status	County	Habitat/Distribution
<b>Fishes</b>			
<i>Etheostoma cragini</i> Arkansas Darter	Candidate	Texas, Beaver	<p>Habitat: Shallow, clear, cool water, sand or silt bottom streams with spring-fed pools and abundant rooted aquatic vegetation. Persist in large, deep pools during low-water periods when streams become intermittent in late summer.</p> <p>Distribution: Sites in extreme northwestern AR, southwestern MO, and northeastern OK, within the Neosho River watershed. Also occurs in watersheds and isolated streams in eastern CO, south-central and southwestern KS, and the Cimarron watershed in northwest OK.</p>
<i>Notropis girardi</i> Arkansas River Shiner	Threatened	Major	<p>Habitat: Inhabits the shallow braided channels of wide sandy prairie rivers in the Arkansas River system. Schools of shiners gather on the lee side of sandbars and ridges of sand in the river channel. They spawn after heavy summer rains. Their eggs drift with the water current and develop as they are carried downstream.</p> <p>Distribution: Nearly all of the remaining populations occur in the Canadian River in OK, western TX and eastern NM. A small population may persist in the Cimarron River in OK. An accidentally introduced, isolated population occurs in the Pecos River in southwest TX.</p> <p>Critical Habitat: Approximately 532 linear miles of 2 river reaches, including 300 feet of adjacent riparian areas measured laterally from each bank. Areas eligible for designation as critical habitat include portions of the Canadian River (South Canadian River) in NM, TX, and OK; Beaver/North Canadian River of OK; Cimarron River in KS and OK, and the Arkansas River in KS.</p>

### 3.10.2 Special Status Species

Wildlife species may be classified as threatened or endangered at either the state or the federal level. Federally, a species is listed as threatened or endangered under ESA and protection of the species is overseen by the USFWS. At a state level, Oklahoma has an endangered species statute that gives the state the authority to list a wildlife species as threatened or endangered within the state although it might not be classified as threatened or endangered federally through ESA. The Oklahoma Department of Wildlife Conservation (ODWC) is responsible for overseeing protection of the species. Currently, there

are four wildlife species listed as state-threatened or state-endangered. ODWC has not identified any of the four species as occurring or potentially occurring within any of the proposed parcel counties.

### 3.10.3 Migratory Birds

Executive Order (EO) 13186, 66 Fed. Reg. 3853, (January 17, 2001) identifies the responsibility of federal agencies to protect migratory birds and their habitats, and directs executive departments and agencies to undertake actions that will further implement the Migratory Bird Treaty Act (MBTA). Under the MBTA, incidental, unintentional, and accidental take, killing, or possession of a migratory bird or its parts, nests, eggs or products, manufactured or not, without a permit is unlawful. EO 13186 includes a directive for federal agencies to develop a memorandum of understanding (MOU) with the USFWS to promote the conservation of migratory bird populations, including their habitats, when their actions have, or are likely to have, a measurable negative effect on migratory bird populations.

**Table 13. Birds of Conservation Concern (BCC) known to breed and/or nest in or near the proposed parcels.**

Parcel	BCC Region (Region)	BCC Within Region	Survey Route Near Proposed Parcel	BCC Known to Breed and/or Nest In or Near the Proposed Parcel*
-116	West Gulf Coastal Plain/Ouachitas (25)	28	Pushmataha	Chuck-will's widow; red-headed woodpecker, Bewick's wren, prairie warbler, <i>Louisiana waterthrush</i> , Kentucky warbler, Bachman's sparrow, painted bunting, orchard oriole
-117	Central Mixed-Grass Prairie (19)	27	Beaver	Mississippi kite, <b>Swainson's hawk</b> , red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, <b>lark bunting</b> , <b>upland sandpiper</b> , <b>long-billed curlew</b> , <b>Cassin's sparrow</b>
-118, -119	Shortgrass Prairie (18)	16	Twichell	<b>Burrowing owl</b> , lark bunting
-120	Central Mixed-Grass Prairie (19)	27	Weches	<b>Swainson's hawk</b> , upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell's vireo, lark bunting
-121, -122	Eastern Tall Grass Prairie (22)	39	Foraker	<b>Upland sandpiper</b> , <b>short-eared owl</b> , whip-poor-will, red-headed woodpecker, northern flicker, loggerhead shrike, Bell's vireo, Bewick's wren, <b>field sparrow</b> , <b>grasshopper sparrow</b> , <b>Henslow's sparrow</b> , dickcissel
-123, -124, -125, -126, -127, -128, -129	Central Mixed-Grass Prairie (19)	27	Phroso	Mississippi kite, <b>Swainson's hawk</b> , <b>upland sandpiper</b> , red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell's vireo, <b>Cassin's sparrow</b>
-130, -131	Central Mixed-Grass Prairie (19)	27	Grimes	<i>Little blue heron</i> , <b>Swainson's hawk</b> , red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell's vireo, <b>Cassin's sparrow</b>

\* *Species in Underline and Italicized*: Wetland Associated Species; **Species in Bold**: Grassland Associated Species; All other species: Woodland or Scrub Associated Species

### **3.10.4 Wildlife**

Wildlife includes all non-domesticated plants, animals and other organisms. Several game species of interest inhabit the proposed lease parcel areas, such as dove, turkey, deer, rabbit, squirrels, raccoons, bobcats and coyotes, along with many species of songbirds. Due to the proposed parcels being located on privately owned surface, comprehensive biological inventories are not available.

### **3.11 Wastes – Hazardous or Solid**

The Resource Conservation and Recovery Act (RCRA) of 1976 established a comprehensive program for managing hazardous wastes from the time they are produced until their disposal. The EPA regulations define solid wastes as any “discarded materials” subject to a number of exclusions. On January 6, 1988, EPA determined that oil and gas exploration, development and production wastes would not be regulated as hazardous wastes under RCRA. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980, deals with the release (spillage, leaking, dumping, accumulation, etc.), or threat of a release of hazardous substances into the environment. Despite many oil and gas constituent wastes being exempt from hazardous waste regulations, certain RCRA exempt contaminants could be subject to regulations as hazardous substances under CERCLA.

No hazardous or solid waste materials are known to be present on any of the proposed lease parcels.

### **3.12 Mineral Resources**

Oklahoma’s mineral resources include: nonfuel minerals such as limestone, gypsum, salt, clays, iodine, and sand and gravel; coal; and petroleum. In recent years, the mineral industry has been the State’s greatest source of revenue. Although Oklahoma’s petroleum production accounts for about 95 percent of Oklahoma’s annual mineral output, nonfuel minerals and coal represent a significant part of the current economy and an important source of future wealth. Leading commodities produced include crushed stone, Portland cement, construction sand and gravel, industrial sand and gravel, iodine, and Grade A helium (USGS 2011). Other commodities now produced in Oklahoma, or for which there are current mining permits, include clays and shale, salt, lime, granite, rhyolite, dolomite, sandstone, volcanic ash, coal, and Tripoli. Deposits and resource that are not mined now, or with no current mining permits, include asphalt, lead, zinc, copper, iron, manganese, titanium, and uranium.

The Federal mineral estate (oil and gas) in Oklahoma totals 1,998,932 acres, with 330,800 (20%) acres currently leased. Most of the state is in a high oil and gas occurrence and development potential category (RMP 1993). Within each of the proposed lease parcel counties, oil and natural gas production is high (Table 14). Table 15 lists the major/economically profitable commodities occurring within the proposed lease parcel counties.

**Table 14. 2011 Oil and Natural Gas Production in the proposed lease parcel counties (OCC 2012).**

	Oil (bbl)	Natural Gas (MCF)
Pottawatomie	1,299,003	3,055,685
Texas	2,040,748	32,206,532
Beaver	1,779,984	28,956,078
Major	1,442,220	34,464,973
Kay	1,115,954	2,243,883
Blaine	502,175	37,286,639
Dewey	1,438,647	27,637,516
Roger Mills	2,279,110	77,438,182

**Table 15. Mineral deposits and resources in the proposed lease parcel counties (USGS 2008).**

	Salt	Volcanic Ash Locations	Sand and/or Gravel	Bentonite	Gypsum	Limestone/Dolomite	Copper Occurrence	Iodine
Pottawatomie	--	--	7 Pt	--	--	--	--	--
Texas	A	1 D	3 Pt	--	--	--	--	--
Beaver	A	5 D; 1 Pt	3 Pt	--	--	--	--	--
Major	A	1 D	1 Pt	--	P; 1 Q	P	--	--
Kay	--	1 D	2 Pt	--	--	P; 1 Q	--	--
Blaine	P	1 D	--	--	P; 6 Q	P; 1 Q	2	--
Dewey	A	1 D	4 Pt	1 Pt	--	--	--	Plant
Roger Mills	A	--	1 Pt	1 D	--	--	--	--

A: All of the County      P: Portions of the county      D: Deposit      Pt: Pit      Q: Quarry

### 3.13 Visual Resources

BLM Manual H-8410-1 lays out the visual resource inventory process for determining visual values. The inventory consists of scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones. The purpose of the analysis is to determine the area’s Visual Resource Management Class (VRM), which defines the degree of acceptable visual change within a characteristic landscape on BLM lands. Because the proposed parcels are on private surface a VRM class has not been established for the areas.

The existing landscape throughout all of the proposed parcel counties include oil and gas development visual impacts from facilities, lease roads, pipelines, utility lines, and above ground components such as tanks, pumpjacks, wellheads, fences, and signs. Visual impacts from agricultural/farming activities include croplands, pastures, outbuildings (i.e. barns, storage sheds, and chicken coups), irrigation pipes/ditches/pivots, and improved and unimproved roads to access outbuildings, crops, pastures, etc. Oil/gas development and agriculture/farming production facilities are readily visible from residences, highways, and country roads in all of the counties, including each proposed parcel.

Proposed parcels -121 through -129 are in or near developed recreation areas where water resources and bank vegetation is an important value that has not been drastically altered from the natural state. In the recreation areas, boat launches, buildings, camping spots, trails, and roads are common in addition

to the increase in visitors as opposed to the proposed parcels not near a recreation area. Outside the recreation areas, the landscape described in the previous paragraph applies.

Proposed parcel -116 is <2.0 miles from Interstate 40. The remaining 15 proposed parcels are >20.0 miles from any interstates passing through Oklahoma. All 16 proposed parcels are <10.0 miles from State Highways.

### **3.14 Recreation**

With more than 12 different ecoregions across the state, Oklahoma offers a diverse collection of wildlife species to watch, hunt, or fish. Through intense habitat conservation and management ODWC is able to provide quality hunting opportunities across the state for species such as: antelope, bear, dove, crane, deer, elk, furbearers (e.g. coyotes, bobcat, raccoon), feral hogs, mountain lion, quail, peregrine, pheasant, rabbit, squirrel, turkey, and waterfowl. With more than 200 lakes and over one million surface acres of water, Oklahoma is well known for its fishing opportunities of more than 40 documented fish species the most common being bass, crappie, sunfish, and catfish.

Outdoor recreation occurs in or near each of the proposed parcels to some degree in the form of hunting, wildlife watching, atv/orv riding, equestrian riding, and hiking. Because proposed parcels -116 through -120, -130, and -131 are on private land, the degree of recreation in or near each proposed parcel is limited by access. Recreation on these parcels typically is limited to individuals who have permission to access the land from the landowner. Parcels -121 through -129 is public land owned by the Army Corp of Engineers (ACOE) and is accessible by all of the public.

Proposed parcels -121 and -122 are within the Kaw Lake Recreation Area. Kaw Lake offers numerous outdoor activities such as boating, skiing, swimming, picnicking, camping, hunting, and fishing. Recreation area around Kaw Lake include boat launching ramps, group camping sites, picnic and camping sites, playgrounds, designated swim beaches, hiking and equestrian trails. Most campsites have RV hookups. Public hunting land around the Lake traditionally produces one of the highest harvest rates of white-tailed deer anywhere in Oklahoma. Other game species include bobwhite quail, dove, squirrel, rabbit, turkey, and pheasant. Kaw Lake has excellent habitat for channel, flathead and blue catfish, crappie, sand bass, walleye, and striped bass/white bass hybrids. The waters below Kaw Dam provide anglers additional opportunities for species liking shallow, colder, or stream/river-like conditions. The spoonbill catfish, or paddle fish, is a commonly sought after rare throwback from prehistoric days.

Proposed parcels -123 through -129 are within the Canton Wildlife Management Area (WMA) that is owned, licensed, leased or under the management of the ODWC. The Canton WMA covers 14,877 acres in Blaine, Dewey, and Major Counties in northwest Oklahoma and is located around Canton Lake. Hunting opportunities include: quail, deer, turkey, rabbit, furbearers, dove, and waterfowl. Primitive camping is available at designated areas along most access roads in the WMA. There is a rifle range on the eastern side of the WMA, north of Canton dam and offers a 200 yard range and covered shooting pavilion.

Canton Lake is owned and managed by the ACOE and offers extensive opportunity for outdoor recreation activities including: swimming, sunbathing, water skiing, boating, fishing, and camping. The Lake is famous for its abundance of walleye with sand bass, crappie, and catfish not far behind in popularity. There are more than 240 campsites available, including some with RV hookups.

### 3.15 Socioeconomics and Environmental Justice

#### 3.15.1 Socioeconomics

Oklahoma’s population of nearly 3.8 million is mostly urban, with almost 70 percent of the State’s population residing in cities or towns. While over 90 percent of the State’s land is in farms and ranches, the large size of typical Oklahoma farms and modern farming methods have resulted in relatively few people residing in rural areas.

Oklahoma’s economy is based upon a combination of agriculture production, manufacturing, service industries and mineral extraction. Manufacturing contributes \$18.6 billion to Oklahoma’s economy and has been the fastest growing industry in the state. The oil and gas industry is a major contributor to the Oklahoma economy bringing in \$15.9 billion through the extraction of more than 13 million barrels of oil and over 54 trillion cubic feet of natural gas (BEA 2012).

Oklahoma employed about 1,824,000 people in 2012, with 1,730,700 employed of which 1,600,500 were non-farm employees. The largest employer for the State is consistently the government, both state and local. Oklahoma’s labor force participation rates have remained relatively constant. The unemployment rate in 2012 hovered around 5.2 percent (BLS 2013).

In 2011, Oklahoma’s top commodities had a value of \$5,591 million with cattle and calves contributing to almost half of the value, followed by hogs and pigs, poultry and eggs, winter wheat, hay, corn, soybeans, cotton, peanuts, canola, pecans, grain sorghum, rye, watermelon, sunflowers, and oats, all of which had a production value of over \$1 million. Tables 16 and 17 describe the extent of farms/croplands and agriculture production within each of the proposed parcel counties.

**Table 16. Farms and Croplands in each of the proposed parcel counties in 2007 (USDA 2007).**

County	Farms			Cropland	
	Number	Total Acres	Average Size	Acres	Acres Harvested
Pottawatomie	1,777	395,065	222	127,444	77,769
Texas	1,038	1,205,978	1,162	656,356	324,455
Beaver	1,218	1,128,871	1,186	90,780	58,050
Major	967	517,334	535	237,379	119,733
Kay	1,050	492,178	469	323,049	185,180
Blaine	862	585,908	680	286,049	197,486
Dewey	756	588,951	779	173,736	102,382
Roger Mills	693	719,356	1,038	186,444	57,679

**Table 17. Agriculture production in 2007 for the proposed parcel counties (USDA 2007).**

	Cattle/Calves		Hogs/Pigs		Corn		Wheat		Sorghum	
	Number	Sold	Number	Sold	Acres Planted	Bushels Sold	Acres Planted	Bushels Sold	Acres Planted	Bushels Sold
Pottawatomie	57,897	24,596	18,556	NA	4,991	415,357	7,161	112,497	NA	NA
Texas	246,850	403,745	1,145,999	3,104,199	81,633	15,804,459	179,027	7,308,230	45,244	2,353,131
Beaver	101,119	121,919	NA	NA	7,329	1,303,869	120,042	4,712,968	22,398	1,251,814
Major	83,958	55,397	NA	NA	2,198	365,671	64,195	1,375,415	1,975	94,822
Kay	42,818	25,031	488	1,644	22,429	2,219,108	96,866	1,906,401	11,196	712,971
Blaine	112,977	105,668	65	NA	2,224	325,096	147,265	3,545,301	2,955	145,062
Dewey	51,588	29,359	366	1,854	191	NA	75,215	1,842,601	1,439	69,558
Roger Mills	63,216	42,652	239	378	NA	NA	28,933	804,608	767	21,818

NA: Data not available

### 3.15.2 Environmental Justice

Executive Order 12989, issued on 11 February 1994, addresses concerns over disproportionate environmental and human health impacts on minority and low-income populations. The impetus behind environmental justice is to ensure that all communities, including minority, low-income or federally recognized tribes, live in a safe and healthful environment. Table 18 describes the demographics of each proposed parcel county.

**Table 18. Demographics of proposed lease parcel counties.**

	Population	Identified as Hispanic or Latino Origin	Not Identified as White or of Hispanic or Latino Origin	Median Household Income	Living Below the Poverty Level
Oklahoma	3,791,508	9.2%	22.6%	\$42,979	16.2%
Pottawatomie	70,280	4.4%	23.0%	\$41,332	17.6%
Texas	21,312	43.7%	8.7%	\$46,631	14.6%
Beaver	5,624	20.5%	5.0%	\$47,386	13.2%
Major	7,657	7.7%	6.3%	\$48,012	10.4%
Kay	46,159	6.8%	19.4%	\$39,505	17.9%
Blaine	9,780	8.4%	17.5%	\$41,306	15.6%
Dewey	4,867	5.6%	9.4%	\$39,940	13.6%
Roger Mills	3,702	5.6%	9.1%	\$48,917	11.6%

## **4.0 ENVIRONMENTAL CONSEQUENCES**

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### **4.1 Assumptions for Analysis**

The act of leasing parcels would, by itself, have no impact on any resources in the OFO. All impacts would be linked to as yet undetermined future levels of lease development. The effects of oil and gas leasing in Oklahoma are analyzed in the Oklahoma RMP (1994), as amended (Chapter 4). That analysis, which assumes that the impacts from an average well, pipeline and access road would total 5.65 acres of surface disturbance in Oklahoma is incorporated by reference into this document.

If lease parcels were developed, short-term impacts would be stabilized or mitigated within five years and long-term impacts are those that would substantially remain for more than five years. Potential impacts and mitigation measures are described below.

Cumulative impacts include the combined effect of past projects, specific planned projects and other reasonably foreseeable future actions such as other infield wells being located within these leases. Potential cumulative effects may occur should an oil and gas field be discovered if these parcels are drilled and other infield wells are drilled within these leases or if these leases become part of a new unit. All actions, not just oil and gas development may occur in the area, including foreseeable non-federal actions.

### **4.2 Effects from the No Action Alternative**

Under the No Action Alternative, the proposed parcels would not be leased. There would be no subsequent impacts from oil and/or gas construction, drilling and production activities. The No Action Alternative would result in the continuation of the current land and resource uses in the proposed lease areas. The No Action Alternative is also used as the baseline for comparison of alternatives.

It is an assumption that the No Action Alternative (no lease option) may result in a slight reduction in domestic production of oil and gas. This would likely result in reduced Federal and state royalty income, and the potential for Federal minerals to be drained by wells on adjacent private or state lands. Consumption is driven by a variety of complex interacting factors including energy costs, energy efficiency, availability of other energy sources, economics, demography, and weather or climate. If the BLM were to forego leasing and potential development of those minerals, the assumption is the public's demand for the resource would not be expected to change. Instead, the undeveloped resource would be replaced in the short- and long-term by other sources that may include a combination of imports, using alternative energy sources (e.g. wind, solar) and other domestic production. This displacement of supply would offset any reductions in emissions achieved by not leasing the subject tracts in the short-term.

## 4.3 Effects from the Proposed Action

### 4.3.1 Air Quality

While the act of leasing Federal minerals would produce no impacts to air quality, subsequent exploration/development of the proposed lease could increase air borne soil particles blown from new well pads or roads, exhaust emissions from drilling equipment, compressor engines, vehicles, dehydration and separation facilities coupled with volatile organic compounds during drilling or production activities.

In order to reasonably quantify emissions associated with well exploration and production activities, certain types of information are needed. Such information includes a combination of activity data such as the types of equipment needed if a well were to be completed successfully (e.g. compressor, separator, dehydrator), the technologies which may be employed by a given company for drilling any new wells, area of disturbance for each type of activity (e.g. roads, pads, electrical lines compressor station), number of days to complete each kind of construction, number of days for each phase of the drilling process, type(s), size, number of heavy equipment used for each type of construction (backhoe, dozer, etc.), number of wells of all types (shallow, deep, exploratory, etc.), compression per well (sales, field booster), or average horsepower for each type of compressor. The degree of impact will also vary according to the characteristics of the geological formations from which production occurs. Currently, it is not feasible to directly quantify emissions. What can be said is that emissions associated with oil and gas exploration and production would incrementally contribute to increases in over air quality emissions into the atmosphere.

The most significant criteria pollutants emitted by oil and gas operations in general are VOCs, particulate matter and NO<sub>2</sub>. VOCs and NO<sub>x</sub> contribute to the formation of ozone, which is a pollutant of concern in Oklahoma. The Tulsa area has recorded exceedances of the O<sub>3</sub> NAAQS. The additional NO<sub>x</sub> and VOCs emitted from any new oil and gas development on these leases are likely too small to have a significant effect on the overall ozone levels of the area.

#### ***Mitigation***

The BLM encourages industry to incorporate and implement best management practices (BMPs), which are designed to reduce impacts to air quality by reducing emissions, surface disturbances, and dust from field production and operations. Typical measures include: adherence to BLM's Notice to Lessees' (NTL) 4(a) concerning the venting and flaring of gas on Federal leases for natural gas emissions that cannot be economically recovered, flared hydrocarbon gases at high temperatures in order to reduce emissions of incomplete combustion; water dirt roads during periods of high use in order to reduce fugitive dust emissions; collocate wells and production facilities to reduce new surface disturbance; implementation of directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and perform interim reclamation to reclaim areas of the pad not required for production facilities and to

reduce the amount of dust from the pads. In addition, the BLM encourages oil and natural gas companies to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce natural gas emissions.

### 4.3.2 Climate

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 a BLM action’s contribution to climate change with impacts in any particular area. 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 decisions made at this level and determining the significance of any discrete amount of GHG emissions is beyond the limits of existing science. When further information on the impacts to climate change is known, such information would be incorporated into the BLM’s planning and NEPA documents as appropriate.

While the act of leasing Federal minerals would have no impact on climate as a result of GHG emissions, subsequent exploration/development of the proposed lease could have effects on global climate through GHG emissions. However, those effects on global climate change cannot be determined. (Refer to cumulative effects section, 4.3.15). It is unknown whether the petroleum resources specific to these leases in the Proposed Action are gas or oil or a combination thereof.

BLM’s Automated Fluid Minerals Support System (AFMSS) provides information about federal mineral estate in Oklahoma for 2010. Oil and gas production are shown in table below for the US, Oklahoma and federal leases in Oklahoma.

#### 2010 Oil and Gas Production

Location	Oil (bbl)	% U.S. Total	Gas (MMcf)	% U.S. Total
United States	1,999,731,000	100	26,836,353	100
Oklahoma	67,730,000	3.39	1,827,328	6.81
Federal leases in Oklahoma	187,000	0.01	14,549	0.05

In order to estimate the contribution of Federal oil and gas leases to greenhouse gases in Oklahoma, it is assumed that the percentage of total U.S. production is comparable to the percentage of total emissions. Therefore, emissions are estimated based on production starting with total emissions for the

United States from EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010* (EPA, 2012b) , and applying production percentages to estimate emissions for Oklahoma. It is understood that this is a rather simplistic technique and assumes similar emissions in basins that may have very different characteristics and operational procedures, which could be reflected in total emissions. This assumption is adequate for this level of analysis due to the unknown factors associated with eventual exploration and development of the leases. However, the emissions estimates derived in this way, while not precise, will give some insight into the order of magnitude of emissions from federal oil and gas leases administered by the Bureau of Land Management (BLM) and allow for comparison with other sources in a broad sense.

**2010 Oil and Gas Field Production Potential Emissions**

Location	Oil (Metric tons of CO <sub>2</sub> <sup>e</sup> )		Gas (Metric tons of CO <sub>2</sub> <sup>e</sup> )		Total O&G Production (Metric tons CO <sub>2</sub> e)	%U.S. Total GHG emissions
	CO <sub>2</sub>	CH <sub>4</sub>	CO <sub>2</sub>	CH <sub>4</sub>		
United States	300,000	30,600,000	10,800,000	126,000,000	167,700,000	2.6
Oklahoma	10,170	1,037,340	735,480	8,580,600	10,363,590	0.15
Federal leases in Oklahoma	30	3,060	5,400	63,000	71,490	0.001

The table above shows the estimated greenhouse gas emissions for oil and gas field production for the U.S., Oklahoma, and Federal leases in Oklahoma. The table illustrates the small percentage of total U.S. greenhouse gas emissions that federal leases generate. Because oil and gas leaves the custody and jurisdiction of the BLM after the production phase and before processing or refining, only emissions from the production phase are considered here. It should also be remembered that following EPA protocols, these numbers do not include fossil fuel combustion which would include such things as truck traffic, pumping jack engines, compressor engines and drill rig engines. Nor does it include emissions from power plants that generate the electricity used at well sites and facilities. The estimates are only for operations, not for construction and reclamation of the facilities, which may have a higher portion of a project's GHG contribution. Note that units of Metric tons CO<sub>2</sub><sup>e</sup> have been used in the table above to avoid very small numbers. CO<sub>2</sub><sup>e</sup> is the concentration of CO<sub>2</sub> that would cause the same level of radiative forcing as a given type and concentration of greenhouse gas.

The table above provides an estimate of direct emissions that occur during production of oil and gas. This phase of emissions represents a small fraction of overall emissions of CO<sub>2</sub><sup>e</sup> from the life cycle of oil

and gas. For example, acquisition (drilling and development) for petroleum is responsible for only 8% of the total CO<sub>2</sub>e emissions, whereas transportation of the petroleum to refineries represents about 10% of the emissions, and final consumption as a transportation fuel represents fully 80% of emissions (U.S.DOE, NETL, 2008).

Environmental impacts of GHG emissions from oil and gas consumption are not effects of the proposed action as defined by the Council on Environmental Quality, and thus are not required to be analyzed under NEPA. Greenhouse gas emissions from consumption of oil and gas are not direct effects under NEPA because they do not occur at the same time and place as the action. They are also not indirect effects because oil and gas leasing and production would not be a proximate cause of greenhouse gas emissions resulting from consumption.

### ***Mitigation***

The EPA's GHG emissions inventory data describes "Natural Gas Systems" and "Petroleum Systems" as two major categories of US sources of GHG emissions. The inventory identifies the contributions of natural gas and petroleum systems to total CO<sub>2</sub> and CH<sub>4</sub> emissions (natural gas and petroleum systems do not produce noteworthy amounts of any of the other greenhouse gases). Within the larger category of "Natural Gas Systems", the EPA identifies emissions occurring during distinct stages of operation, including field production, processing, transmission and storage, and distribution. "Petroleum Systems" sub-activities include production field operations, crude oil transportation and crude oil refining. Within the two categories, the BLM has authority to regulate only those field production operations that are related to oil and gas measurement, and prevention of water (via leaks, spills and unauthorized flaring and venting).

The EPA data show that improved practices and technology and changing economics have reduced emissions from oil and gas exploration and development (Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2010 (EPA, 2012b)). One of the factors in this improvement is the adoption by industry of the BMPs proposed by the EPA's Natural Gas Energy Star program. The OFO will work with industry to facilitate the use of the relevant BMPs for operations proposed on Federal mineral leases where such mitigation is consistent with agency policy. While EPA data shows that methane emissions increased from oil and gas exploration and development from 1990-2010, reductions in methane emissions from oil and gas exploration and development should occur in future years as a result of EPA's recently finalized oil and gas air emissions regulations.

### **4.3.3 Soils**

While the act of leasing Federal minerals would produce no impacts to soils, subsequent exploration/development of the proposed lease may produce impacts by physically disturbing the topsoil and exposing the substratum soil on subsequent project areas. Direct impacts resulting from the oil and gas construction of well pads, access roads, and reserve pits include removal of vegetation, exposure of the soil, mixing of horizons, compaction, loss of topsoil productivity and susceptibility to wind and water erosion. Wind erosion would be expected to be a minor contributor to soil erosion with

the possible exception of dust from vehicle traffic. These impacts could result in increased indirect impacts such as runoff, erosion and off-site sedimentation. Activities that could cause these types of indirect impacts include construction and operation on well sites, access roads, gas pipelines and facilities.

Contamination of soil from drilling and production wastes mixed into soil or spilled on the soil surfaces could cause a long-term reduction in site productivity. Some of these direct impacts can be reduced or avoided through proper design, construction, maintenance and implementation of BMPs.

Additional soil impacts associated with lease development would occur when heavy precipitation causes water erosion damage. When water saturated segment(s) on the access road become impassable, vehicles may still be driven over the road. Consequently, deep tire ruts would develop. Where impassable segments are created from deep rutting, unauthorized driving may occur outside the designated route of access roads.

Proposed lease parcels -121 through -129 would have a stipulation attached (COE-SS-1A), which does not permit surface occupancy within 2,000 feet of Canton or Kaw Lakes. This would eliminate the potential for impacts to soils as a result of exploration/development on nine proposed lease parcels. However, the impacts described above could occur on private surface outside of the leased parcel as a result of the operator constructing a well pad and directionally drilling through the leased parcel. Even though the pad is not on the parcel, the act of constructing a pad that contains the well that was directionally drilled through the leased parcel is a connected action that would be considered despite the surface distance from the parcel.

### ***Mitigation***

The operator would stockpile the topsoil from the surface of well pads which would be used for surface reclamation of the well pads. The impact to the soil would be remedied upon reclamation of well pads when the stockpiled soil that was specifically conserved to establish a seed bed is spread over well pads and vegetation re-establishes.

Reserve pits would be re-contoured and reseeded as described in Conditions of Approval (COA) attached to the APD. Upon abandonment of wells and/or when access roads are no longer in service the Authorized Officer (AO) would issue instructions and/or orders for surface reclamation/restoration of the disturbed areas as described in attached COAs. During the life of the development, all disturbed areas not needed for active support of production operations should undergo "interim" reclamation in order to minimize the environmental impacts of development on other resources and uses. Earthwork for interim and final reclamation must be completed within 6 months of well completion or well plugging (weather permitting). The operator shall submit a Sundry Notice and Report on Wells (Notice of Intent), prior to conducting interim reclamation.

Road construction requirements and regular maintenance would alleviate potential impacts to access roads from water erosion damage.

#### 4.3.4 Water Resources

While the act of leasing Federal minerals would produce no impacts to water resources, subsequent exploration/development of the proposed lease may produce impacts. Surface disturbance from the construction of well pads, access roads, pipelines, and utility lines can result in degradation of surface water and groundwater quality from non-point source pollution, increased soil losses, and increased gully erosion.

Potential impacts that would occur due to construction of well pads, access roads, pipelines, and utility lines include increased surface runoff and off-site sedimentation brought about by soil disturbance; increased salt loading and water quality impairment of surface waters; channel morphology changes due to road and pipeline crossings; and possible contamination of surface waters by produced water. The magnitude of these impacts to water resources would depend on the proximity of the disturbance to the drainage channel, slope aspect and gradient, degree and area of soil disturbance, soil character, duration and time within which construction activity would occur, and the timely implementation and success or failure of mitigation measures.

Direct impacts would likely be greatest shortly after the start of construction activities and would decrease in time due to natural stabilization, and reclamation efforts. Construction activities would occur over a relatively short period; therefore, the majority of the disturbance would be intense but short lived. Direct impacts to surface water quality would be minor, short-term impacts which may occur during storm flow events.

Hydraulic fracturing is a common process and applied to nearly all wells drilled. Hydraulic fracturing fluid is roughly 99 percent water but also contains numerous chemical additives as well as propping agents, such as sands. Chemicals added to stimulation fluids include friction reducers, surfactants, gelling agents, scale inhibitors, acids, corrosion inhibitors, antibacterial agents, and clay stabilizers. Stimulation techniques have been used in the United States since 1949. Over the last 10 years, advances in multi-stage and multi-zone hydraulic fracturing has allowed development of gas fields that previously were uneconomic.

Contamination of groundwater could occur without adequate cementing and casing of the proposed well bore. Casing specifications are designed and submitted to the BLM. The BLM independently verifies the casing program, and the installation of the casing and cementing operations are witnessed by certified Petroleum Engineering Technicians. Surface casing setting depth is determined by regulation. Adherence to APD COAs and other design measures would minimize potential effects to groundwater quality.

Petroleum products and other chemicals, accidentally spilled, could result in surface and groundwater contamination. Similarly, possible leaks from reserve and evaporation pits could degrade surface and groundwater quality. Authorization of the proposed projects would require full compliance with BLM directives and stipulations that relate to surface and groundwater protection.

Proposed lease parcels -121 through -129 would have a stipulation attached (COE-SS-1A), which does not permit surface occupancy within 2,000 feet of Kaw or Canton Lakes. This would reduce the potential for lake contamination as it would be unlikely that contaminants could move >2,000 feet provided BMPs/COAs were properly implemented. Constructing a well pad, with the intention of accessing the leased parcel's associated minerals, outside of the parcel boundaries could have the same impacts as described above.

### ***Mitigation***

The use of a plastic-lined reserve pit, closed systems or steel tanks would reduce or eliminate seepage of drilling fluids into the soil and eventually reaching groundwater. Spills or produced fluids (e.g. saltwater, oil, and/or condensate in the event of a breach, overflow, or spill from storage tanks) could result in contamination of the soils onsite, or offsite, and may potentially impact surface and groundwater resources in the long term. The casing and cementing requirements imposed on proposed wells would reduce or eliminate the potential for groundwater contamination from drilling muds and other surface sources.

## **4.3.5 Floodplains, Wetlands, Riparian Areas**

### ***4.3.5.1 Floodplains***

While the act of leasing Federal minerals produces no impacts to floodplains, subsequent exploration/development of the proposed parcel may produce impacts. Surface disturbance from the development of well pads, access roads, pipelines, and utility lines can result in impairment of the floodplain values from removal of vegetation, removal of wildlife habitat, impairment of water quality, decreased flood water retention and decreased groundwater recharge.

Floodplains occur within proposed parcels -116 and -120 through -129. The ACOE No Surface Occupancy stipulation will be attached to parcels -121 through -129. Lease stipulation ORA-1 for Floodplain Protection would be attached to parcels -116 and -120. ORA-1 states that, "All or portions of the lands under this lease lie in and or adjacent to a major watercourse and are subject to periodic flooding. Surface occupancy of these areas will not be allowed without the specific approval, in writing, of the BLM." In addition to ORA-1, the BLM identified the need to develop a Floodplain Protection Lease Notice that would also be attached to these two parcels. This notice would inform the lessee and operator that surface occupancy of these areas and surface disturbance within up to 200 meters of the outer edge of the floodplain may not be allowed in order to protect the integrity and functionality of the floodplain and associated watercourse (Appendix 1). Furthermore, controlled surface use requiring special mitigation measures may be required and will be developed during the application for permit to drill.

### ***Mitigation***

Potential mitigation is deferred to site-specific development at the APD stage.

#### **4.3.5.2 Wetlands, Riparian Areas**

While the act of leasing Federal minerals would produce no direct impacts to wetlands or riparian areas; no adverse impacts are expected for wetlands or riparian areas if exploration/development occurred on any of the lease parcels in the future.

#### **Mitigation**

Potential mitigation is deferred to site-specific development at the APD stage. Protective stipulation ORA-2 would be attached to -116, -117, and -120 through -129. ORA-2 states that, "All or portions of the lands under this lease contain wetland and/or riparian areas. Surface occupancy of these areas will not be allowed without the specific approval, in writing, of the Bureau of Land Management. Impacts or disturbance to wetlands and riparian habitats which occur on this lease must be avoided or mitigated. The mitigation shall be developed during the application for permit to drill."

#### **4.3.6 Farmlands, Prime or Unique**

While the act of leasing Federal minerals would produce no impacts to prime or unique farmlands, subsequent exploration/development of the proposed lease would remove the area from production for the life of the well. Direct impacts resulting from the construction of well pads, access roads, and reserve pits can affect the soil properties, increase erosion, and reduce water infiltration potentially affecting the characteristics unique to prime or unique farmlands.

The amount of farmlands lost depends on the amount and type of development proposed during the APD process. Up to 1879.6 acres (42%) all proposed lease parcels could be impacted and/or removed as prime farmland, while 2595.7 acres (58.0%) would not be affected as they are not prime or unique farmland. It is anticipated that there would be no permanent loss of prime or unique farmland once all reclamation activities are complete. Initial construction and development would result in greater surface disturbance and more area temporarily lost for production. Acres not needed during the production phase would be reclaimed and returned to prime or unique farmlands suitable for production. When the well is no longer productive, the entire site would be reclaimed and returned to prime or unique farmlands.

#### **Mitigation**

During the APD process, efforts would be made to relocate the disturbance onto soils identified as "not prime farmland"; however, if relocation is not an option the following mitigation measure would be placed on the project.

When removing soil, the three major mineral soil horizons (A, B, and C) would be removed and stockpiled independent of one another. All separation would occur prior to implementation of any other construction activities. During the interim and final reclamation phases, the three independently stockpiled soil layers would be replaced in the reverse order that they were removed with the C horizon placed first followed by B, then A.

The soil and water resources mitigation measures would also minimize the impacts to prime or unique farmlands.

### **4.3.7 Heritage Resources**

#### **4.3.7.1 Cultural Resources**

No previously recorded historic properties have been documented within the APE. A determination of No Historic Properties Affected has been made and none of the proposed parcels have been recommended for withdrawal from the sale. The Texas State Historic Preservation Office has been consulted and Section 106 of the National Historic Preservation Act as amended compliance has been completed.

While the act of leasing Federal minerals would produce no direct impacts to cultural resources, subsequent development of a lease could. To comply with Section 106, a cultural resources survey will need to be conducted for all surface disturbance activities related to development of the lease. Direct and indirect effects cannot be predicted without analysis of site-specific development at the APD stage of development. Potential impacts at that stage could include increased human activity in the area increasing the possibility of removal of, or damage to, heritage artifacts. The increase in human activity in the area increases the possibility of irretrievable loss of information pertaining to the heritage of the project region. Conversely, the benefits to heritage resources derived from the future development are the heritage and historic survey that adds to literature, information, and knowledge of cultural resources.

Many cultural resource issues exist beyond the NHPA, such as state and municipal registers of historic sites, National Heritage Areas, National Trails, or other heritage designations. Leasing the proposed parcels would have no effect on any of these types of cultural resources.

Please refer to the Cultural and Paleontological Resources Summary and BLM Cultural Determination in Appendix 5 for more information.

#### **4.3.7.2 Paleontology**

While the act of leasing Federal minerals would produce no direct impacts to paleontological resources, subsequent development of a lease could. Direct and indirect effects cannot be predicted without analysis of site-specific development at the APD stage of development. Potential impacts at that stage could include increased human activity in the area increasing the possibility of removal of, or damage to, paleontology resources. The increase in human activity in the area increases the possibility of irretrievable loss of information pertaining to the paleontology of the project region. Conversely, the benefits to paleontology resources derived from the future development are the paleontology survey that adds to literature, information, and knowledge of cultural resources.

Protection and preservation of significant fossil materials in specific locations would be required for any BLM permitted project.

#### **4.3.7.3 Native American Religious Concerns**

The proposed action is not known to physically threaten any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder the performance of traditional ceremonies and rituals pursuant to AIRFA or EO 13007. There are currently no known remains that fall within the purview of NAGPRA or ARPA that are threatened by leasing.

Please refer to the Cultural and Paleontological Resources Summary and BLM Cultural Determination in Appendix 5 for more information.

#### **Mitigation Common to ALL Cultural Resources**

Specific mitigation measures, including but not limited to, site avoidance or excavation and data recovery would be determined when site-specific APDs and cultural surveys are received. As well, a second NHPA section 106 evaluation would be completed. The Oklahoma State Historic Preservation Office confirmed that studies will need to be done at the APD stage.

Standard Conditions of Approval are attached to each APD including:

- In the event that lease development practices are found in the future to have an adverse effect on significant cultural resources, the operator and the BLM, in consultation with the affected tribe(s), and Texas State Historic Preservation Office will take action to mitigate or negate those effects. Measures include, but are not limited to physical barriers to protect resources, relocation of practices responsible for the adverse effects, or other treatments as appropriate.
- If additional ground disturbance is required outside of the currently proposed APE, the Bureau of Land Management archaeologist must be notified prior to any work. If archeological material such as chipped stone tools, pottery, bone, historic ceramics, glass, metal, or building structures are exposed; stop work at that spot immediately and contact the BLM archeologist at (918) 621-4153 or (918) 621-4100.
- If archeological material such as chipped stone tools, pottery, bone, historic ceramics, glass, metal, or building structures are exposed; stop work at that spot immediately and contact the BLM, and the Oklahoma State Historic Preservation Office at (405) 521-6249.

#### **4.3.8 Invasive, Non-native Species**

While the act of leasing Federal minerals would not contribute to the spread or control of invasive or non-native species, subsequent exploration/development of the proposed lease may. Any surface disturbance could establish new populations of invasive non-native species, although the probability of this happening cannot be predicted using existing information. Noxious weed seeds can be carried to and from the project areas by construction equipment, the drilling rig and transport vehicles.

#### **Mitigation**

Mitigation is deferred to site-specific development at the APD stage. BMPs require that all actions on public lands that involve surface disturbance or reclamation take reasonable steps to prevent the introduction or spread of noxious weeds, including requirements to use weed-free hay, mulch and straw.

#### **4.3.9 Vegetation**

While the act of leasing Federal minerals would produce no impacts to vegetative resources, subsequent exploration/development of the proposed lease would have impacts to vegetation. The level of impact depends on the vegetation type, the vegetative community composition, soil type, hydrology, and the topography of the parcels. Surface-disturbing activities could affect vegetation by removing, trampling, or killing the vegetation; churning soils; losing substrates for plant growth; impacting biological crusts; disrupting seedbanks; burying individual plants; reducing germination rates; covering plants with fugitive dust; and generating sites for undesirable weedy species. In addition, development could reduce available forage or alter livestock distribution leading to overgrazing or other localized excess grazing impacts to palatable plant species. If these impacts occurred after seed germination but prior to seed establishment, both current and future generations could be affected.

Vegetation would be lost within the construction areas of pads, roads, and rights of ways. Those areas covered in compacted native substrates, such as pads and roads, would have no vegetation for the life of the well. Interim and final reclamation should result in vegetation establishment in three to five growing season (one to two years) with appropriate techniques used and adequate precipitation. Inadequate precipitation over several growing seasons could result in loss of vegetative cover, leading to weed invasion and deterioration of native vegetation.

#### ***Mitigation***

Mitigation is primarily deferred to site-specific development at the APD stage. If potential wells are productive disturbed areas not needed for the production facility would be reclaimed. In the case of non-productive wells, all disturbed areas should be reclaimed through reseeding or vegetative cover reestablishment. BMPs identified in BLM guidance documents such as the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development: The Gold Book (USDI, 2007) recommend areas to be restored with native vegetation in regards to both species and structure. This recommendation is contingent upon the wishes of the surface owner.

#### **4.3.10 Wildlife**

##### ***4.3.10.1 Threatened and Endangered Species***

While the act of leasing Federal minerals produces no impacts to Threatened and Endangered Species, subsequent exploration/development of the proposed parcel may produce impacts. Surface disturbance from the development of well pads, access roads, pipelines, and utility lines can result in removal of wildlife habitat.

### ***Mitigation***

General mitigation includes attaching protective stipulation WO-ESA-7, which states that consultation with USFWS may be needed, would be attached to all proposed parcels since Federally protected species or their habitat may be in or near the proposed parcel either now or in the future.

Four proposed parcels are within Lesser Prairie Chicken Habitat (-118, -119, -130, and -131) and would have ORA-3 stipulations added to them. Any proposed surface disturbing activity may require an inventory and consultation with the USFWS and/or state wildlife agency. Consultation with USFWS could take up to 180 days to complete. Surface occupancy could be restricted or not allowed as a result of the consultation outcome. Appropriate modifications to the imposed restrictions would be made for the maintenance and operations of producing oil and gas wells.

#### ***4.3.10.2 Special Status Species***

No special status species were identified for any of the proposed lease parcels. Leasing the proposed parcels and future exploration/development activities would have no impact on special status species. If new species listed in the future, the effects of the project would be reviewed at the APD stage.

#### ***4.3.10.3 Migratory Birds***

While the act of leasing Federal minerals would not produce impacts to migratory birds, subsequent exploration/development of the proposed parcel may produce impacts. Surface disturbance from the development of well pads, access roads, pipelines, and utility lines can result in an impact to migratory birds and their habitat.

### ***Mitigation***

Per the Memorandum of Understanding between BLM and the USFWS, entitled “To Promote the Conservation of Migratory Birds,” the following temporal and spatial conservation measures must be implemented as part of the Conditions of Approval with any permit to drill:

- 1) Avoid any take of migratory birds and/or minimize the loss, destruction, or degradation of migratory bird habitat while completing the proposed project or action.
- 2) If a proposed project or action includes a reasonable likelihood that take of migratory birds will occur, then complete actions that could take migratory birds outside of their nesting season. This includes clearing or cutting of vegetation, grubbing, etc. Strive to complete all disruptive activities outside the peak of migratory bird nesting season to the greatest extent possible.
- 3) If no migratory birds are found nesting in proposed project or action areas immediately prior to the time when construction and associated activities are to occur, then the project activity may proceed as planned.

Additionally, the Wildlife Resource General Conditions of Approval (WRGCOAs) #4 (Burying Transmission Lines) and Notice to Lessees (NTL) 96-01-TDO (Modification of Oil and Gas Facilities to Minimize Bird and

Bat Mortality) address measures designed to protect migratory birds from accidental deaths associated with power line collisions/electrocutions, open-vent exhaust stacks and open pits and tanks.

#### **4.3.10.4 Wildlife**

While the act of leasing Federal minerals would produce no direct impacts to wildlife, subsequent development of a lease may produce impacts. Impacts could result from increased habitat fragmentation, noise, or other disturbance during development. Although reclamation and restoration efforts for surface disturbance could provide for the integrity of other resources, these efforts may not always provide the same habitat values (e.g. structure, composition, cover, etc.) in the short or in some instance, the long-term in complex vegetative community types (e.g., shrub oak communities).

The short-term negative impact to wildlife would occur during the construction phase of the operation due to noise and habitat destruction. In general, most wildlife species would become habituated to the new facilities. For other wildlife species with a low tolerance to activities, the operations on the well pad would continue to displace wildlife from the area due to ongoing disturbances such as vehicle traffic, noise and equipment maintenance. The conditions of approval would alleviate most losses of wildlife species, such as; fencing the reserve pits, netting storage tanks, installation or other modifications of cones on separator stacks, and timing stipulations. The magnitude of above effects would be dependent on the rate and location of the oil and gas development, but populations could likely not recover to pre-disturbance levels until the activity was completed and the vegetative community restored.

#### ***Mitigation Common to ALL Species***

The BLM will require oil and gas lessees to operate in a manner that will minimize adverse impacts to wildlife and apply reasonable measures to all oil and gas exploration/development activities. Measures would be taken to prevent, minimize, or mitigate impacts to fish and wildlife animal species from exploration and development activities, including specific mitigation measures (i.e. rapid revegetation, noise restriction, project relocation, pre-disturbance surveys, etc.) unique to the proposed development site, but would be deferred until the APD process.

The Wildlife Resource General Conditions of Approval (WRGCOAs) are included in all approved APDs and use standard BMPs to provide extra measures of protection to wildlife populations and habitats in the area. Impacts to the wildlife resource component of the environment can be avoided or minimized by adopting the WRGCOAs and BMPs.

#### **4.3.11 Wastes – Hazardous or Solid**

While the act of leasing Federal minerals would produce no impacts on the environment from hazardous or solid wastes, subsequent exploration/development of the proposed lease could have result in the introduction of hazardous and non-hazardous substances to the site. Hazardous substances may be produced, used, stored, transported or disposed of as a result of the project. Properly used, stored, and disposed of hazardous and non-hazardous substances greatly decreases the potential for any impact on any environmental resources. One way operators and the BLM ensure hazardous and non-hazardous

substances are properly managed in through the preparation of a Spill Prevention, Control, and Countermeasure (SPCC) plan.

### ***Mitigation***

Specific mitigation is deferred to the APD process. The following measures are common to most projects: all trash would be placed in a portable trash cage and hauled to an approved landfill, with no burial or burning of trash permitted; chemical toilets would be provided for human waste; fresh water zones encountered during drilling operations would be isolated by using casing and cementing procedures; a berm or dike would enclose all production facilities if a well is productive; and all waste from all waste streams on site would be removed to an approved disposal site.

#### **4.3.12 Mineral Resources**

While the act of leasing Federal minerals would produce no impacts to mineral resources, subsequent exploration/development of the proposed lease could impact the production horizons and reservoir pressures. If production wells are established, the resources allotted to the wells would eventually be depleted. The amount and location of direct and indirect effects cannot be predicted until site-specific development information is available typically during the APD stage.

Other mineral resources could be impacted as a result of exploration/development through the loss of available surface or subsurface area needed to develop or access the other mineral resource overlapping the proposed lease parcel. The extent of the impacts, if any cannot be predicted until site-specific development information is available typically during the APD stage.

### ***Mitigation***

Mitigation is deferred to site-specific development at the APD stage. Spacing orders and allowable production orders are designed to conserve the oil and/or gas resource and provide maximum recovery.

#### **4.3.13 Visual Resources**

While the act of leasing Federal minerals would produce no impacts to visual resources, subsequent exploration/development of the proposed lease could impact visual quality through: increased visibility of constructed features such as roads, well pads, pipelines, tank batteries; road degeneration from heavy trucks and vehicles following rain and snow; dust and exhaust from construction, drilling, and production vehicles and equipment; vegetation removal and construction of steep slopes; unreclaimed sites; and discarded equipment. Well pads, power lines, access roads, and associated production facilities and storage tanks have the greatest potential to alter visual conditions for the life of the well. Vegetation removal would present an obvious contrast in color with the surrounding vegetation and affect foreground and middleground distance zones for more than a decade. These impacts would be most obvious immediately after construction. Impacts would decrease as the disturbed surface began to blend in color, form, and texture, when interim or final reclamation occurs. Long-term visual impacts could persist as long as the well is producing, which could be a couple of years to more than 50 years.

Long-term impacts may include vegetation removal, alteration of the landscape, and installation of equipment and facilities.

**Mitigation**

Mitigation is deferred to site-specific development at the APD stage.

**4.3.14 Recreation**

While the act of leasing Federal minerals would produce no impacts to recreation resources, subsequent exploration/development of the proposed lease could impact recreation quality and opportunities through: increased vehicle traffic and human presence, loss of areas to recreate, blocked access, and increased noise and visual disturbance.

**Mitigation**

Mitigation is deferred to site-specific development at the APD stage.

**4.3.15 Socioeconomics and Environmental Justice**

No minority or low income populations would be directly affected in the vicinity of the proposed lease parcel. Indirect impacts could include an increase in overall employment opportunities related to the oil and gas and service support industry in the region, as well as the economic benefits to State and County governments related to royalty payments and severance taxes. Other impacts could include a small increase in activity and noise disturbance in areas used for agriculture and recreational activities. However, these impacts would apply to all land users in the area.

**Mitigation**

Mitigation is deferred to site-specific development at the APD stage.

**4.3.16 Cumulative Effects**

The NMSO manages approximately 41 million acres of Federal mineral estate. Of the 41 million acres, 35 million acres are available for oil and gas leasing. Approximately 17% of the 35 million acres is currently leased (73% of the leases are in production and 63% of the lease acres are in production). The NMSO received 151 parcel nominations (92,147.63 acres) for consideration in the July 2013 Oil & Gas Lease Sale, and is proposing to lease 68 (30,820.16 acres) of the 151 parcels. If these 68 parcels were leased, the percentage of Federal minerals leased would not change. The Carlsbad, Roswell, Las Cruces, and Farmington parcels are analyzed under separate EAs.

**Table 5A. Actual - Acres of Federal Minerals/Acres Available/Acres Leased:**

State	Federal O&G Mineral Ownership	Acres Available	Acres Leased	Percent Leased
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KS	744,000	614,586	127,414	21%
NM	34,774,457	29,751,242	5,023,215	17%
OK	1,998,932	1,668,132	330,800	20%
TX	3,404,298	3,013,207	391,091	13%
Totals/Average	40,921,687	35,058,167	5,862,520	17%

**Table 5B. Parcels Nominated & Offered in the July 2013 Oil & Gas Lease Sale:**

Field Office	No. of Nominated Parcels	Acres of Nominated Parcels	No. of Parcels to be Offered	Acres of Parcels to be Offered
Carlsbad	39	17,148.76	25	9,172.14
Farmington	48	23,878.12	6	2280.20
Las Cruces	35	43,160.58	10	11,417.65
Texas	13	3,761.31	13	3,761.31
Oklahoma	16	4,468.855	14	4,188.855
Totals	151	92,417.63	66	30,820.16

**Table 5C. Foreseeable - Acres of Federal Minerals/Acres Available/Acres Leased:**

State	Federal O&G Mineral Ownership	Acres Available	Acres Leased	Percent Leased
KS	744,000	614,586	127,654	21%
NM	34,774,457	29,751,242	5,046,084.99	17%
OK	1,998,932	1,668,132	334,988.85	20%
TX	3,404,298	3,013,207	394,852.31	13%
Totals/Average	40,921,687	35,058,167	5,903,260	17%

The cumulative impacts fluctuate with the gradual reclamation of well abandonments and the creation of new additional surface disturbances in the construction of new access roads and well pads. The on-going process of restoration of abandonments and creating new disturbances for drilling new wells gradually accumulates as the minerals are extracted from the land. Preserving as much land as possible and applying appropriate mitigation measures will alleviate the cumulative impacts.

Analysis of cumulative impacts for reasonably foreseeable development of oil and gas wells in Oklahoma was analyzed in the Oklahoma RMP (1994), as amended (pg. 4-6 – 4-8). Potential development of all available federal minerals in Oklahoma including those in the proposed lease parcels was included as part of the analysis. Total surface disturbance projected by the plan was based on an estimated 20 Federal wells being drilled annually in Oklahoma with an estimated 113 acres of disturbance. Over the last 10 years there have been no changes to the basic assumptions or projections described in the Oklahoma RMP (1994), as amended, analysis.

More than 100 years of oil and gas development in Oklahoma has resulted in an extensive infrastructure of existing roads and pipelines. The Oklahoma Corporation Commission reports a total of 115,000 oil

wells and 65,000 natural gas wells that are drilled and not plugged in Oklahoma. A total of 74,319 thousand barrels of oil was produced in 2011 with an average of 62 rotary rigs in operation per month. They also report a total of 1,827,328 million cubic feet of natural gas was produced in 2011 with an average of 120 rotary rigs in operation per month. Impacts from this development would remain on the landscape until final abandonment and reclamation of facilities occurs as wells are plugged when they are no longer economically viable.

#### ***4.3.16.1 Cumulative Effects on Air Quality***

The following analysis of cumulative impacts of the proposed action on air quality will be limited to the eight counties in which the proposed lease parcels occur.

The primary activities that contribute to levels of air pollutants in the five counties are predominately combustible engines of road and non-road, diesel and gasoline vehicles and equipment. The Air Quality Technical Report includes a description of the varied sources of national and regional emissions that are incorporated here to represent the past, present and reasonably foreseeable impacts to air resources (USDI BLM 2011). It includes a summary of emissions on the national and regional scale by industry source. Sources that are considered to have notable contributions to air quality impacts and GHG emissions include electrical generating units, fossil fuel production (nationally and regionally) and transportation.

The small increase in emissions that could result from approval of the proposed actions would not result in eastern or western Oklahoma exceeding the NAAQS for any criteria pollutant. In October 2012, EPA regulations that require control of VOC emissions from oil and gas development became effective. These regulations will reduce VOC emissions from oil and gas exploration and production emissions that contribute to the formation of ozone. Emissions from any development of the leases is not expected to impact the 8-hour average ozone concentrations, or any other criteria pollutants in eastern or western Oklahoma .

#### ***4.3.16.2 Cumulative Effects of the Proposed Action on Climate Change***

The cumulative impacts of GHG emissions and their relationship to climate change are evaluated at the national and global levels in the Air Quality Technical Report (USDI 2011). The very small increase in GHG emissions that could result from approval of the proposed action would not produce climate change impacts that differ 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 effects 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; however, EPA's recently finalized oil and gas air quality regulations have a co-benefit of methane reduction that will reduce greenhouse gas emissions from any oil and gas development that would occur on this lease.

## 5.0 CONSULTATION/COORDINATION

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This section includes the resource specialists located within the OFO that specifically participated and provided input in the lease parcel review process and the development of this EA document.

<b>ID Team Member</b>	<b>Title</b>	<b>Organization</b>
Lawrence Moore	Archaeologist	BLM
Becky Peters	Wildlife Biologist	BLM
Pat Stong	Geologist	BLM
Melinda Fisher	Natural Resource Specialist	BLM
Galen Schwertfeger	Environmental Specialist	BLM
Gary McDonald	Environmental Specialist	BLM
Larry Levesque	Planning and Environmental Coordinator	BLM

The BLM NM State Director, along with several New Mexico State Office resource leads was held on 14 February 2013 to review Field Office recommendations for nominated parcels.

### 5.1 Public Involvement

The nominated parcels, along with the appropriate stipulations from the Oklahoma RMP (1994), as amended were posted online for a two week review period beginning January 28, 2013. Comments were received from the Center for Biological Diversity. This EA will be available for public review and comment for 30 days beginning March 1, 2013. Any comments, including the comments from the Center for Biological Diversity, provided prior to the lease sale will be considered and incorporated into the EA as appropriate.

## 6.0 REFERENCES

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## **7.0 AUTHORITIES**

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Code of Federal Regulations (CFR)

40 CFR All Parts and Sections inclusive Protection of Environment, Revised as of January 1, 2001.

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## APPENDIX 1. OKLAHOMA FIELD OFFICE LEASE STIPULATION SUMMARY

<b>Stipulation</b>	<b>Description/Purpose</b>
COE SS-1A: (KAW & CANTON LAKES) OK	<b>NO SURFACE USE OCCUPANCY:</b> No surface occupancy is allowed on this lease in order to protect the reservoir. All areas within 2,000 feet of any major structure, including but not limited to the dam, spillway, or embankment, are restricted areas. The restricted areas including public use areas, recreation areas, wildlife refuges, etc. are not to be used for any purpose. Drilling operations in, on, or under the restricted areas, including drilling outside of the restricted areas which would cause a bore hole to be under the restricted area, will not be permitted. Structures and appurtenances shall be of material or construction determined to not create floatable debris and construction and operations of the structures should not cause pollution of the soils and waters of the project. All storage tanks and slush pits will be protected by dikes of sufficient capacity to protect the reservoir from pollution.
ORA-1 OK	<b>FLOODPLAIN PROTECTION:</b> A result of EO 11988 Floodplain Management of May 24, 1977. All or portions of the lands under this lease lie in and or adjacent to a major watercourse and are subject to periodic flooding. Surface occupancy of these areas will not be allowed without the specific approval, in writing, of the Bureau of Land Management.
ORA-2 OK	<b>WETLAND/RIPARIAN:</b> Mandated by EO 11990 Protection of Wetlands of May 24, 1977. All or portions of the lands under this lease contain wetland and/or riparian areas. Surface occupancy of these areas will not be allowed without the specific approval, in writing, of the Bureau of Land Management. Impacts or disturbance to wetlands and riparian habitats which occur on this lease, must be avoided or mitigated. The mitigation shall be developed during the application for permit to drill.
ORA-3 OK	<b>SEASON OF USE:</b> Surface occupancy of this lease will not be allowed from February 15 – May 15 for protection of the lesser prairie-chicken breeding season.
WO-ESA-7 TX,OK	<b>ENDANGERED SPECIES ACT SECTION 7 CONSULTATION STIPULATION:</b> The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 <u>et seq.</u> , including completion of any required procedure for conference or consultation.
WO-NHPA TX, OK	<b>CULTURAL RESOURCES AND TRIBAL CONSULTATION STIPULATION:</b> This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Executive Order 13007, or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations (e.g., State Historic Preservation Officer (SHPO) and tribal consultation) under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

**LEASE NOTICE**  
**FLOODPLAIN MANAGEMENT**  
**DRAFT**

All or portions of the lands under this lease lie in and/or adjacent to a major watercourse and may be subject to periodic flooding. In accordance with E.O. 11988 – Floodplain Management 5/24/1977, as amended, and the Clean Water Act of 1972, as amended, impacts or disturbances to this area must be avoided or mitigated. Surface occupancy of these areas and surface disturbance within up to 200 meters of the outer edge of the floodplain may not be allowed in order to protect the integrity and functionality of the floodplain and associated watercourse. Controlled surface use requiring special mitigation measures may be required and will be developed during the application for permit to drill. These would be required as part of the environmental analysis, approval for drilling or any other operation on this lease. These measures could include modifications or relocation of proposed well locations; burial of linear facilities such as pipelines; modifications in surface activities; minimizing surface disturbance by co-locating roads, utilities and pipelines in common rights-of-ways; interim reclamation of all surface disturbance initiated immediately after construction; reduction of long term noise producing activities; suitable off-site mitigation or other reasonable measures to mitigate impacts to floodplains. These measures may be imposed in accordance with Section 6 of the lease terms, Onshore Oil and Gas Order No. 1, 43 CFR 3162.5-1 and 43 CFR 3101.1-2.

For the purpose of:

To protect the unique biological and hydrological features associated with rivers, streams, riparian/wetland areas, and areas within the 100-year floodplain demarcation.

**Bureau of Land Management**  
**Oklahoma Field Office**

**ORA-LN-3**  
**November 2012**

# APPENDIX 2. OKLAHOMA NOMINATED LEASE SALE PARCELS

## BLM New Mexico Competitive Oil and Gas Lease Sale July 17, 2013 Oklahoma Nominated Sale Parcels

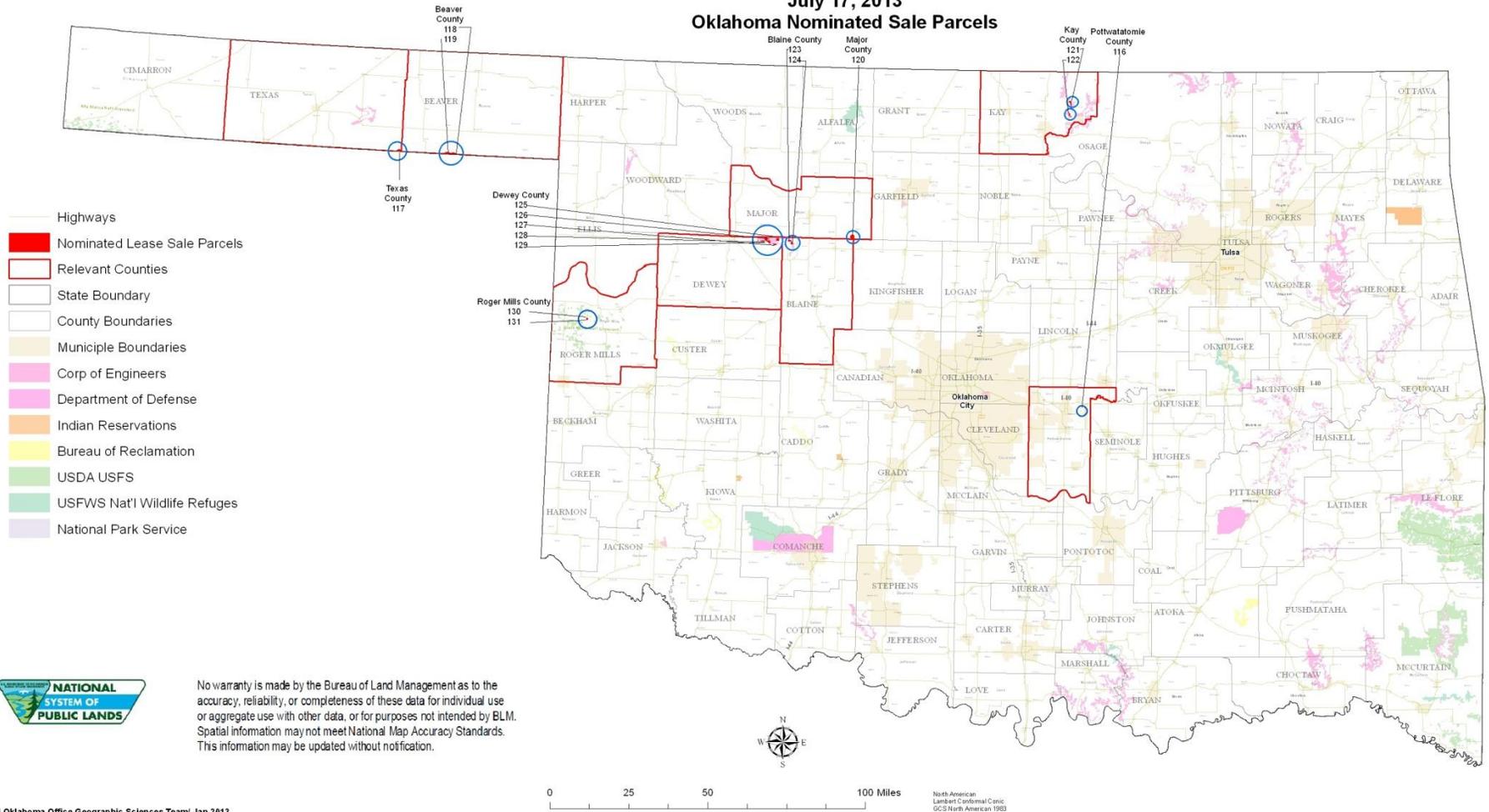


Figure 1. Texas County, Proposed Parcel -116.

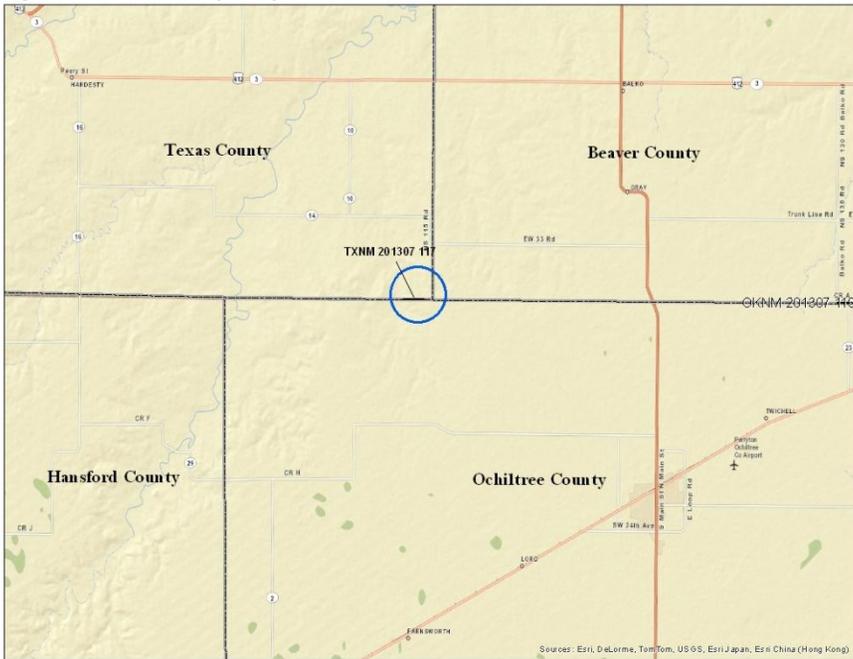


Figure 2. Beaver County, Proposed Parcels -117 and -118.

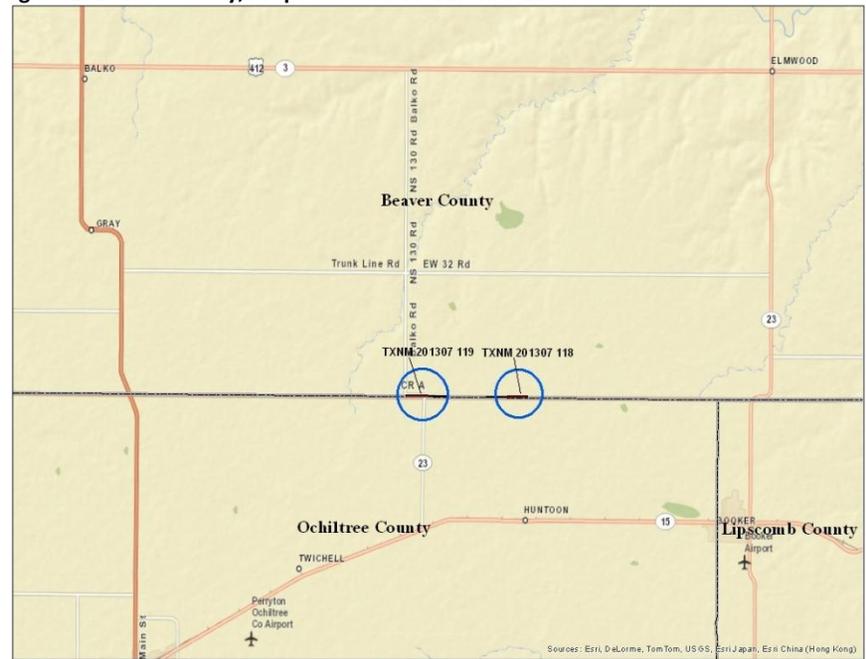


Figure 3. Major County, Proposed Parcel -119.

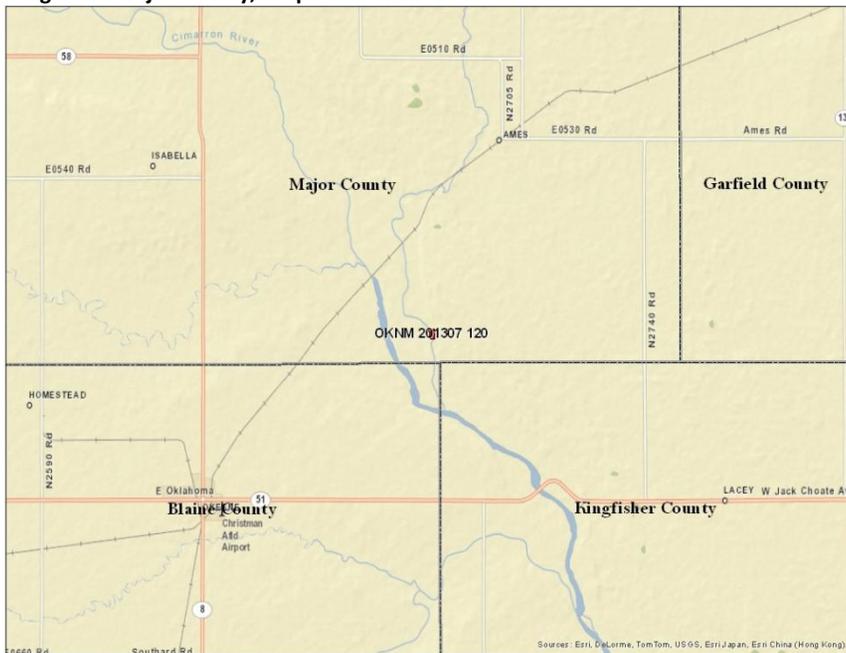


Figure 4. Kay County, Proposed Parcels -120 and -121.



Figure 5. Dewey and Blaine Counties, Proposed Parcels -122 through -129.

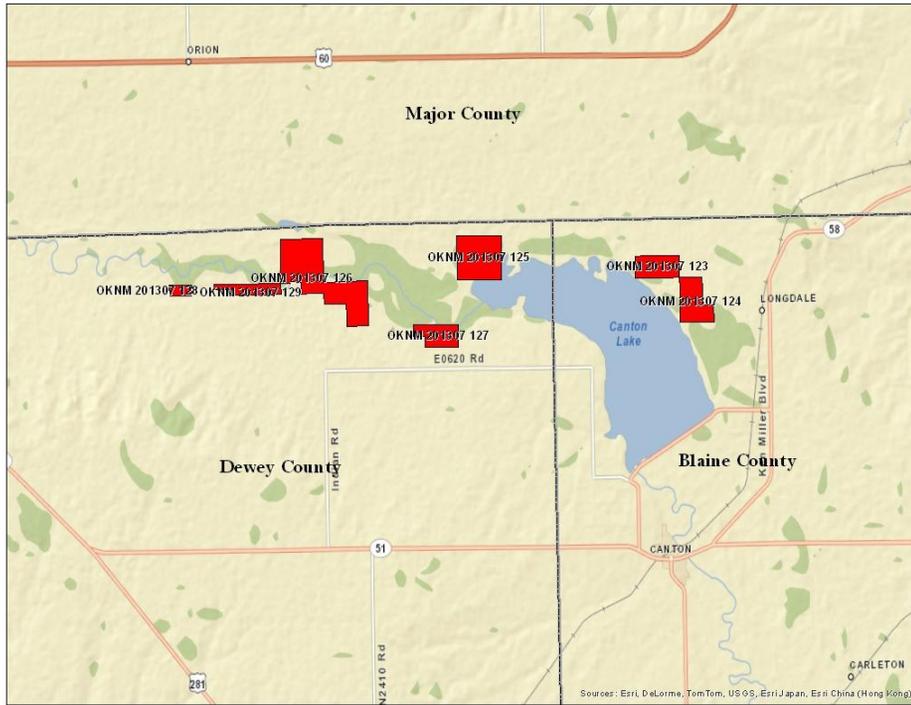


Figure 6. Roger Mills County, Proposed Parcels -130 and -131.



## APPENDIX X. SOIL PROPERTIES OF THE PROPOSED LEASE PARCELS

Parcel	Soil Name	Soil Symbol	Acres in area	% in area	Erosion K Factor	Wind Erodibility Index	Prime and Unique Farmland*
-116	Asher silty clay loam	1	0.2	1.1	.37	38	Y
	Gaddy loamy fine sand	15	13.1	61.8	.17	134	N
	Keokik silt loam	21	4.3	20.2	.37	56	Y
	Water	W	3.6	16.8	--	--	N
-117	Conlen clay loam	MaB	8.2	60.5	.32	86	N
	Conlen-Plack complex	Mp	5.3	39.4	.32	86	N
-118	Pullman clay loam	Pm	15.4	77.9	.32	48	Y
	Sherm clay loam	PuA	4.4	22.1	.32	38	Y
-119	Pullman clay loam	Pm	18.5	100.0	.32	48	Y
-120	Gaddy fine sand	Ls	16.1	76.4	.17	134	N
	Tivoli fine sand	TrD	5	23.6	.15	220	N
-121	Ashport, Port, and Pulaski soils	Br	4.5	0.7	.37	86	N
	Pocasset fine sandy loam	Ca	64.4	9.6	.20	86	Y
	Dale clay loam	Dc	12.7	1.9	.32	48	Y
	Dougherty-Eufaula complex	DxB	2.5	0.4	.20	134	N
	Dougherty-Eufaula complex	DxC	31.7	4.7	.20	134	N
	Lovedale fine sandy loam	Et	3.0	0.5	.24	86	N
	Lela clay	Lc	16.4	2.5	.37	86	Y
	Gaddy fine sand	Lm	2.1	0.3	.17	134	N
	Minco silt loam	Lo	61.7	9.2	.37	56	N
	Goodnight loamy fine sand	Sa	4.8	0.7	.17	134	N
	Lovedale fine sandy loam	ShB	32.4	4.8	.24	86	Y
	Lovedale fine sandy loam	ShC	27.9	4.2	.24	86	Y
	Vanoss silt loam	VaA	111.9	16.7	.37	56	Y
	Vanoss silt loam	VaB	159.4	23.8	.37	56	Y
	Vanoss silt loam	VaD	22.4	3.4	.37	56	N
Water	W	100.9	15.1	--	--	N	
Waurika silt loam	Wa	10.5	1.6	.49	48	N	
-122	Ashport, Port, and Pulaski soils	Br	19	4.9	.37	86	N
	Dale clay loam	Dc	11.6	3.0	.32	48	Y
	Agra-Foraker complex	NeC	15.9	4.1	.49	56	Y
	Agra-Foraker complex	NeC2	0.5	0.1	.49	48	N
	Vanoss silt loam	VaA	5.6	1.4	.37	56	Y
	Vanoss silt loam	VaB	28.7	7.4	.37	56	Y
	Vanoss silt loam	VaC	43.7	11.2	.37	56	Y
	Vanoss silt loam	VaD	63.1	16.2	.37	56	N
Water	W	200.6	51.6	--	--	N	
-123	Cyril fine sandy loam	Ca	90.7	28.8	.24	86	Y
	Carwile-Lovedale complex	CsA	87.8	27.8	.32	86	N
	Eda loamy fine sand	PrB	34.9	11.1	.15	134	N
	Eda loamy fine sand	PrC	37.1	11.8	.15	134	N
	Lovedale fine sandy loam	ShA	1.9	0.6	.24	86	Y
	Lovedale fine sandy loam	ShC	2.0	0.6	.24	86	Y
	Tivoli fine sand	TrD	5.2	1.7	.15	220	N
	Water	W	0.6	0.2	--	--	N
	Waldeck fine sandy loam	Wa	51.5	16.3	.20	86	Y
Gracemont and Gracemore soils	Wt	3.7	1.2	.17	134	N	

Parcel	Soil Name	Soil Symbol	Acres in area	% in area	Erosion K Factor	Wind Edibility Index	Prime and Unique Farmland*
-124	Cyril fine sandy loam	Ca	134.3	35.5	.24	86	Y
	Nobscot fine sand	NcC	35.7	9.4	.15	220	N
	Eda loamy fine sand	PrB	164.7	43.5	.15	134	N
	Eda loamy find sand	PrC	21.0	5.5	.15	134	N
	Lovedale fine sandy loam	ShA	4.4	1.2	.24	86	Y
	Lovedale fine sandy loam	ShC	8.4	2.2	.24	86	Y
	Waldeck fine sandy loam	Wa	10.2	2.7	.20	86	Y
-125	Lincoln loamy fine sand	Bf	12.5	2.0	.17	134	N
	Canadian loam	Ca	4.4	0.7	.32	56	Y
	Hardeman fine sandy loam	EfB	35.9	5.7	.24	86	Y
	Eda loamy fine sand	PpB	28.9	4.6	.15	134	N
	Eda loamy fine sand	PpC	8.9	1.4	.15	134	N
	Tivoli fine sand	Tv	329.9	52.7	.15	220	N
	Water	W	123.6	19.7	--	--	N
	Pocasset loam	Wa	81.9	13.1	.37	86	Y
-126	Gracemont silty clay loam, saline	Ad	211.5	18.2	.32	86	N
	Hardeman fine sandy loam	EfC	13.4	1.2	.24	86	Y
	Grandfield fine sandy loam	MfB2	2.2	0.2	.20	86	N
	Eda loamy fine sand	PpC	44.2	3.8	.15	134	N
	Eda-Tivoli complex	Pt	46.1	4.0	.15	134	N
	Lesho clay loam	Sp	170.1	14.7	.28	86	Y
	Tivoli fine sand	Tv	275.6	23.8	.15	220	N
	Water	W	19.0	1.6	--	--	N
	Pocasset loam	Wa	149.2	12.9	.37	86	Y
Westola fine sandy loam	Ya	228.5	19.7	.20	86	Y	
-127	Gracemont silt clay loam, saline	Ad	80.5	28.9	.32	86	N
	Carey silt loam	CeB	20.9	7.5	.37	48	Y
	Lincoln clay loam	Ln	4.4	1.6	.28	86	N
	Grandfield fine sandy loam	MfD	0.6	0.2	.20	86	Y
	Eda loam fine sand	PpC	27.2	9.8	.15	134	N
	Devol fine sandy loam	Ps	28.0	10.1	.20	86	Y
	Eda-Tivoli complex	Pt	33.4	12.0	.15	134	N
	Quinlan-Woodward complex	QwE	24.3	8.7	.37	56	N
	Water	W	7.3	2.6	--	--	N
	Pocasset loam	Wa	5.9	2.1	.37	86	Y
	Woodward loam	WbC	17.6	6.3	.37	56	Y
	Dill fine sandy loam	WdB	6.4	2.3	.20	86	Y
	Westola fine sandy loam	Ya	21.8	7.8	.20	86	Y
-128	Gracemont silty clay loam, saline	Ad	32.9	41.6	.32	86	N
	Canadian loam	Ca	4.8	6.1	.32	56	Y
	Tivoli fine sand	Tv	11.8	14.9	.15	220	N
	Westola fine sandy loam	Ya	29.6	37.4	.20	86	Y

Parcel	Soil Name	Soil Symbol	Acres in area	% in area	Erosion K Factor	Wind Edibility Index	Prime and Unique Farmland*
-129	Gracemont silty clay loam, saline	Ad	86.3	41.6	.32	86	N
	Lincoln loamy find sand	Bf	5.5	2.6	.17	134	N
	Canadian loam	Ca	14.2	6.9	.32	56	Y
	Hardeman fine sandy loam	EfD	22.0	10.6	.24	86	Y
	Hardeman fine sandy loam	EfE	1.3	0.6	.24	86	N
	Lesho clay loam	Sp	54.0	26.0	.28	86	Y
	Water	W	3.9	4.5	--	--	N
	Westola fine sandy loam	Ya	9.3	4.5	.20	86	Y
	Westola fine sandy loam	Yf	10.8	5.2	.20	86	Y
-130	Grandfield-Nobscot complex	MnE	14.4	6.0	.24	86	N
	Clairemont silt loam	No	14.0	5.8	.43	86	Y
	Quinlan-Woodward complex	QwE	57.4	24.0	.37	56	N
	Quinlan-Rock outcrop complex	Rb	103.8	43.5	.37	56	N
	Woodward loam	WoC	35.3	14.8	.37	56	Y
	Woodward-Quinlan loams	WwC	3.3	1.4	.37	56	Y
	Westola fine sandy loam	Ya	10.5	4.4	.20	86	Y
-131	Quinlan-Woodward complex	QwE	1.1	2.7	.37	56	N
	Quinlan-Rock outcrop complex	Rb	28.5	71.3	.37	56	N
	Woodward loam	WoC	10.4	26.0	.37	56	Y

\* N: Not prime or unique farmland      Y: All areas prime farmland

## APPENDIX 3. BIOLOGICAL EVALUATION.

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### United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
OKLAHOMA FIELD OFFICE  
7906 E. 33<sup>rd</sup> St., Suite 101  
TULSA, OK 74145-1352  
<http://www.blm.gov>



RE: Biological Evaluation for the July, 2013 Federal Oil & Gas Lease Sale Oklahoma Counties.  
DOI-BLM-NM-040-2013-0113

NM-201307-116 - Pottawatomie County, Oklahoma	Sec. 13-T10N-R4E, LOT 1
NM-201307-117 - Texas County, Oklahoma	Sec. 01-T1S-R19E, W2 LOT 1&2
NM-201307-118 - Beaver County, Oklahoma	Sec. 01-T01S-R22E, LOTS 1-3
NM-201307-119 - Beaver County, Oklahoma	Sec. 03-T10S-R22E, LOTS 1&2
NM-201307-120 - Major County, Oklahoma	Sec. 25-T20N-R10W, LOT 4
NM-201307-121 - Kay County, Oklahoma	Sec. 01-T27N-R3E, LOT 10; Sec. 06-T27N-R4E, LOTS 1-5 & S2NE, SENW, SE; Sec. 07-T27N-R4E, LOTS 4-7 & N2NE; Sec. 18-T27N-R4E, NENE
NM-201307-122 - Kay County, Oklahoma	Sec. 30-T27N-R4E, LOT 4-8 & SENW NESW, & N2SESW SWSESW N2SESESW; Sec. 31-T27N-R4E, N2NE
NM-201307-123 - Blaine County, Oklahoma	Sec. 04-T19N-R13W, S2
NM-201307-124 - Blaine County, Oklahoma	Sec. 10-T19N-R13W, W2 SWSE & S2NWSE
NM-201307-125 - Dewey County, Oklahoma	Sec. 02-T19N-R14W, LOTS 1-6 & S2N2 N2S2 S2SW
NM-201307-126 - Dewey County, Oklahoma	Sec. 06-T19N-R14W, LOT 1-14 & S2NE SENW NESW N2SE; Sec. 07-

	T19N-R14W, N2NE; Sec. 08-T19N-R14W, N2 SE
NM-201307-127 - Dewey County, Oklahoma	Sec. 15-T19N-R14W, LOT 1-3 & S2NE N2NW SENW
NM-201307-128 - Dewey County, Oklahoma	Sec. 10-T19N-R15W, N2NE
NM-201307-129 - Dewey County, Oklahoma	Sec. 11-T19N-R15W, N2N2NE SENENE; Sec. 12-T19N-R15W, LOTS 1-4 & NWNW
NM-201307-131 - Roger Mills County, Oklahoma	Sec. 01-T14N-R25W, SWSW

The Bureau of Land Management’s (BLM) environmental assessment (EA) for this project contains all pertinent information regarding the specific characteristics of the proposed leasing of federal oil & gas minerals. The purpose of this report is to document BLM’s “No Effect” for threatened & endangered species based on the administrative action on making the proposed parcels available for leasing.

*Wetland and Riparian Habitat*

Wetland habitats provide important wintering and migration habitat for several species of Migratory Birds. Wetlands also provide a link between land and water and are some of the most productive ecosystems in the world. Executive Order (EO) 11990 on the Protection of Wetlands provides opportunity for early review of Federal agency plans regarding new construction in wetland areas. Under EO 11990, each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency’s responsibilities for conduction federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating and licensing activities.

NM-201307-116 Pottawatomie County, Oklahoma

U.S. Fish and Wildlife USFWS (USFWS) National Wetlands Inventory map showed Freshwater Forested/Shrub Wetland, Riverine, Freshwater Pond wetland issues within this lease parcel.

NM-201307-117 Texas County, Oklahoma, NM-201307-118 - Beaver County, Oklahoma, NM-201307-119 - Beaver County, Oklahoma

USFWS National Wetlands Inventory map showed no wetland areas within the proposed lease sale parcel.

NM-201307-120 - Major County, Oklahoma

USFWS National Wetlands Inventory map showed Freshwater Forested/Shrub Wetland issues within this lease parcel.

NM-201307-121 - Kay County, Oklahoma, NM-201307-122 - Kay County, Oklahoma, NM-201307-123 - Blaine County, Oklahoma, NM-201307-125 - Dewey County, Oklahoma

USFWS National Wetlands Inventory map showed Freshwater Emergent Wetland, Lake, Freshwater Forested/Shrub Wetland issues within this lease parcel.

NM-201307-124 - Blaine County, Oklahoma, NM-201307-129 - Dewey County, Oklahoma  
 USFWS National Wetlands Inventory map showed Forested/Shrub Riparian wetland issues within this lease parcel.

NM-201307-126 - Dewey County, Oklahoma  
 USFWS National Wetlands Inventory map showed Freshwater Forested/Shrub Wetland, Forested/Shrub Riparian wetland issues within this lease parcel.

NM-201307-127 - Dewey County, Oklahoma  
 USFWS National Wetlands Inventory map showed Freshwater Forested/Shrub Wetland, Riverine wetland issues within this lease parcel.

NM-201307-128 - Dewey County, Oklahoma  
 USFWS National Wetlands Inventory map Forested/Shrub Riparian, Riverine, Freshwater Forested/Shrub Wetland, Freshwater Emergent Wetland, Riverine wetland issues within this lease parcel.

NM-201307-131 – Roger Mills County, Oklahoma  
 USFWS National Wetlands Inventory map showed no wetland areas within the proposed lease sale parcel.

*Threatened and Endangered Species*

The purpose of the Endangered Species Act (ESA) is to ensure that federal agencies and departments use their authorities to protect and conserve endangered and threatened species. Section 7 of the ESA requires that federal agencies prevent or modify any projects authorized, funded, or carried out by the agencies that are "likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of critical habitat of such species."

The table below provides a list of the species, federally listed as endangered, threatened, or as rare species of special concern, which occur or have potential for occurrence in Pottawatomie, Texas, Beaver, Major, Kay, Blaine and Dewey Counties, Oklahoma.

*Special Status Species*

The Oklahoma Department of Wildlife does not list any species of concern for the above listed counties.

<b>Federally and State Listed Threatened and Endangered Species and Species of Concern, Alfalfa, Jackson, Kay, Woods Counties, OK</b>			
<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Status</b>	<b>County</b>
<b>Birds</b>			
<i>Charadrius melodus</i>	Piping plover	Threatened	Pottawatomie, Texas, Beaver, Major, Kay, Blaine,

Federally and State Listed Threatened and Endangered Species and Species of Concern, Alfalfa, Jackson, Kay, Woods Counties, OK			
Scientific Name	Common Name	Federal Status	County
			Dewey, Roger Mills
<i>Tympanuchus pallidicinctus</i>	Lesser Prairie-Chicken	Proposed Threatened	Texas, Beaver, Dewey, Roger Mills
<i>Grus americana</i>	Whooping Crane	Endangered	Pottawatomie, Texas, Beaver, Major, Kay, Blaine, Dewey, Roger Mills
<i>Sterna antillarum</i>	Interior Least Tern	Endangered	Pottawatomie, Texas, Beaver, Major, Kay, Blaine, Dewey, Roger Mills
<i>Vireo atricapilla</i>	Black-Capped Vireo	Endangered	Blaine
Fishes			
<i>Notropis girardi</i>	Arkansas River Shiner	Threatened	Major
<i>Etheostoma cragini</i>	Arkansas Darter	Candidate	Texas, Beaver,

### Piping Plovers

Habitat: Piping Plovers are found on mudflats, sandy beaches and shallow wetlands with sparse vegetation. They may be found along the margins of lakes and large rivers where there is exposed (bare) sand or mud.

Current Distribution: There are two nesting records for the Piping Plover in the Oklahoma panhandle, but this species is normally a spring and fall migrant throughout the state. Most records for migrating Piping Plovers occur across the main body of the state; recent records have come from Woodward, Alfalfa, Oklahoma, Cleveland, Tulsa and Washington counties. Spring migration occurs in April and early May; fall migration occurs between the last week of July and late September.

### Lesser Prairie-Chicken (LPC)

Habitat: The sand shinnery and sand sagebrush native rangelands of northwest Oklahoma are crucial for survival of this species.

Current Distribution: LPC are found in southeastern Colorado, southwestern Kansas, northwestern Oklahoma, Eastern New Mexico, and the Texas Panhandle. The lesser prairie chicken is identified as a species of greatest conservation need in Oklahoma and is a candidate for federal listing as threatened, range-wide.

### Whooping Crane

Habitat: Whooping Cranes pass through Oklahoma each spring and fall during migration. While in our state, they are typically found in shallow wetlands, marshes, the margins of ponds and lakes, sandbars and shorelines of shallow rivers, wet prairies and crop fields near wetlands.

Current Distribution: During their migration, they pass through the western half of Oklahoma – most sightings occur west of Interstate 35 and east of Guymon in the panhandle. Currently, the

migratory population consists of approximately 270 birds that nest in northern Canada and winter along the Gulf Coast of Texas.

The Salt Plains National Wildlife Refuge, located just south of the lease parcel, is designated as critical whooping crane habitat for use during the fall and spring migrations.

#### Interior Least Tern

Habitat: Terns live along large rivers and may sometimes be found hunting fish in shallow wetlands and the margins of ponds and lakes. Least Terns require bare sand and gravel for nesting and typically nest in small colonies consisting of two to 20 pairs along large rivers on sand bars and scoured bends. Colonies also occur on salt flats such as the large one at Salt Plains National Wildlife Refuge.

Current Distribution: The Least Tern is a rare species and is found in Oklahoma during the late spring and summer breeding season (mid-May through late August). In Oklahoma, Least Terns may be found on portions of the Arkansas, Cimarron, Canadian and Red rivers.

#### Black-Capped Vireo

Habitat: Black-capped Vireos are typically found in low brushy thickets comprised of deciduous trees such as oaks, redbuds and plums. These thickets are often found on thin and rocky soils that slow or stunt the growth of trees and maintain the low thickets that the vireo prefers.

Current Distribution: Currently, there are only two known populations of Black-capped Vireos in Oklahoma. One population is large (over 2,000 birds) and is located in the Wichita Mountains of northern Comanche County. The other population is small (less than 30 birds) and is located in the canyon lands of northern Blaine County north of Watonga.

#### Arkansas River Shiner

Habitat: The Arkansas River Shiner inhabits the shallow braided channels of wide sandy prairie rivers in the Arkansas River system. Schools of shiners often gather on the lee side of sandbars and ridges of sand in the river channel. They spawn after heavy summer rains and their eggs drift with the water current and develop as they are carried downstream.

Current Distribution: At the present time, nearly all of the remaining Arkansas River Shiners occur in the Canadian River in Oklahoma, western Texas and eastern New Mexico. A small population may persist in the Cimarron River in Oklahoma, and an isolated population occurs in the Pecos River in southwestern Texas where they were accidentally introduced.

The USFWS has designated as critical habitat a total of approximately 532 linear miles of 2 river reaches, including 300 feet of adjacent riparian areas measured laterally from each bank. The areas that have been determined to be eligible for designation as critical habitat for the conservation of the Arkansas River shiner include portions of the Canadian River (often referred to as the South Canadian River) in New Mexico, Texas, and Oklahoma, the Beaver/North Canadian River of Oklahoma, the Cimarron River in Kansas and Oklahoma, and the Arkansas River in Kansas.

### Arkansas Darter

Habitat: The Arkansas darter prefers shallow, clear, cool water, sand or silt bottom streams with spring-fed pools and abundant rooted aquatic vegetation. During late summer low-water periods when streams may become intermittent, Arkansas darter populations in Colorado persist in large, deep pools.

Current Distribution: The Arkansas darter's range includes sites in extreme northwestern Arkansas, southwestern Missouri, and northeastern Oklahoma, within the Neosho River watershed. It also occurs in a number of watersheds and isolated streams in eastern Colorado, south-central and southwestern Kansas, and the Cimarron watershed in northwest Oklahoma.

According to above information all or portions of these leases could contain Federal and/or state listed threatened or endangered species or/and their habitats. Any proposed surface disturbing activity may require an inventory and consultation with the USFWS and/or the state wildlife agency. The consultation could take up to 180 days to complete. Surface occupancy could be restricted or not allowed as a result of the consultation. Appropriate modifications to the imposed restrictions will be made for the maintenance and operations of producing oil and gas wells.

### *Wildlife*

Wildlife includes all non-domesticated plants, animals and other organisms. Several game species of interest inhabit the lease parcel areas, such as, dove, turkey, deer, rabbit, squirrels, raccoons, bobcats and coyotes, along with many species of songbirds. Due to this project area located on privately owned surface, comprehensive biological inventories are not available.

### *Migratory Birds*

Executive Order (EO) 13186, 66 Fed. Reg. 3853, (January 17, 2001) identifies the responsibility of federal agencies to protect migratory birds and their habitats, and directs executive departments and agencies to undertake actions that will further implement the Migratory Bird Treaty Act (MBTA). Under the MBTA, incidental, unintentional, and accidental take, killing, or possession of a migratory bird or its parts, nests, eggs or products, manufactured or not, without a permit is unlawful. EO 13186 includes a directive for federal agencies to develop a memorandum of understanding (MOU) with the USFWS to promote the conservation of migratory bird populations, including their habitats, when their actions have, or are likely to have, a measurable negative effect on migratory bird populations.

NM-201307-116 - Pottawatomie County, Oklahoma is located within the Bird Conservation Region 25, West Gulf Coastal Plain/Ouachitas. Twenty-eight birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found nine species from the Pushmataha Route Survey list, the chuck-will's widow, red-headed woodpecker, Bewick's wren, prairie warbler, Louisiana waterthrush, Kentucky warbler, Bachman's sparrow, painted bunting and the orchard oriole.

NM-201307-117 - Texas County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found nine species from the Beaver

Route Survey list, the Mississippi kite, Swainson's hawk, Red-headed woodpecker, Scissor-tld flycatcher, Loggerhead shrike, lark bunting, upland sandpiper, long-billed curlew and the Cassin's sparrow.

NM-201307-118 - Beaver County, Oklahoma is located within the Bird Conservation Region 18, Shortgrass Prairie. Sixteen birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found two species from the Twichell Route Survey list, the burrowing owl and the lark bunting.

NM-201307-119 - Beaver County, Oklahoma is located within the Bird Conservation Region 18, Shortgrass Prairie. Sixteen birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found two species from the Twichell Route Survey list, the burrowing owl and the lark bunting.

NM-201307-120 - Major County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found seven species from the Weches Route Survey list, the Swainson's hawk, upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell's vireo and the lark bunting.

NM-201307-121 - Kay County, Oklahoma is located within the Bird Conservation Region 22, Eastern Tall Grass Prairie. Thirty-nine birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found twelve species from the Foraker Route Survey list, the upland sandpiper, short-eared owl, whip-poor-will, red-headed woodpecker, northern flicker, loggerhead shrike, Bell's vireo, Bewick's wren, field sparrow, grasshopper sparrow, Henslow's sparrow and the dickcissel.

NM-201307-122 - Kay County, Oklahoma is located within the Bird Conservation Region 22, Eastern Tall Grass Prairie. Thirty-nine birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found twelve species from the Foraker Route Survey list, the upland sandpiper, short-eared owl, whip-poor-will, red-headed woodpecker, northern flicker, loggerhead shrike, Bell's vireo, Bewick's wren, field sparrow, grasshopper sparrow, Henslow's sparrow and the dickcissel.

NM-201307-123 - Blaine County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found eight species from the Phroso Route Survey list, the Mississippi kite, Swainson's hawk, upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell's vireo, Cassin's sparrow.

NM-201307-124 - Blaine County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found eight species from the Phroso Route Survey list, the Mississippi kite, Swainson's hawk, upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell's vireo, Cassin's sparrow.

NM-201307-125 - Dewey County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found eight species from the Phroso Route Survey list, the Mississippi kite, Swainson’s hawk, upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell’s vireo, Cassin’s sparrow.

NM-201307-126 - Dewey County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found eight species from the Phroso Route Survey list, the Mississippi kite, Swainson’s hawk, upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell’s vireo, Cassin’s sparrow.

NM-201307-127 - Dewey County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found eight species from the Phroso Route Survey list, the Mississippi kite, Swainson’s hawk, upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell’s vireo, Cassin’s sparrow.

NM-201307-128 - Dewey County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found eight species from the Phroso Route Survey list, the Mississippi kite, Swainson’s hawk, upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell’s vireo, Cassin’s sparrow.

NM-201307-129 - Dewey County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found eight species from the Phroso Route Survey list, the Mississippi kite, Swainson’s hawk, upland sandpiper, red-headed woodpecker, scissor-tld flycatcher, loggerhead shrike, Bell’s vireo, Cassin’s sparrow.

NM-201307-131 – Roger Mills County, Oklahoma is located within the Bird Conservation Region 19, Central Mixed-Grass Prairie. Twenty-seven birds of conservation concern have been identified in this region. Breeding bird surveys conducted near the site found eight species from the Grimes Route Survey list, the little blue heron, Swainson’s hawk, red-headed woodpecker, scissor-tailed flycatcher, loggerhead shrike, Bell’s vireo, and Cassin’s sparrow.

<b>Birds of Conservation Concern Known to Breed and/or Nest in or near Proposed Lease Parcels</b>		
<b>Wetland Associated</b>	<b>Grasslands</b>	<b>Woodland or Scrub</b>
Louisiana waterthrush	Swainson’s hawk	Mississippi kite
Little blue heron	Long-billed curlew	Red-headed woodpecker
	Cassin’s sparrow	Bell’s vireo
	Upland sandpiper	Bewick’s wren
	Field sparrow	Northern flicker
	Grasshopper sparrow	Dickcissel
	Henslow’s sparrow	Orchard oriole

<b>Birds of Conservation Concern Known to Breed and/or Nest in or near Proposed Lease Parcels</b>		
<b>Wetland Associated</b>	<b>Grasslands</b>	<b>Woodland or Scrub</b>
	Lark bunting	Chuck-will's widow
	Burrowing owl	Prairie warbler
	Short-eared owl	Kentucky warbler
		Bachman's sparrow
		Painted bunting
		Scissor-tailed flycatcher
		Whip-poor-will
		Loggerhead shrike

### **Environmental Consequences**

#### *Wetland and Riparian Habitat*

While the act of leasing Federal minerals would produce no direct impacts to wetlands or riparian areas; no adverse impacts are expected for wetlands or riparian areas if exploration/development occurred on this lease parcel in the future.

#### *Mitigation*

Potential mitigation is deferred to site-specific development at the APD stage. Protective stipulation ORA-2 would be attached to the lease of a tract which falls within a wetland/riparian. ORA-2 states that, "All or portions of the lands under this lease contain wetland and/or riparian areas. Surface occupancy of these areas will not be allowed without the specific approval, in writing, of the Bureau of Land Management. Impacts or disturbance to wetlands and riparian habitats which occur on this lease must be avoided or mitigated. The mitigation shall be developed during the application for permit to drill."

NM-201307-116 in Pottawatomie County, Oklahoma would have stipulation ORA-2: Wetland/Riparian Protection attached to the lease.

NM-201307-117 - Texas County, Oklahoma, NM-201307-118 & 119 - Beaver County, Oklahoma has no wetland issues.

NM-201307-120 in Major County Oklahoma would have stipulation ORA-2: Wetland/Riparian Protection attached to the lease.

The Army Corp of Engineers Special Stipulation 1-A will be attached to parcels NM-201307 - 121 thru 129.

#### *Threatened and Endangered Species*

While the act of leasing Federal minerals produces no impacts to Threaten and Endangered Species, subsequent exploration/development of the proposed parcel may produce impacts. Surface disturbance from the development of well pads, access roads, pipelines, and utility lines can cause an increase in habitat fragmentation, noise, or other disturbance during development.

#### *Mitigation*

Protective stipulation WO-ESA-7 would be attached to any lease of a tract which falls within an area of potential wildlife habitat. WO-ESA-7 states that, “The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 *et seq.*, including completion of any required procedure for conference or consultation.”

NM-201307-116, NM-201307-117 and NM-201307-120 parcels in Pottawatomie, Texas and Major Counties would have stipulation WO-ESA-7: Threatened and Endangered Species protection.

NM-201307-118, NM-201307-119 in Beaver County and NM-201307-131 in Roger Mills County would have stipulation ORA-3: Season of Use and WO-ESA-7: Threatened and Endangered Species protection.

The Army Corp of Engineers Special Stipulation 1-A will be attached to parcels NM-201307 - 121 thru 129.

Additionally, the Wildlife Resource General Conditions of Approval (WRGCOAs) included in an approved APD and use of standard Best Management Practices (BMPs) should provide extra measures of protection to general wildlife populations and habitats in the area. Impacts to the wildlife resource component of the environment can be avoided or minimized by adopting the WRGCOAs and BMPs.

#### *Special Status Species*

No State listed species or their critical habitat is present in the proposed lease sale parcels.

#### *Wildlife*

While the act of leasing Federal minerals would produce no direct impacts to wildlife, subsequent development of a lease may produce impacts. Impacts could result from increased habitat fragmentation, noise, or other disturbance during development. Although reclamation and restoration efforts for surface disturbance could provide for the integrity of other resources, these efforts may not always provide the same habitat values (e.g. structure, composition, cover, etc.) in the short or in some instance, the long-term in complex vegetative community types (e.g., shrub oak communities). The short-term negative impact to wildlife would occur during the construction phase of the operation due to noise and habitat destruction. In general, most wildlife species would become habituated to the new facilities. For other wildlife species with a low tolerance to activities, the operations on the well pad would continue to displace wildlife from the area due to ongoing disturbances such as vehicle traffic, noise and equipment maintenance.

The conditions of approval would alleviate most losses of wildlife species, such as; fencing the reserve pits, netting storage tanks, installation or other modifications of cones on separator stacks, and timing stipulations. The magnitude of above effects would be dependent on the rate and location of the oil and gas development, but populations could likely not recover to pre-disturbance levels until the activity was completed and the vegetative community restored.

#### *Mitigation*

Measures would be taken to prevent, minimize, or mitigate impacts to fish and wildlife animal species from exploration and development activities. Prior to authorization, activities would be evaluated on a case-by-case basis, and the project would be subject to mitigation measures. Mitigation could potentially include rapid re-vegetation, noise restrictions, project relocation, or pre-disturbance wildlife species surveying.

#### *Migratory Birds*

The USFWS estimates that many migratory birds are killed annually throughout the United States in oil field production skim pits, reserve pits, and centralized oilfield wastewater disposal facilities. Numerous grasshoppers, moths, June bugs, and the like become trapped on the surface in tanks and on pits, and become bait for many species of migratory birds. Open tanks and pits then become traps to many species of birds protected under the MBTA. Properly covered tanks and pits (and regularly inspected covered tanks and pits) is imperative to continued protection of migratory birds in the well pad area.

#### *Mitigation*

Per the MOU between BLM and the USFWS, entitled “To Promote the Conservation of Migratory Birds,” the following temporal and spatial conservation measures must be implemented as part of the Conditions of Approval with a permit to drill:

- 1) Avoid any take of migratory birds and/or minimize the loss, destruction, or degradation of migratory bird habitat while completing the proposed project or action.
- 2) If the proposed project or action includes a reasonable likelihood that take of migratory birds will occur, then complete actions that could take migratory birds outside of their nesting season. This includes clearing or cutting of vegetation, grubbing, etc. The primary nesting season for migratory birds varies greatly between species and geographic location, but generally extends from early April to mid-July. However, the maximum time period for the migratory bird nesting season can extend from early February through late August. Strive to complete all disruptive activities outside the peak of migratory bird nesting season to the greatest extent possible.
- 3) If no migratory birds are found nesting in proposed project or action areas immediately prior to the time when construction and associated activities are to occur, then the project activity may proceed as planned.

#### *Mitigation Common For All Species*

The Wildlife Resource General Conditions of Approval (WRGCOAs) included in the approved APD and use of standard Best Management Practices (BMPs) should provide extra measures of

protection to general wildlife populations and habitats in the area. Impacts to the wildlife resource component of the environment can be avoided or minimized by adopting the WRGCOAs and BMPs. WRGCOA #4 (Burying Transmission Lines) and Notice to Lessees (NTL) 96-01-TDO (Modification of Oil and Gas Facilities to Minimize Bird and Bat Mortality) address measures designed to protect migratory birds from accidental deaths associated with power line collisions/electrocutions, open-vent exhaust stacks and open pits and tanks.

### **Determination**

The proposed lease sale parcels and all subsequent activities resulting from it are subject to all state and federal regulations and proposed lease stipulations designed to reduce environmental risks. Lease stipulations are legally binding restrictions and operating requirements that become part of lease contracts.

This lease sale, in and of itself, has no impact on threatened or endangered species, wetland or migratory birds to analyze or consult on. Additionally, site-specific analysis and mitigation will occur once the parcels are leased and an Application for Permit to Drill is submitted.

Based on all the information discussed above the biological determination of effect for federally listed species regarding leasing of these parcels is “**NO EFFECT**”.

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Becky Peters Wildlife Biologist

01/22/2013 .  
Date

## APPENDIX 5. CULTURAL RESOURCES REPORT

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