

**United States Department of the Interior
Bureau of Land Management**

Finding of No Significant Impact

January 2013 Competitive Oil and Gas Lease Sale

DOI-BLM-NM-F020-2012-0031-EA

Rio Arriba County, New Mexico

Taos Field Office
226 Cruz Alta Road
Taos, New Mexico
575-758-8851



FINDING OF NO SIGNIFICANT IMPACT

January 2013 Competitive Oil and Gas Lease Sale

DOI-BLM-NM-F020-2012-0031-EA

Based on the analysis of potential environmental impacts contained in the environmental assessment (EA) prepared for the January 2013 Competitive Oil and Gas Lease Sale (DOI-BLM-NM-F020-2012-0031-EA), addressing parcels nominated within the Taos Field Office planning area, and considering the significance criteria in 40 CFR 1508.27, I have determined that the Preferred 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 Taos Resource Management Plan, approved on May 24, 2012, and the lease stipulations and notices that accompany the tracts proposed for leasing would mitigate the impacts of future development on these tracts. Therefore, preparation of an environmental impact statement is not warranted.

Prepared by:

Brad Higdon, Planning and Environmental Coord.

Date

Reviewed By:

Sam DesGeorges, Taos Field Manager

Date

Approved by:

Jesse Juen, State Director

Date

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Environmental Assessment

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1.0 INTRODUCTION

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 Act 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 lands 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; what appropriate stipulations should be included; and if there are special resource conditions of which potential bidders should be made aware. The parcels nominated for this sale, along with the appropriate stipulations from the RMP, are 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 BLM's review of the 16 parcels nominated for the January 2013 Competitive Oil and Gas Lease Sale that involve public lands administered by the Taos Field Office. 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 parcels and applicable stipulations were posted online for a two week public scoping period starting on July 23, 2012. One comment was received expressing concerns regarding the potential for subsequent drilling activities to impact ground water quality.

In addition, this EA was made available for public review and comment for 30 days beginning August 27, 2012. Comments were received from Rio Arriba County, Canjilon District of Carson National Forest, and a concerned Canjilon community member. The comments provided were considered and incorporated into this EA as appropriate. See section 5.1 for a summary of the substantive comments as well as the BLM's response to each.

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 of 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 Taos Resource Management Plan (RMP), approved in May 2012. The RMP designated approximately 343,449 acres of federal minerals open for fluid mineral leasing with moderate constraints, which include seasonal timing limitations and other controlled surface use stipulations designed to minimize or alleviate potential impacts to special resource values. Since the parcels under consideration fall within this area and the applicable constraints identified in the RMP would be attached to the parcels, if leased, leasing the parcels would be in conformance with the Taos RMP. Leasing the parcels would also be consistent with the RMP's goals and objectives for natural and cultural resources.

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this EA is tiered to and incorporates by reference certain information and analyses contained in the 2012 Taos RMP and its Final Environmental Impact Statement (EIS). The site-specific analysis of individual wells or roads prepared when a lease holder submits an Application for Permit to Drill (APD) would also be tiered to the Taos RMP and Final EIS.

In addition, FLPMA established guidelines to provide for the 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 U.S. For split-estate lands where the mineral estate is an interest owned by the U.S., 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 1601.09 and 1624-1).

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.

The U.S. Fish and Wildlife Service (USFWS) concurred with Taos Field Office biologists on a determination of no effect or not likely to adversely affect threatened or endangered species on the Draft Environmental Impact Statement prepared (Draft EIS) for the Taos RMP (USDI 2011). The USFWS response, dated June 30, 2010, is on file at the Taos Field Office (consultation number 22420-2008-I-0013). No further consultation with the USFWS is needed at this stage for any of the proposed parcels.

Federal regulations and policies require the BLM to make its public land and resources available on the basis of the principle of multiple-use. At the same time, it is BLM policy to conserve special status species and their habitats, and to ensure that actions authorized by the BLM do not contribute to the need for the species to become listed as threatened or endangered by the USFWS.

Compliance with responsibilities under Section 106 of the National Historic Preservation Act are adhered to by following the Protocol Agreement between New Mexico Bureau of Land Management and New Mexico State Historic Preservation Officer (Protocol Agreement), which is authorized by the National Programmatic Agreement between BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, and other applicable BLM handbooks. A cursory review of draft parcel locations was performed by the Taos Field Office to broadly address the potential for areas of concern to be present. It is, however, the responsibility of the lessee, or their designated consultants, to understand and implement all of the requirements of the National Historic Preservation Act and other pertinent legislation with regard to the management of cultural resources within their respective Areas of Potential Effect (APE). This responsibility includes the assumption of all costs related to compliance work and any mitigation issues that might arise through avoidance, relocation, or the implementation of other remedial actions.

The Taos Field Office conducts Native American consultation on each lease sale activity. If Traditional Cultural Properties (TCP) or heritage-related issues are identified, such parcels are withheld from the sale while letters requesting information, comments, or concerns are sent to the Native American representative. If the same draft parcels appear in future sales, a second request for information is sent to the same recipients and the parcels will be held back again. If no response to the second letter is received, the parcels are allowed to be offered in the next sale.

If responses are received, BLM cultural resources staff will discuss the information or issues of concern with the Native American representative to determine if all or portions of a parcel need to be withdrawn from the sale, or if special requirements need to be attached as lease stipulations. Native American consultation letters for the January 2013 Lease Sale were sent by registered mail on August 17, 2012 to the prospective affiliated tribes. To date, no responses with concerns from Tribes have been received.

Compliance with the provisions of the 2009 Paleontological Resources Protection Act (PRPA; Public Law 111-011) requires that the Department of the Interior consider the potential impacts of development plans on significant fossil resources and allow for the implementation of mitigation measures where necessary. Initial compliance is an internal process where the potential for significant paleontological resources to be present is established by a review of the Potential Fossil Yield Classification System (PFYC) for the Area of Potential Effects (APE). Numerical ranking of the associated geological formations under the PFYC system in terms of fossil potential dictates the direction of additional compliance measures. These may range from a determination of no effect to the requirement that a paleontological survey be conducted by appropriate specialists and that further action adheres to any subsequent recommendations.

In Section 1835 of the Energy Policy Act of 2005 (43 U.S.C. 15801), 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 the 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.

In 2007, the Legislature of the State of New Mexico passed the Surface Owners Protection Act. This Act requires operators to provide the surface owner at least five business days notice prior to initial entry upon the land for activities that do not disturb the surface; and provide at least 30 days notice prior to conducting actual oil and gas operations. At the New Mexico Federal Competitive Oil and Gas Lease Sale conducted on October 17, 2007, the BLM announced the implementation of this policy. Included in this policy is the implementation of a Notice to Lessees (NTL), a requirement of lessees and operators of onshore federal oil and gas leases within the State of New Mexico to provide the BLM with the names and addresses of the surface owners of those lands where the Federal government is not the surface owner, not including lands where another federal agency manages the surface.

The NMSO would then contact the surface owners and notify 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. 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 Taos Field Office resource specialists on July 9, 2012 to identify and consider potentially affected resources and associated issues—the scope of issues evaluated in this EA—presented below. The outcome of this meeting and subsequent review by the resource specialists was the identification of applicable lease stipulations that are appropriately applied to each respective parcel.

The parcels included in the Proposed Action, along with the appropriate stipulations from the RMP, were posted online at http://www.blm.gov/nm/st/en/prog/energy/oil_and_gas.html for a two week public scoping period beginning July 23, 2012. One comment was received expressing concerns regarding the potential for subsequent drilling activities to impact ground water quality.

In addition, appropriate consultations were initiated with Native American tribes and pueblos, Rio Arriba County, and Carson National Forest via letter on August 17, 2012 to solicit input on the proposed lease sale and any potential unresolved issues.

Based on these scoping efforts, the following issues have been determined relevant to the analysis of this action:

Wildlife Habitat

- Potential impacts to big game winter and spring range and migration corridor
- Potential impacts to nesting raptors and bald eagle roosting sites
- Potential impacts to prairie dog towns

Cultural Resources

- Potential to adversely affect National Register eligible sites
- Potential to adversely affect the Old Spanish National Historic Trail
 - Potential to adversely affect physical manifestations of the Old Spanish Trail
 - Potential to adversely affect ancillary resources to the Old Spanish Trail
- Potential to adversely affect or restrict Native American access to Traditional Cultural Properties

Paleontological Resources

- Potential to impact significant paleontological resources

Visual Resources

- Potential for visual contrast inconsistent with Visual Resource Management classes I and II.

Soils

- Potential for soil erosion on slopes
- Potential erosion of fragile soils

Livestock Grazing

- Potential to impact livestock grazing operations

Vegetation

- Potential to disrupt and remove native/desirable vegetation

Noxious Weeds and Invasive, Non-native Species

- Potential to introduce and propagate noxious weeds and other invasive, non-native species

Aquatic Resources

- Potential to effect surface waters and associated resources such as riparian areas, wetlands, and floodplains
- Potential to effect ground water quality

Areas of Human Occupancy and Development

- Potential to impact land uses by local populations
- Potential to disproportionately impact minority or low income populations (Environmental Justice)

Air Resources

- Potential for emissions of hazardous air pollutants
- Potential for contributions to climate change

Potential issues associated with threatened or endangered species were considered during project scoping but dismissed from detailed analysis because there would be no potentially significant effects related to the issues resulting from the Proposed Action. These species were determined to not be present within the area proposed for leasing. This determination is supported by the Draft EIS prepared for the Taos RMP (DOI 2011), and the concurrence received from the USFWS on the lack of potential impacts to special status species from the RMP's mineral leasing allocations. Nevertheless, a stipulation addressing compliance with the Endangered Species Act is attached to all lease parcels to ensure protection of threatened, endangered, or special status plant or animal species or their habitat.

2.0 PROPOSED ACTIONS AND ALTERNATIVES

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 proposed 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 16 parcels would not be offered for lease during the January 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. Selection of the no action alternative would not preclude these parcels from being nominated and considered in a future lease sale.

2.2 Alternative B – Proposed Action

The Proposed Action is to lease the 16 parcels of federal minerals nominated by the public, covering 13,303.6 acres administered by the Taos Field Office, for oil and gas exploration and development. Standard terms and conditions as well as stipulations listed in the Taos RMP would be applied where appropriate. Stipulations applied to all leases ensure compliance with Section 106 of the National Historic Preservation Act (NHPA) and Executive Order 13007 regarding the protection of cultural resources and Section 7 of the Endangered Species Act regarding plant and animal species or their habitats subject to its provisions. A complete description of these parcels, including any stipulations, is provided in Appendix 1, while a map of the parcels, Figure 1, is included in Appendix 2.

Once sold, the lease purchaser has the exclusive right to use so much of the leased lands as is reasonably necessary to explore and drill for all of the oil and gas within the lease boundaries, subject to the stipulations attached to the lease (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 meets the site specific requirements specified in 43 CFR 3162.

2.3 BLM Preferred Alternative

A third alternative, the Preferred Alternative, is developed in response to the circumstances within eight lease parcels where further evaluation of specific issues is necessary before the BLM can assure an adequately informed decision can be made. The unresolved issues related to the eight parcels include potential impacts to residential, commercial, and agricultural developments and potential impacts to a community water source.

The Preferred Alternative is to defer parcel NM-201301-013, which consists of approximately 31 acres in T. 27 N., R. 4 E., sections 26 (lots 7-14) and 35 (lots 11-16 and 18-20). Human occupancy and development occurs within its boundaries. While a no surface occupancy stipulation is attached to this parcel under the Proposed Action in an effort to address this issue, the Preferred Alternative includes the deferral of parcel NM-201301-013 pending further evaluation of this specific issue with Rio Arriba County officials and the local population.

Likewise, parcels NM-201301-001, NM-201301-003, NM-201301-004, NM-201301-006, NM-201301-012, and NM-201301-014 are proposed for deferral under this alternative due to potential conflicts with residential, agricultural, and other developments that have yet to be fully identified.

In addition, parcel NM-201301-009 is deferred under this alternative to provide for further evaluation of issues regarding an important source of water for the community of Cebolla.

The Preferred Alternative, therefore, is to lease the remaining eight parcels—NM-201201-002, NM-201201-005, 201201-007, NM-201201-008, NM-201201-010, NM-201201-011, NM-201201-015, and NM-201201-016—presented under the Proposed Action, totaling 6,245.18 acres, with the following minor exceptions:

Lease notices would be attached to the parcels identified below to notify potential lessees of two circumstances which may require special consideration or measures at the time surface disturbance—any modification, use, or occupancy of the surface of a lease parcel authorized by approval of an Application for Permit to Drill (APD)—is proposed on the lease. Parcels are listed under the respective notices to be applied under the Preferred Alternative.

Lease Notice - Potential Occurrence of National Historic Trail Features

This lease has potential to contain resources, including ancillary resources, associated with the Old Spanish or Camino Real de Tierra Adentro National Historic Trails that may require special mitigation measures such as avoidance, data recovery, and stabilization.

Applicable parcels:

NM-201201-002
NM-201201-008
NM-201201-011
NM-201201-015
NM-201201-016

Lease Notice - Occurrence of Rangeland Monitoring Plots

This lease contains one or more rangeland monitoring plot, consisting of approximately two acres, which may require avoidance from any surface disturbing activities.

Applicable parcel:

NM-201201-005

In addition, the Taos Field Office proposes to exercise its discretion to maintain the Taos RMP by clarifying the intent of lease stipulation TFO-CSU-V Protection of Visual Resources. As currently written, this lease stipulation can be misconstrued to mean that all measures identified in the stipulation to protect visual resources would be applied regardless of the circumstance, including the Visual Resource Management classifications within a parcel. The stipulation will be changed to state, “To minimize visual impacts to the characteristic landscape, surface disturbing activities may be subject to the following measures” (In this case, the word “may” replaces the word “would” in the original text.)

2.4 Alternatives Considered but Eliminated from Detailed Analysis

A team of BLM resource specialists did not identify any other alternatives requiring detailed analysis in this EA aside from those presented above. Because the Taos RMP—signed on May 24, 2012—is recently approved after an extensive environmental review process involving the preparation of an environmental impact statement, the lease stipulations included in the RMP and applied as appropriate to each parcel are considered to be up-to-date and adequate for addressing potential environmental issues.

No other relevant issues were identified by the interdisciplinary team that need to be resolved with new lease stipulations developed through this environmental review process.

3.0 AFFECTED ENVIRONMENT

This section describes the environment that would be affected by implementation of the alternatives described in Section 2. Elements 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.

3.1 Wildlife Habitat

3.1.1 Big Game Winter and Spring Range and Migration Corridor. In cooperation with the New Mexico Department of Game and Fish (NMDGF), a review of the GIS data indicates there are concerns with big game winter range and migration corridors relative to the lease sale parcels and the potential presence determination is based on evaluation of the proposed action area habitat and the known habitat requirements of big game (See Appendix B, Figure 2). For the parcels under consideration in this EA, big game species of concern include Rocky Mountain elk (*Cervus elaphus*), and mule deer (*Odocoileus hemionus*). Migration corridors are important to ensure connectivity to areas of wildlife habitat, for both game and non-game species. From large mammals, to amphibians unable to cross even a small area of unsuitable habitat, these connective corridors provide opportunity for genetic exchange between populations, access to dispersal habitat and expansion of populations. If animals are unable to move to areas of suitable habitat, inbreeding and genetic bottlenecks can weaken defenses to environmental factors such as disease or fire.

3.1.2 Nesting Raptors and Bald Eagle Roosting Sites. Raptor species of concern that could occur within the subject parcels include bald eagle, golden eagle, northern goshawk, red-tailed hawk, ferruginous hawk, and other raptor species, such as owls.

3.1.3 Prairie Dog Towns. Prairie dog towns serve as important habitat for many wildlife species. Several species of birds, such as horned larks, ferruginous hawks, and golden eagles frequent prairie dog towns in search of food. Three species of wildlife of management concern are very closely associated with prairie dog towns: the mountain plover, burrowing owl and black-footed ferret. Vacant prairie dog burrows serve as homes for cottontail rabbits and several species of small rodents. Gunnison's prairie dog towns have been mapped and are monitored in Taos, Santa Fe and Rio Arriba counties.

3.2 Cultural Resources

3.2.1 National Register Eligible Sites. The lease area is located in the upper Rio Chama Valley which is, from an archaeological standpoint, not well known. Regardless, enough information exists to indicate that there is a high potential for National Register eligible cultural properties to be located throughout the region and within the area encompassed by the proposed lease sale parcels. The entire spectrum of known cultural time periods is represented in this region by a wide range of archaeological site types and archaeological remains. More recent periods of human occupation and use may also be represented by standing structures. Also present in this region are the remnants of prehistoric and historic trails and routes that, most significantly include, the Old Spanish National Historic Trail. Special management stipulations associated with this latter feature are detailed below.

Another potential concern is the presence of previously unidentified Traditional Cultural Properties. Traditional Cultural Properties or TCPs are places or even portions of the landscapes that have distinct cultural values that may be not be readily apparent to the casual observer or to trained cultural and scientific observers. The identification of TCPs generally requires consultation and involvement with Native American Tribal representatives or members of other traditional cultural groups. TCPs are

typically ascribed specific cultural values and may not be identifiable by the kinds of physical remains that are typically associated with other past human activities.

Previous cultural resources investigations in the region have largely been limited in scale and scope, and have been restricted to cursory reviews of grazing lease renewals and survey of a few linear seismographic projects. Enough comprehensive survey has been accomplished to date to demonstrate that significant cultural remains can be found in any of the range of environmental setting encompassed by the proposed lease sale parcels.

Paleoindian and Archaic period remains are documented for the region. A plethora of small lithic scatters have been recorded which are mostly indicative of transitory Archaic period use of the Upper Chama Valley. Many of these sites are poorly preserved and may not be considered significant under National Register guidelines. Still others have been found that contain intact, well-preserved, subsurface archaeological contexts or other archaeological features that render these sites highly significant.

Unique to the Upper Chama region are the archaeological remains of what is referred to as Gallina Culture. Distinctive manifestations of Gallina Culture include masonry towers, cliff dwellings, small roomblocks of puddled adobe or masonry, and jacal structures. The earliest manifestations date to about A.D. 1000 and consist of small pithouse sites with associated agricultural features. Ceramic artifacts exhibit stylistic and technological affinities with the San Juan Basin and the Mesa Verde areas to the west. Consolidation of these dispersed pithouse sites takes place after about AD 1300 but the larger residential complexes present in the lower Chama River Valley do not appear to extend north into the entrenched segments of the drainage or into the surrounding uplands. Violence and evidence for warfare permeate Gallina Culture remains. Sites are very often positioned for defense and human remains typically display signs of violent trauma. While most Gallina Culture remains are located further south in the Chama Valley the potential presence of associated archaeological sites cannot be ruled out for the region encompassed by the proposed lease sale.

Late Prehistoric and Protohistoric period archaeological manifestations are likely to be encountered in the proposed lease sale region that can be associated with Athabaskan (Navajo and Apache) and Numic (Ute) speaking groups. Athabaskan groups are known to have migrated in to the Southwestern region from central Canada approximately 500 years ago. The Navajo were certainly present in the Upper Chama Valley region where they occupied small residential sites inhabited by a single or a few related family groups. During the Historic period the Navajo conducted raids south into the Pueblo and Hispanic settlements located around Abiquiu and the Rio Grande communities. Retaliatory raids, coupled with conflicts with their traditional enemies, the Utes, pushed the Chama Valley Navajo westward after ca. 1700, into the peripheries of the San Juan Basin.

The Jicarilla Apache are generally considered late-comers to the Upper Chama Valley. Also part of the Athabaskan migration out of central Canada, the predecessors of the modern Jicarilla initially settled along the margins of the western Plains but were pushed across the Sangre de Cristo Mountain range during the mid-18th century, into the vicinity of Taos due to the effects of combined attacks by Utes and Comanche's. During the late 19th century the Jicarilla were resettled onto their present reservation which is situated around Dulce, New Mexico, located to the northwest of the Upper Chama Valley. Archaeological remains associated with 19th and 20th century Jicarilla occupation and use of the Upper Chama Valley may be expected to be found within the lease sale region.

Numic speaking Utes probably began moving into the Upper Chama and Rio Grande Valley regions sometime after 1000 AD from their original homeland located to the west in the Great Basin region. Ute-affiliated peoples are frequently mentioned in the early Spanish accounts of entradas into the regions of present day northern New Mexico and southern Colorado. The Ute were originally semi-nomadic hunters and gatherers but like their Plains allies, the Comanche's, the Ute quickly shifted to an emphasis upon

raiding after their adoption of the horse in the 17th and 18th centuries. The remains of Ute encampments are likely to be present within the areas encompassed by the proposed lease sale.

In 1716 the Chama Valley region was traversed by the Dominguez-Escalante Expedition which sought to find a viable terrestrial route between Santa Fe and the Spanish mission settlements located along the coast of California. The Chama segment of the expedition served as the precursor to the Old Spanish Trail which was established in 1829 and experienced its most intensive interval of use during the Mexican Period. In its entirety, the Trail fell into disuse at the beginning of the United States Territorial Period but limited segments continued to be used as these were incorporated into the local frontier infrastructure during the remainder of the 19th century. The Old Spanish Trail was designated as a National Historic Trail by the United States Congress in 2004. Two alternate, designated routes of the Trail extend through portions of the proposed lease sale area. These designated routes are accompanied by special management stipulations. The identification of actual physical remnants of the Old Spanish Trail and its attendant features are highly problematic. The route of the Trail is generally identified through historical descriptions and contemporary accounts rather than through archaeological manifestations. It is therefore unlikely that definitive evidence of the Trail and its attendant features would be encountered by compliance-related field work.

Historic period settlement of the Upper Chama region generally began in the late 19th and early 20th centuries. Prior to this time the area was occupied or frequented by indigenous groups (primarily Utes and Navajos) and the threat of raiding remained pronounced until the latter part of the 19th century. The expansion of small, traditionally Hispanic settlements up the Rio Chama Valley, north of Abiquiu, commenced during this time. From the east, the construction and completion of the Cumbres & Toltec Railroad in the 1880's provided for a major influx of settlers and the expansion of mining and lumber enterprises throughout the region. Settlement in the late 19th and early 20th centuries was also fostered throughout the region under the provisions of the Homestead Act were also patented and settled. Potentially significant archaeological manifestations that are associated with all of these events are likely to be encountered within the region encompassed by the proposed lease parcels.

3.2.2 Old Spanish National Historic Trail. A special consideration for the Cebolla lease area is the presence of identified or established segments of the Old Spanish Trail. This feature has been designated by the United States Congress as a National Historic Trail (NHT). The NHT designation includes special management stipulations. Primary among these is the exclusion of "surface occupancy" within 0.5 miles along designated routes of the Old Spanish Trail (See Appendix B, Figure 3). Any cultural compliance surveys and assessments conducted within the area should consider the possible presence of previously undocumented or unidentified ancillary features and segments of the Old Spanish Trail where the NHT special management stipulation may be applicable.

Trail Resources. Actual physical (archaeological) manifestations of the Old Spanish Trail are extremely rare and difficult to confirm or identify. The Congressionally designated route of the Old Spanish Trail is an idealized representation of the Trail's approximate location where it traverses the general area encompassed by the Cebolla lease sale. The designated route is based almost entirely upon a consideration of evidence contained in detailed reviews of historical documents that include trail journals, contemporary maps and other ancillary accounts. Even if physical manifestations of the trail and its use are present these may be difficult, if not impossible, to recognize and conformation of their direct affiliation with the Old Spanish Trail may likewise be elusive.

Ancillary Trail Resources. Ancillary trail resources may include such features as previously unidentified alternative routes of the main trail system, associated camp sites or other physical manifestations of the trails usage. Included here may be physical remnants of the expansion of 19th century frontier infrastructure and settlement that occurred as a result of the use and development of the Old Spanish Trail through previously undeveloped or largely inaccessible regions of the Southwestern

region. The Trail's potential impact on Native American communities and cultures located within or near the regions traversed by the route should likewise be considered as, in many cases, its effect was very likely profound, resulting in substantial alterations to traditional Native American landscapes and lifeways. Physical alterations of the natural environment may likewise be apparent that should be considered and documented. These might include the introduction of non-native plant species along the peripheries of the route and the depletion of other resources (firewood, forage, and grazing).

3.3 Paleontological Resources

An internal base-line assessment was conducted to address the potential for significant paleontological resources to be affected by proposed lease sale developments. This assessment was achieved through the application of the Potential Fossil Yield Classification system (PFYC) which provides for the numerical ranking of geological formations in a map overlay format. The overlay for the proposed lease sale area ranks this region as Class 3: Moderate or Unknown. This designation identifies the presence of fossiliferous geologic formations where fossil content varies in significance, abundance, and predictable occurrences, or where sedimentary rocks are present for which an adequate assessment of fossil potential has not yet been determined. This assessment determines that additional consultation with the Regional Paleontologist or with a qualified specialist may be necessary to evaluate site specific fossil potential and significance.

3.4 Visual Resources

The project area is located within the Chama Extensive Recreation Management Area and the Old Spanish National Historic Trail corridor. Visual resources are managed for VRM class II objectives in the trail corridor and class III objectives in the remainder of the area. "Steps in the contrast rating process for projects adjacent to the Old Spanish National Historic Trail should include selection of a key observation point from the trail and preparation of a viewshed analysis using GIS to determine visibility of a project from the trail" (USDOI BLM 2012, p. 25).

- Class II Objective: Aims to retain the existing character of the landscape. The level of change should be low. Management activities may be seen, but should not attract the attention of the casual observer.
- Class III Objective: Aims to partially retain the existing character of the landscape. The level of change should be moderate. Management activities may attract attention but should not dominate the view of the casual observer (USDI 1986).

The Chama Extensive Recreation Management Area is located east of the Rio Chama Wilderness Study Area and south of the Rio Nutrias encompassing BLM public lands over to NM Highway 84. The characteristic landform includes small light yellow and grey cliffs and bluffs converging and rising to low, rolling mesas. Sagebrush and grass dominate the lower areas while piñon-juniper woodlands are found in draws and on tops of bluffs. Oak and Ponderosa forest is seen as the mesa slopes and breaks toward the Rio Chama. River canyons are small and shallow but steeply cut with rust and light orange walls. River beds are cobble and sand. Human activity in the area is apparent by two track routes, livestock grazing, power lines, and fencing. Users in the area are primarily ranchers, farmers, and hunters. Amount of use is low due to remoteness and seasonally poor road conditions. Public interest is low to moderate and although is not visible from major travel routes, may be seen by visitors to the Rio Chama. Adjacent uses include grazing, hunting, hiking, boating, and access to the Rio Chama. Special Area designations include the Rio Chama Wild and Scenic River, the Chama Wilderness, and the Chama Wilderness Study Area.

3.5 Soils

The Soil Conservation Service, now the Natural Resource Conservation Service (NRCS), has surveyed the soils in Rio Arriba County. Complete soil information is available in the Soil Survey of Rio Arriba County, New Mexico, Northern Part (USDA Soil Conservation Service 1987). The soil map units represented in the project area are:

The parcels within the Taos Field Office planning area contain the following soil types:

- 103 - Orlie fine sandy loam, 1 to 8 percent slopes
- 106 - Amal silt loam, 2 to 8 percent slopes
- 107 - Berryman-Ruson association, 1 to 8 percent slopes
- 108 - Peney-Ranset association, 1 to 20 percent slopes
- 109 - Calendar gravelly loam, 5 to 35 percent slopes
- 113 - Teromote-Ruson association, 1 to 8 percent slopes
- 115 - Menefee channery loam, 2 to 35 percent slopes
- 117 - Chamita loam, 0 to 2 percent slopes
- 118 - Hesperus-Pastorius-Chamita complex, 0 to 5 percent slopes
- 130 - Topetaul-Hogg complex, 3 to 25 percent slopes
- 136 - Elpedro silt loam, 1 to 5 percent slopes
- 203 - Nabor-Elbuck complex, 5 to 35 percent slopes
- 242 - Tinaja-Rock outcrop complex, 45 to 75 percent slopes

3.5.1 Slopes. Areas within the lease parcels that have slopes of greater than 30% and/or have fragile soils, as discussed below, total 33 percent of the combined acreage of the lease parcels. This is shown on Figure 4 of Appendix B.

3.5.2 Fragile Soils. Soils are classified as fragile if their Erosion Hazard as identified in the Soil Survey is Severe or Very Severe. Approximately 35 percent of soils within the total area proposed for leasing is considered severe. See Figure 4 of Appendix B.

3.6 Livestock Grazing

The parcels proposed in this lease sale (NM-201301-001, 003, 004, 005, & 006) cover portions of grazing allotments 00560, 00568, 00569, 00570, and 00744, while the remaining parcels are not associated with a BLM grazing allotment. These allotments provide authorized grazing of cattle from year round operations to seasonal operations. Rangeland monitoring sites are located within the grazing allotments.

3.7 Vegetation

The parcels are located in the Southern Rocky Mountain Ecoregion as identified in the Comprehensive Wildlife Conservation Strategy of the New Mexico Department of Game and Fish (2006). Vegetation descriptions within the area are described by vegetation categories developed by Southwest Regional Gap Analysis Project (SWReGAP). The allotments are located in the: Abies concolor Forest Alliance, Agriculture-Cultivated Crops and Irrigated Agriculture, Agriculture-Pasture/Hay, Colorado Plateau Mixed Bedrock Canyon and Tableland, Colorado Plateau Mixed Low Sagebrush Shrubland, Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland, Inter-Mountain Basins Big Sagebrush Shrubland, Inter-Mountain Basins Greasewood Flat, Inter-Mountain Basins Shale Badland, Inter-Mountain Basins Semi-Desert Grassland, Inter-Mountain Basins Semi-Desert Shrub Steppe, Introduced Upland Vegetation-Perennial Grassland and Forbland, Quercus gambelii Shrubland Alliance, Rocky Mountain Aspen Forest and Woodland, Rocky Mountain Montane Riparian Systems, Rocky Mountain Ponderosa Pine Woodland, Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and

Woodland, Southern Rocky Mountain Juniper Woodland and Savanna, Southern Rocky Mountain Pinyon-Juniper Woodland, and Southern Rocky Mountain Ponderosa Pine Woodland

3.8 Noxious Weeds and Invasive, Non-native Species

When a lessee proposes to explore or develop its lease, an area-specific noxious and invasive, non-native species (weed) inventory review would be done to determine if there is a need for a weed inventory of the areas to be affected by surface disturbing activities.

The presence of those species described in the Noxious Weed List for the State of New Mexico (NMDA, 2009) is detected via continual inventory being carried on by all field going personnel. The inventory process is on-going to detect invasive populations when they are small. Once a population is found, the BLM coordinates with various agencies, lease operators, and the land user to implement some kind of treatment to remove or control the population.

Small infestations of noxious weeds are located within or immediately adjacent to the project area. Most noxious weeds invade areas mainly along the shoulders of county roads, lease, and private roads, and on production pads within the project area.

3.9 Aquatic Resources

3.9.1 Surface Water, including Riparian Areas, Wetlands, and Floodplains. The proposed lease action covers sections of the Rio Cebolla, Arroyo Seco, and Rio Gallina-Rio Chama HUC-10 watersheds. These watersheds are located within the Rio Chama HUC-8 watershed. The Rio Chama, Rio Cebolla and Rio Nutrias receive drainage directly and indirectly from lands in the proposed lease area. No water quality impairments were identified by the New Mexico Environment Department for the Rio Chama or Rio Cebolla. The Rio Nutrias was listed as impaired due to turbidity with probable sources of crop production, riparian habitat loss, rangeland grazing and streambank modifications/destabilization (NMED 2012).

Surface water resources in the proposed leasing area include streams, riparian areas, and Federal Emergency Management Agency mapped floodplains. Riparian areas and wetlands are identified by the presence of hydric soils, hydrophilic vegetation and geomorphology indicating the presence of surface water. FEMA floodplains are channels and their associated “100 year” floodplain that have been mapped for insurance purposes. All of these surface water features can include perennial, ephemeral, or intermittent waters. No surface occupancy is allowed within 200 meters of the outer edge of riparian areas, wetlands, or floodplains (Stipulation TFO-NSO-RIP). This stipulation provides protection to surface water features that contain important plant and animal resources and reduces the risk of downstream impairment of connected water resources. A portion of nine lease parcels contain restricted surface water features.

In addition, nine of the parcels are wholly or partially Rio Arriba County’s Critical Management Area for headwaters, where oil and gas development activities would be subject to the provisions of the County’s Comprehensive Plan.

3.9.2 Ground Water. The proposed lease parcels lie within the Rio Chama basin, which is within the Rio Grande groundwater basin. The lease parcels lie at the eastern edge of the San Juan basin. The quality of groundwater in the Chama basin is not generally known, but the lack of large human populations and industry suggests that the groundwater has not been impaired by human actions. Factors that may affect groundwater resources in the area include livestock grazing management and groundwater pumping. Groundwater in the area is used for domestic household and livestock purposes. There are

some localized impairments caused by leaking underground storage tanks. In general, areas of the aquifer that are recharged by infiltration from precipitation or surface water sources contain fresh water.

The only available well record filed in the lease area (T27N, R4E) with the New Mexico Office of the State Engineer indicates that depth to groundwater is about 620 feet below ground surface. The drilling record indicates that the water bearing stratum is a sandstone-gravel conglomerate. The Geologic Map of New Mexico shows that the geologic strata below the lease area is Mancos Shale.

3.10 Areas of Human Occupation and Development

3.10.1 Land Uses by Local Populations. Rio Arriba County, perhaps particularly within the vicinity of the lease parcels, retains strong ties to its agricultural roots. Rio Arriba County's 2010 Comprehensive Plan states, "Tens of thousands of acres remain under agricultural production, and agriculture and livestock remain important components of the local economy. As an encouraging testament to the strength of the Rio Arriba's traditions, culture and history, the protection of irrigated farm and grazing land continues to be a top priority for residents of the County" (Rio Arriba County 2010, page 11).

In recent years, citizens in the north-central portion of the county where the lease parcels are located have expressed concerns regarding the potential effects of oil and gas development on private lands. In response, Rio Arriba County's Comprehensive Plan, with its incorporation of the 2009 Oil and Gas Ordinance, established two zones within the county. The Energy Resource Development District in the western half of the county provides for the ongoing development of its rich oil and gas resources with standards and measures appropriate for the area-specific environment, identified through coordination with industry and Federal and State agencies.

The remainder of the county falls within the Frontier District. The Comprehensive Plan characterizes this zone as having "a very different geographic profile and has certain features such as high levels of precipitation, habitat for endangered, threatened, and sensitive species, shallow ground water, an abundance of surface water, and sloping terrain, all of which require higher standards of design and development to protect against the possible adverse consequences of such development" (Rio Arriba County 2010, page 33).

In addition to higher permitting standards, the Comprehensive Plan establishes Critical Management Areas (CMAs) to identify and protect sensitive or scarce environmental resource values. The plan states, "The goal of CMAs is to protect vital areas and environmental features such as streams, rivers, irrigated farm lands, floodplains, and critical wildlife habitat that provide important ecologic, economic, and social value" (Rio Arriba County 2010, page 33). The CMAs include the delineation of headwaters, riparian and floodplains, and irrigated agricultural lands. Nine of the parcels are located within the headwaters CMA, while some parcels, as indicated above, include riparian areas and floodplains. At least one parcel, NM-201301-013, contains irrigated agricultural lands.

In addition, parcel NM-201301-013 includes residential, commercial, and agricultural developments within the community of Cebolla, a location identified in the Rio Arriba Comprehensive Plan as a node development area (See Appendix B, Figure 5). A land use goal in the Comprehensive Plan states, "Encourage compact, compatible, and sustainable node development that reflects traditional settlement patterns" (Rio Arriba County 2010, page 37).

3.10.2 Environmental Justice. Executive Order 12898 requires Federal agencies to assess projects to ensure there is no disproportionately high or adverse environmental, health, or safety impacts on minority and low-income populations.

Rio Arriba County is unique for its high percentage of Hispanic residents and Spanish-speakers. More than 70 percent of County residents identify themselves as Hispanic or Latino and more than 55 percent speak Spanish at home. These figures are substantially higher than those state-wide. However, rather than a large immigration population—relatively few county residents are foreign-born—the Hispanic population has its roots in the Spanish and Mexican colonization of the sixteenth through the mid-nineteenth centuries (Rio Arriba County 2010). The Native American population in Rio Arriba County is about 14 percent, also well above the average for New Mexico.

Median household income within the past decade has been roughly 7 percent less than state-wide, at about 32,486 dollars. The percentage of persons below poverty level has been at approximately 17.9, slightly lower than the state-wide average.

3.11 Air Resources

Air quality and climate are components of air resources which may be affected by BLM applications, activities, and resource management. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision making process. Much of the information referenced in this section is incorporated from the Air Quality Technical Report for BLM Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as Air Quality Technical Report). This document summarizes the technical information related to air resources and climate change associated with oil and gas development.

3.11.1 Air Quality. The Air Quality Technical Report describes the types of data used for description of the existing conditions of criteria pollutants (USDI BLM 2011), how the criteria pollutants are related to the activities involved in oil and gas development (USDI BLM 2011), and provides a table of current National and state standards. The EPA's Green Book web page (EPA, 2010) reports that Rio Arriba County, where all the proposed leases are located, is in attainment of all National Ambient Air Quality Standards (NAAQS) as defined by the Clean Air Act. The area is also in attainment of all state air quality standards (NMAQS).

Hazardous pollutants. The Air Quality Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities (USDI BLM 2011). The EPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP emissions by county in the U.S. The purpose of the NATA is to identify areas where HAP emissions result in high health risks and further emissions reduction strategies are necessary. The 2005 NATA shows that Rio Arriba County is in the lowest categories for cancer, neurological and respiratory risk or hazard (EPA, 2011a).

3.11.2 Climate Change. Climate within the Taos Field Office planning area is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. Climate within the planning area exhibits considerable variation largely influenced by elevation. Semiarid lower elevations transition into moister, cooler montane areas at higher elevations. In general, the area experiences cool summer temperatures (daytime highs in the mid to high 90's Fahrenheit) and moderately cold winters (nighttime lows below 0°F).

The planning area is characterized by precipitation maxima occurring in the winter as snowfall and in the summer as thunderstorms associated with the Southwest Monsoon. These maxima are particularly important to resources and resource uses in the planning area. Snowmelt drives spring peak flow in area rivers and is important to aquatic fauna lifecycles. Spring peak flows are also important to the recreation community as outfitters rely on flows for whitewater boating experience. Summer monsoons are important to rangeland health and productivity.

Temperature and precipitation vary considerably across the planning area. For example, in Taos County the average annual temperature is 42°F and the average annual precipitation is 17.4 inches. Santa Fe averages 48°F and 14.7 inches annually, while San Miguel averages 52°F and 16.2 inches annually (Western Regional Climate Center 2011).

Temporal trends in temperature and precipitation also vary considerably. Based on the summary of precipitation and temperature by county above, it can be inferred that temporal trends tend to be consistent across the planning area, while spatial variability is high (i.e., hot years are hot and wet years are wet throughout the planning area). Portions of the planning area (especially Jemez Mountains) have shown overall temperature increases in the past 40 years while no change or a slight cooling trend has occurred in portions of the southern Sangre de Cristo Mountains (Enquist and Gori 2008). Plots of 10 year running averages for annual temperature by county show an increase across the entire planning area of 1.0-1.5°F since 1990 (Western Regional Climate Center 2011). An extended period of drought from 2000 to 2005 affected much of the state of New Mexico, including portions of the planning area. However, much of the planning area experienced wetter conditions from 1991-2005 compared with a baseline of 1961-1990 (Enquist and Gori 2008).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Assumptions for Analysis

The act of leasing parcels would, by itself, have no impact on any resources in the Taos Field Office planning area. Since the parcels included in the proposed action are in a largely unexplored area where oil or gas reserves remain speculative, all impacts evaluated in this analysis would be linked to an undetermined level of lease development. However, the terms of the lease, if sold, would require the drilling of at least one exploratory well on the parcel over the life of the lease. It is therefore reasonable to assume one exploratory well would be drilled to comply with the terms of the lease.

The general vicinity of the parcels did, however, experience the drilling on one well in 2011, the first in this area in perhaps decades. While the drill location was located approximately eight miles to the west of the nominated parcels (in T. 27 N., R. 2 E., section 35, NE¼), the landscape and access is very comparable to that within the parcels, such that the experience with this exploratory well provides and reasonable basis for what can be expected within the parcels, if leased.

The well drilled in 2011 involved the disturbance of approximately three acres. The well pad accounted for roughly half of the disturbance, and the access road accounted for the rest. Due to the lack of available production-related infrastructure in the vicinity of the parcels and the speculative nature of producible reserves, it is assumed that any recoverable reserves produced by the exploratory wells would be transported out of the area by truck. The assumed surface disturbance associated with exploratory drilling would, therefore, not include production facilities. Total potential surface disturbance that could result from the leasing of these parcels is therefore 48 acres under the Proposed Action and 45 acres under the Preferred Alternative.

In addition, if lease parcels were drilled, short-term impacts would be stabilized or mitigated within 5 years and long-term impacts are those that would substantially remain for more than 5 years.

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) would not affect current domestic production of oil and gas. This would likely result in reduced Federal and State royalty income, and the potential for Federal lands 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 that 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 Analysis of the Proposed Action

4.3.1 Wildlife Habitat

4.3.1.1 Big Game Winter and Spring Range and Migration Corridor. For the January 2013 Lease Sale, only the big game winter and spring range timing limitation (January 1 to April 30) applies. Rocky mountain elk and mule deer are known to inhabit the area of the San Juan Mountains, Tusas Range, and the area along the border of New Mexico and Colorado, including the region surrounding Chama from the Jicarilla Apache Nation to the BLM lands of the subject parcels up for lease sale. Migratory elk herds, up to a population of approximately 25,000, move along the San Juans from Colorado into New Mexico for winter range, as well as resident herds that remain between the pinon-juniper woodlands on the east side of the Rio Chama to the mixed-conifer forest of the Santa Fe National Forest west of the Rio Chama. Timing limitations referenced above would avoid negative impacts of disturbance and resulting fragmentation of habitat during these critical times in the area of the parcels subject to lease sale.

4.3.1.2 Nesting Raptors and Bald Eagle Roosting Sites. Raptor surveys will be required prior to any surface disturbing activities on a potential lease. Raptor nests and bald eagle roosting sites will be avoided respectively:

- Bald eagle: 0.5-1.0 miles (January 1 – August 31)
- Golden eagle: 0.5 mile (January 1 – August 31)
- Northern goshawk: 0.5 mile (March 1 – July 31)
- Red-tailed hawk: 0.125 mile (February 1 – July 15)
- Ferruginous hawk: 1.0 mile (February 1 – July 15)
- All other raptor species: 0.25 mile (March 1 - June 30)

Raptors are a specialized type of avian species, many hunting on the wing (in the air) and are a top predator in natural ecosystems. The food chain that includes raptor species often provide or depend on other specialized species, such as waterfowl, or passerines, both of which could be protected migratory bird species. Raptors control rodent and reptilian populations, often on an important cyclic basis, and are key scavengers that recycle nutrients in a functioning ecosystem. The BLM is committed to conservation and enhancement of raptor species and habitat.

The timing limitations for each species that could occur in the area of the parcels subject for lease sale protect these species during their respective reproductive period and fledgling of young. Therefore, providing for successful reproduction and hunting opportunities to raise chicks limit disturbance to raptors and would prevent adverse impacts to the species.

4.3.1.3 Prairie Dog Towns. There may be prairie dogs within the proposed lease area. The BLM/TFO has specific management measures to ensure that prairie dogs are protected. A biological survey may be required to determine any impacts on individual project proposals. Any potential impacts to special status species will be determined based on the biological survey report. A preconstruction survey for prairie dogs may also be required for proposed projects scheduled to be constructed within known habitat April 1 to September 15. Occupied prairie dog towns will not be disturbed within a 0.25 mile radius. After September 15, any project that will cause destruction of a burrow can only begin after confirmation that the burrow is not occupied.

Prairie dogs are often referred to as a “keystone” species because they provide habitat and serve as prey disproportionate to their size or the size of the particular population. Historically abundant, the species has been reduced to approximately 1% of its original range. The sub-species that could be found in the subject lease parcels is known as the montane subspecies of the Gunnison’s prairie dog (*Cynomys gunnisoni*) and was designated as a Candidate federally listed (threatened or endangered) species in 2008 (FR Vol. 73, No. 24, Feb. 5, 2008) due to its decreased range, isolation of this particular sub-species in a

high elevation mountainous region of New Mexico, and its importance to other special status species (Western burrowing owl, black-footed ferret, raptors, etc.).

While prairie dogs could benefit from the disturbance created by installation of well pad infrastructure and roads, the species could be negatively impacted if construction or development activities occurred during the active breeding, rearing and foraging season, typically spring and summer months. Therefore, the timing restrictions outlined above would avoid any adverse impacts to the species during this critical time period.

4.3.2 Cultural Resources

4.3.2.1 Eligible Sites. While the act of leasing a parcel would produce no impacts, subsequent development of the lease could have impacts on archaeological resources. Required archaeological surveys would be conducted upon all subsequent actions that are expected to occur from the lease sale to avoid disturbing cultural resources.

Potential threats to cultural resources from leasing are variable and dependent upon the nature of the cultural resource and the nature of the proposed development. Effects normally include alterations to the physical integrity of a cultural resource. The greatest potential impact to cultural resources stems from the construction of associated lease related facilities such as pipelines, power lines, roads, and well locations. If a cultural resource is significant for other than its scientific information, effects may also include the introduction of audible, atmospheric, or visual elements that are out of character for the cultural site and diminish the integrity of those criteria that make the site significant. A potential effect from the proposed action is the increase in human activity or access to the area with the increased potential of unauthorized removal or other alteration to cultural resources in the area. These impacts could include altering or diminishing the elements of a National Register eligible property and diminish an eligible property's National Register eligibility status. Conversely, cultural resource investigations associated with development potentially adds to our understanding of the prehistory/history of the area under investigation and discovery of sites that would otherwise remain undiscovered due to burial or omission during review inventories.

Potential Mitigation: Specific mitigation measures, including, but not limited to, possible site avoidance or excavation and data recovery would have to be determined when site-specific development proposals are received. Provided that Class III cultural resource inventories are conducted as lease development takes place and avoidance measures associated with the preservation of cultural resources are proposed and stipulated during development, there does not appear to be any adverse impacts to cultural resources from leasing. In the event that sites cannot be avoided, mitigating measures will be developed in consultation with Native American tribes that ascribe affiliation or historical relationships to those sites.

4.3.2.2 Old Spanish National Historic Trail. Physical manifestations of the Old Spanish Trail are extremely rare or difficult to identify. The potential does exist, however, for physical impacts to trail remnants and features to occur as a result of lease development. On the other hand, the congressionally-designated route of the Old Spanish National Historic Trail may include no physical manifestations of the actual trail or associated features. Regardless, the designated route is protected by special provisions and stipulations that include a one half mile wide surface occupancy exclusion buffer located on either side of the designated trail centerline.

Trail Resources. As indicated previously, actual physical manifestations of the Old Spanish Trail are not likely to be identified by cultural resources surveys. Regardless, the potential does exist for such remains to be present. Potential mitigation measures to protect these remains would be the same as those outlined above for other significant cultural resources. Additionally, however, confirmed physical manifestations of the trail would also be mitigated by the imposition of a no surface occupancy exclusion

buffer that is identical in breadth and scope to that imposed for the Congressionally-designated portions of the route.

Ancillary Trail Resources. Ancillary trail resources may include such features as previously unidentified alternative routes of the main trail system, associated camp sites or other physical manifestations of the trails usage. Where a direct connection between the Trails period of use and an ancillary feature can be confirmed the ancillary feature assumes a level of significance compatible with the trail itself. In these instances mitigation measures applied to the ancillary feature would be the same as those that apply to the Trail.

Ancillary features of a secondary nature may not assume the same significance as those that can be directly tied to the use of the trail. Included here may be physical remnants of the expansion of 19th century frontier infrastructure and settlement that occurred as a result of the use and development of the Old Spanish Trail through previously undeveloped or largely inaccessible regions of the Southwestern region. Manifestations of the potential impact of the Trail on Native American communities and cultures, or on the natural environment, are also considered secondary in character. In these situations the ancillary feature should be treated as a “stand alone” resource that must be evaluated in its own right and if necessary, mitigation measures should be devised and implemented independent of the inherent National Register significance of the Old Spanish National Historic Trail.

4.3.2.3 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.

Use of lease notice NM-11-LN will help ensure that new information is incorporated into lease development. Additional consultation may be initiated at the APD stage of development if BLM professional staff determines it is necessary.

Potential Mitigation: No site-specific mitigation measures for Native American Religious Concerns have been recommended at this time for the parcels recommended to proceed for sale. All parcels recommended to proceed to sale will have the Special Cultural Resource Lease Notice NMLN- 11 attached to the lease.

In the event that lease development practices are found in the future to have an adverse effect on Native American TCPs, the BLM, in consultation with the affected tribe, would 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.

To be in conformance with the Native American Graves Protection and Repatriation Act of 1991 (Public Law 101-610), the terms and conditions of the lease should contain the following condition: —In the event that the lease holder discovers or becomes aware of the presence of Native American human remains within the lease, they shall immediately notify the Bureau of Land Management in writing.

4.3.3 Paleontological Resources

Surface disturbances associated with oil and gas exploration and development activities have the potential to affect paleontological resources in the areas known to contain or have the potential to contain paleontological resources. The potential for significant fossil resources to be present is directly related to the nature of the geological formations present in the area and the ranking of these formations according to the Potential Fossil Yield Classification (PFYC) system.

Surface-disturbing activities could potentially alter the characteristics of paleontological resources through damage, fossil destruction, or disturbance of the stratigraphic context in which paleontological resources are located, resulting in the loss of important scientific data. Conversely, surface-disturbing activities could also potentially lead to the discovery of paleontological localities that would otherwise remain undiscovered due to burial or omission during review inventories, providing a better understanding of the nature and distribution of those resources.

Potential Mitigation: Paleontological surveys would be required in areas where the potential for paleontological resources exist to avoid disturbing the paleontological resource. Specific mitigation measures, including, but not limited to, possible site avoidance or excavation would have to be determined when site-specific development proposals are received. However, in most surface-disturbing situations, paleontological resources would be avoided by project redesign or relocation. Should a paleontological locality be unavoidable, properties would be mitigated by data collection and potential likely excavation prior to implementation of a project.

4.3.4 Visual Resources

The following contrasts are anticipated from facilities such as produced water, condensate or oil storage tanks, access roads, well pads, and other ancillary facilities.

Strong contrasts to the landform and color of structures from storage tanks could occur in both VRM Class II and III areas. Moderate to strong contrast to line, color, and texture of the vegetation could occur for any of the other facilities associated with the project. With the visual resource lease stipulation, along with other standard mitigation measures, methods such as BLM approved paint colors for facilities, low profile storage tanks, consideration in contours of the landscape in design and location of the project, viewshed analysis, and visual simulations it is possible that the project can meet VRM objectives.

4.3.5 Soils

4.3.5.1 Slopes. Impacts resulting from surface disturbance on the more vulnerable slopes would be eliminated as a result of applying the lease stipulation that precludes disturbances on slopes greater than 30 percent. For slopes less than 30 percent or in other areas where fragile soils occur, potential impacts are discussed below.

4.3.5.2 Fragile Soils. While the act of leasing a tract would produce no direct impacts, subsequent development of the lease would physically disturb the topsoil and would expose 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 top soil 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 of 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 impacts can be reduced or avoided through proper design, construction and maintenance and implementation of best management practices.

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.

Potential 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 attached Conditions of Approval. Upon abandonment of wells and/or when access roads are no longer in service the Authorized Officer would issue instructions and/or orders for surface reclamation/restoration of the disturbed areas as described in attached Conditions of Approval.

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

For the purpose of protecting slopes or fragile soils surface disturbance would not be allowed on slopes over 30 percent.

4.3.6 Livestock Grazing

While the act of leasing Federal minerals would produce no direct impacts to livestock grazing, subsequent development of a lease may produce impacts. Oil and gas development could result in a loss of vegetation for livestock grazing (e.g., direct removal, introduction of unpalatable plant species, etc.), decrease the palatability of vegetation due to fugitive dust, disrupt livestock management practices, involve vehicle collisions, and decrease grazing capacity. These impacts could vary from short-term impacts to long-term impacts depending on the type of exploration or development, the success of reclamation, and the type of vegetation removed for the oil and gas activities.

Potential Mitigation: Measures would be taken to prevent, minimize, or mitigate impacts to livestock grazing 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 controlling livestock movement by maintaining fence line integrity, fencing of facilities, revegetation of disturbed sites, installation of cattleguards, and fugitive dust control.

4.3.7 Vegetation

There would be no direct effects to vegetative resources from the sale of the lease parcels. Subsequent exploration/development of the proposed leases would have indirect impact to vegetation and would depend on the vegetation type, the vegetative community composition, soil type, hydrology, and the topography of the parcels. Oil and gas development surface-disturbing activities could affect vegetation by destroying the vegetation, churning soils, loss of substrates for plant growth, impacting biological crusts, disrupting seedbanks, burying individual plants, reduction of germination rates, covering of 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 set, 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 caliche, such as pads and roads, would have no vegetation for the life of the well. Rights-of-ways could re-vegetate in one to two years with proper reclamation 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.

Impacts to vegetation depend on development. These acres would produce no vegetation, due to caliche covered surfaces with each well in production. These acres should be in adequate vegetative cover in three to five growing seasons, if adequate precipitation is received after following interim or final reclamation.

In addition, any rangeland monitoring plot could be disturbed by activities on the lease, if not avoided through site-specific planning of activities on the lease. If such disturbances were to occur, the opportunity to build upon generations of monitoring data would be lost.

Potential Mitigation:

Mitigation would be addressed at the site-specific APD stage of exploration and development. Needed COAs would be identified and addressed during planning at the APD stage. Mitigation could potentially include revegetation with native plant species, soil enhancement practices, direct live haul of soil material for seed bank revegetation, reduction of livestock grazing, fencing of reclaimed areas, and the use of seeding strategies consisting of native grasses, forbs, and shrubs.

4.3.8 Noxious Weeds and Invasive, Non-native Species

While the act of leasing Federal minerals produces no impacts, subsequent development produces impacts in the form of surface disturbance. The construction of an access road and well pad may unintentionally contribute to the establishment and spread of noxious weeds. Noxious weed seed could be carried to and from the project areas by construction equipment, the drilling rig and transport vehicles

The main mechanism for seed dispersion on the road and well pad is by equipment and vehicles that were previously used and or driven across or through noxious weed infested areas. The potential for the dissemination of invasive and noxious weed seed may be elevated by the use of construction equipment typically contracted out to companies that may be from other geographic areas in the region. Washing and decontaminating the equipment prior to transporting onto and exiting the construction areas would minimize this impact.

Impacts by noxious weeds would be minimized due to requirements for the company to eradicate the weeds upon discovery. Multiple applications may be required to effectively control the identified populations.

Potential Mitigation: In the event noxious weeds are discovered during construction of any access roads and well pads, mitigation would be deferred to the site specific development at the APD stage. Best management practices (BMPs) would be incorporated into the conditions of approval (COAs) of an approved APD.

4.3.9 Aquatic Resources

4.3.9.1 Surface Water, including Riparian Areas, Wetlands, and Floodplains. The act of leasing Federal minerals produces no impacts to surface waters, riparian areas, and floodplains. However, the subsequent development may produce impacts in the form of surface disturbance. Surface disturbance from the development of well pads, access roads, pipelines, and powerlines can result in impairment of these values from removal of vegetation, decreased flood water retention and decreased groundwater recharge. Stipulation TFO-NSO-RIP and, where applicable, Rio Arriba County's ordinance on oil and gas development on private surface within the headwaters CMA provide protection of these resources.

While the act of leasing a parcel would produce no direct impacts, subsequent development of the lease would lead to surface disturbance from the construction of well pads, access roads, pipelines, and powerlines which can result in degradation of surface water quality 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 powerlines include increased surface water 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 likely 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. Indirect impacts to water-quality related resources, such as fisheries, would not occur.

4.3.9.2 Ground Water. 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 ground water quality. Authorization of the proposed projects would require full compliance with BLM directives and stipulations that relate to surface and groundwater protection.

Potential Mitigation: The use of a plastic-lined reserve pits would reduce or eliminate seepage of drilling fluid 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.

4.3.10 Areas of Human Occupation and Development

4.3.10.1 Land Uses by Local Population. Though the Federal mineral estate, administered according to the Taos RMP, has primacy over the private surface estate, regulated by Rio Arriba County under its Comprehensive Plan, the County's plan is substantially complementary of the RMP with regards to protecting certain resource values, particularly riparian areas, floodplains, and occupied structures and other developments. However, RMP stipulations imposing no surface occupancy constraints over some or all of a parcel—especially in the case of parcel NM-201301-013—could force any access to the minerals and surface development onto private lands over non-Federal minerals where the County's jurisdiction would be supreme. Any oil and gas developments on privately-owned surface lands would be subject to review and decision by the County, and the County's regulations may, in certain cases, be more restrictive than those of the BLM.

Despite the protective measures identified in the BLM and County plans, there is potential to impact local populations with visual contrast, noise, and disruption of traditional land uses in relatively close proximity to occupied dwellings and developments. In addition, leasing parcel NM-201301-013 could be

inconsistent with a Rio Arriba County goal for land use to “Encourage compact, compatible, and sustainable node development that reflects traditional settlement patterns.”

4.3.10.2 Environmental Justice. Due to the population makeup and its dispersion throughout Rio Arriba County, the no minority or low income populations are expected to be disproportionately affected by the proposed leases or potential subsequent oil or gas activities. Indirect impacts could include impacts due to 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.

4.3.11 Air Resources

4.3.11.1 Air Quality. Leasing the subject tracts would have no direct impacts to air quality. Any potential effects to air quality from sale of lease parcel would occur at such time that the lease is developed. Potential impacts of development of the proposed lease could include increased air borne soil particles blown from new well pads or roads, exhaust emissions from drilling equipment, compressors engines, vehicles, flares, and dehydration and separation facilities, and volatile organic compounds during drilling or production activities.

There are three phases in the development of a well that result in different levels of emissions. The first phase occurs during the first year of development and may include pad construction, drilling, completion, interim reclamation, and operation of the completed well. The first year results in the highest level of emissions due to the large engines required during the construction and drilling, and the potential release of natural gas to the atmosphere during completion.

The second phase of the well begins after the well is completed and is put on line for production. Emissions during the production phase may include vehicle traffic, engines to pump oil if necessary, compressor engines to move gas through a pipeline, venting from storage tanks, and storage tank heaters. A workover of the well may occasionally be required, but the frequency of workovers is not predictable. The final phase is to plug and abandon the well and rehab the pad.

Potential Mitigation: The BLM encourages industry to incorporate and implement 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: adhere 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, flare 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; implement 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 re-vegetate areas of the pad not required for production facilities and to reduce the amount of dust from the pads.

An application for permit to drill (APD) is required for each proposed well to develop a lease. Onshore Oil and Gas Order No. 1 issued under 43 CFR 3160 authorizes BLM to attach Conditions of Approval (COA) to APDs during the permitting process. Additional analysis will be done at such time as an APD is requested and a determination will then be made on the need for mitigation based on the estimated level of emissions.

4.3.11.2 Climate Change. Information about (GHGs) and their effects on national and global climate is presented in the Air Quality Technical Report (USDI BLM 2011). Analysis of the impacts of

the proposed action on GHG emissions will be discussed below. Only the GHG emissions associated with exploration and production of oil and gas will be evaluated here because the environmental impacts of GHG emissions from oil and gas consumption, such as refining and emissions from consumer-vehicles, are not effects of the proposed action as defined by the Council on Environmental Quality because they do not occur at the same time and place as the action. Thus, GHG emissions from consumption of oil and gas do not constitute a direct effect that is analyzed under NEPA. Nor is consumption an indirect effect of oil and gas production because production is not a proximate cause of GHG emissions resulting from consumption. However, emissions from consumption and other activities are accounted for in the cumulative effects analysis.

Leasing the subject tracts would have no direct impacts to climate change as a result of GHG emissions. Any potential GHG emissions from sale of the lease parcel would occur at such time that the lease was developed.

The two primary GHGs associated with the oil and gas industry are carbon dioxide (CO₂) and methane (CH₄). Because methane has a global warming potential that is 21-25 times greater than the warming potential of CO₂, the EPA uses measures of CO₂ equivalent (CO₂e) which takes the difference in warming potential into account for reporting greenhouse gas emissions. Emissions will be expressed in metric tons of CO₂ equivalent in this document.

Oil and Gas production in New Mexico is concentrated in the northwest corner, the San Juan Basin, and the southeast corner, the Permian Basin. Production in the San Juan Basin is mostly natural gas while production in the Permian Basin is mostly oil. Production statistics developed from EPA and New Mexico Oil Conservation Division for 2008 are shown in Table 4.1 for the US, New Mexico and for wells on federal leases in each basin while Table 4.2 shows an estimate of greenhouse gas emissions for oil and gas field production based on the assumption that emission are proportional to production. There are currently no producing wells in the vicinity of the lease parcels, therefore it is impossible to quantify emissions based on potential production, but it can be concluded that any GHG emissions would be very small compared to the more active production areas in New Mexico which each account for only 0.01% of US GHG emissions.

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 phases 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. Note that units of Metric tons CO₂e have been used in Table 4.2 to avoid very small numbers. For comparison one million metric tons is equal to one teragram.

Table 4.1: 2008 Oil and Gas Production

	Oil Barrels (bbl)	% U.S. Total	Gas (MMcf)	% U.S. Total
United States	1,811,816,000	100	25,754,348	100
New Mexico	60,178,252	3.32	1,473,136	5.72
Federal leases in New Mexico	25,700,000	1.42	920,000	3.57
San Juan Basin	1,600,000	0.09	709,000	2.75
Permian Basin	24,100,000	1.33	211,000	0.82

Table 4.2: 2008 Oil and Gas Field Production Emissions

	Oil		Gas		Total O&G Production	%U.S. Total GHG missions
(Metric Tons CO ₂ e)	CO ₂	CH ₄	CO ₂	CH ₄		
United States	500,000	28,400,000	8,500,000	14,100,000	51,500,000	0.74
New Mexico	16,607	943,287	486,196	806,513	2,252,603	0.03
Federal leases in New Mexico	7,092	402,844	303,638	503,682	1,217,257	0.02
San Juan Basin	442	25,080	233,999	388,164	647,684	0.01
Permian Basin	6,651	377,765	69,639	115,518	569,573	0.01

Table 4.2 provides an estimate of direct emissions that occur during exploration and production of oil and gas. This phase of emissions represents a small fraction of overall emissions of GHGs from the life cycle of oil and gas. For example, acquisition (drilling and development) of petroleum is responsible for only 8% of the total lifecycle GHG 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).

Potential Mitigation: The EPA’s inventory data describes “Natural Gas Systems” and “Petroleum Systems” as the two major categories of total US sources of GHG gas emissions. The inventory identifies the contributions of natural gas and petroleum systems to total CO₂ and CH₄ 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 waste (via leaks, spills and unauthorized flaring and venting).

The BLM encourages industry to incorporate and implement “Best Management Practices” (BMPs), which are designed to reduce impacts to GHG emissions from field production and operations. Typical measures include: adhere 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, flare hydrocarbon gases at high temperatures in order to reduce emissions of incomplete combustion; implement directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores; and require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored.

4.4 Analysis of the BLM Preferred Alternative

The need to develop the Preferred Alternative is driven by the need to address potential conflicts with leasing parcels underlying or in close proximity to residential, commercial, or agricultural developments and an important community water source. The mineral estate in parcel NM-201301-013 in particular underlies inhabited and developed portions of the community of Cebolla, a location recognized by Rio Arriba County as a node development area where compatible development should reflect traditional settlement patterns (Rio Arriba County 2010).

By deferring these parcels, as proposed under the Preferred Alternative, the parcels would not be available for lease during the January 2013 lease sale and potential conflicts would not be realized at least for the deferral period. The potential conflicts that would at least be temporarily avoided by deferral could include visual and audible intrusions into the inhabited and developed areas, disruptions to traditional land uses such as ranching and farming, and incompatible uses within the node development area. Instead, the BLM would work closely with Rio Arriba County to resolve potential conflicts either through detailed, site-specific measures stipulated in a lease or by determining that the parcels should not be made available for lease under any circumstance. This latter option would require the preparation of an amendment to the Taos RMP, a process that would include public involvement and input.

The Preferred Alternative also includes two lease notices—developed as part of this environmental review process—to alert potential leases of potential, additional parameters that may be placed on any activities on the lease if the respective circumstances prove to be present. These notices would also establish potential environmental issues requiring consideration and attention at the time subsequent environmental analyses are prepared for such exploration or development activities. The lease notices, entitled *Potential Occurrence of National Historic Trail Features* and *Occurrence of Rangeland Monitoring Plots*, provide further opportunity to ensure these resources and features and not unnecessarily disturbed or adversely affected.

Impacts to other resources not discussed above are expected to be reduced to the extent that they would not occur on the roughly 7,058.4 acres deferred under the Preferred Alternative. In terms of acreage where potential effects could occur under the Proposed Action, the Preferred Alternative would amount to a reduction of 53 percent. However, potential impacts to riparian areas, floodplains, irrigated agricultural lands, scenic quality, and the Old Spanish National Historic Trail would also be avoided under this alternative.

4.5 Cumulative Impacts

The NMSO oversees the administration of 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 128 parcel nominations (65,370.44 acres) for consideration in the January 2013 Oil & Gas Lease Sale, and is proposing to lease 82 (42,917.96 acres) of the 128 parcels. If these 82 parcels were leased, the percentage of Federal minerals leased would not significantly change. The Farmington, Carlsbad, Roswell, and Oklahoma Field Office (Oklahoma and Texas) parcels are analyzed under separate EAs.

Table 4.3. Actual - Acres of Federal Minerals/Acres Available/Acres Leased:

State	Federal O&G Mineral Ownership	Acres Available	Acres Leased	Percent Leased
KS	744,000	596,147	129,378	22%
NM	34,774,457	30,699,038	5,140,073	17%
OK	1,998,932	1,810,000	329,765	18%
TX	3,404,298	1,774,545	450,425	25%
Totals/Average	40,921,687	34,879,730	6,049,641	17%

Table 4.4. Parcels Nominated & Offered in the January 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	19	6,256.84	9	1,559.85

Roswell	1	640.00	1	640.00
Farmington	39	19,643.46	4	1,918.92
Taos	16	13,303.6	8	6,245.18
Texas	49	25,233.45	29	25,233.45
Oklahoma	5	266.59	5	266.59
Totals	128	65,370.44	82	42,917.96

Table 4.5. Foreseeable - Acres of Federal Minerals/Acres Available/Acres Leased:

State	Federal O&G Mineral Ownership	Acres Available	Acres Leased	Percent Leased
KS	744,000	596,147	129,378	22%
NM	34,774,457	30,699,038	5,167,360	17%
OK	1,998,932	1,810,000	331,071	18%
TX	3,404,298	1,774,545	483,260	27%
Totals/Average	40,921,687	34,879,730	6,111,069	18%

Currently, there are no producing Federal oil or gas wells on public lands administered by the Taos Field Office—referred to as the planning area—though there are producing carbon dioxide wells within the Tucumcari Basin. The reasonably foreseeable future actions identified in the Taos Resource Management Plan Final Environmental Impact Statement, released in December 2011, project one dry hole and two producing wells (numbers rounded) would be drilled per year in the planning area, based on the number of wells drilled since the early 1920's in the eight county area of northeastern New Mexico.

Of the resources analyzed above under section 4.3, only air resources have the potential to be cumulatively impacted. No cumulative impacts associate with the other resources were identified through the interdisciplinary team process, as no other relevant cumulative action was identified within a reasonable vicinity of the parcels aside from the state- or region-wide energy development activities that affect air resources.

4.5.1 Air Resources

The following analysis of cumulative impacts of the proposed action on air quality will be limited to the Taos Field Office planning area. The cumulative impacts of GHG emissions and their relationship to climate change are evaluated at the national and global levels in the Air Resource Technical Report (USDI BLM 2011).

4.5.1.1 Effects of Other Past, Present, and Reasonably Foreseeable Actions.

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.

4.5.1.2 Cumulative Effects of the Proposed Action on Air Resources.

The very small increase in emissions that could result from approval of the proposed action would not result in any Rio Arriba County exceeding the NAAQS for any criteria pollutants. The applicable regulatory threshold for HAPs is the oil and gas industry National Emissions Standards for Hazardous Air Pollutants, which are currently under review by the EPA. The emissions from the proposed well are not expected to impact any criteria pollutant standards in Rio Arriba County.

4.5.1.3 Cumulative Effects of the Proposed Action on Climate Change.

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 the proposed action on global or regional climate.

The Air Quality Technical Report (USDI BLM, 2011) discusses the relationship of past, present and future predicted emissions to climate change and the limitations in predicting local and regional impacts related to emissions. It is currently not feasible to know with certainty the net impacts from particular emissions associated with activities on public lands.

5.0 Consultation/Coordination

This section indicates the list of preparers of this EA, as well as those consulted on its scope of actions and issues. Consultation efforts are considered on-going.

BLM Interdisciplinary Team – List of Preparers

Merrill Dicks, Archaeologist
Greg Gustina, Fisheries Biologist
Brad Higdon, Planning and Environmental Coordinator
Peter Hoagland, Forester
Patricio Martinez, GIS Specialist
Tami Torres, Outdoor Recreation Planner
Derek Trauntvein, Rangeland Specialist
Mary Uhl, Air Resource Specialist
Valerie Williams, Wildlife Biologist

Agencies Consulted

Carson National Forest
Rio Arriba County, Division of Planning and Zoning

Tribes Consulted

Jicarilla Apache Tribe
Navajo Nation
Ute Mountain Ute Tribe
Southern Ute Tribe
Hopi-Tewa Tribe
San Juan Pueblo

5.1 Public Involvement

The parcels nominated for this sale, along with the appropriate stipulations from the RMP, were posted online for a two week review period starting on July 23, 2012. One comment was received expressing concerns regarding the potential for subsequent drilling activities to impact ground water quality.

This EA and unsigned FONSI were made available for public review and comment for 30 days beginning August 27, 2012. Comments were received from Rio Arriba County, Canjilon District of Carson National Forest, and a concerned Canjilon community member. The comments provided were considered and incorporated into this EA as appropriate.

Presented below are the substantive comments and the BLM responses to each:

1. Lease of parcel NM-201301-013 should be deferred beyond January 2013. Leasing this location is undesirable for the obvious reason of close proximity to people's homes, businesses, and agricultural lands.

Response: BLM policy provides for "Deferring a lease parcel from leasing, in whole or in part, pending further evaluation of specific issues" (Instructional Memorandum No. 2010-117). In the case of parcel NM-201301-013 and six other parcels where residential, commercial, or agricultural developments are present or in relative close proximity, the BLM's preferred alternative is to defer the parcels until it can work cooperatively with

Rio Arriba County officials, appropriate governmental agencies, and concerns citizens to ensure potential conflicts are adequately resolved. Further evaluation by the BLM will involve additional environmental review in an environmental assessment that will include public participation.

2. Sale of parcels NM-201301-003, NM-201301-012, and NM-201301-014 should also either be deferred or should have the stipulation of No Surface Occupancy added to their leases, due to their immediate adjacent proximity to the resources and improvements, including residences, agricultural lands, and stock ponds.

Response: The BLM's preferred alternative is to defer parcels NM-201301-003, NM-201301-012, and NM-201301-014 pending further evaluation. See response to comment 1 above.

3. Under section 3.10.1, Land Uses by Local Populations, the EA states that "the closest headwaters are several miles to the east of the lease parcels." This is not correct since the boundaries of Rio Arriba County's Headwaters District were amended in June 2012. All or portions of ten of the 16 lease parcels are located within the Headwaters District.

Response: Sections 3.9.1, 3.10.1, and 4.3.9.1 have been updated to reflect Rio Arriba County's amended Headwaters District boundaries.

4. Under section 4.3.10.1, Land Uses by Local Population, the EA states that "the Federal mineral estate, administered according to the Taos RMP, has primacy over the private surface estate, regulated by Rio Arriba County under its Comprehensive Plan." While it's understood that the term *primacy* in this context means that the right of access to the mineral estate shall not be unreasonably prohibited, the EA should clarify the Rio Arriba County's role in review of applications for surface occupancy on privately-owned surface lands; that is, the EA should state that oil and gas exploration and development from privately-owned surface lands are in fact subject to review and decision by the County, and that the County's regulations may, in certain cases, be more restrictive than those of the BLM.

Response: Section 4.3.10.1 has been revised to indicate Rio Arriba County's role in review of applications for occupancy of private surface estates.

5. Parcel NM-201301-009 should not be offered for leasing due to its close proximity to the well that provides the community of Cebolla with its water supply from a subsurface aquifer. Whereas the protection of water quality and quantity is of central importance in Rio Arriba County's Comprehensive Plan, and whereas the potential risk of water contamination or supply reduction by oil and gas exploration and development is a risk whose consequences, though not necessarily likely, would be catastrophic and unacceptable to the County, any proposed lease, including but not limited to parcel NM-201301-009, that is sufficiently close in proximity to such a ground water supply and conduit or to surface water bodies (ponds, rivers, etc.), should be removed from consideration for leasing for oil and gas exploration at any depth unless and until the BLM is able to provide geological or other evidence (not including construction-based protections) which demonstrates that these water resources would be protected beyond any doubt in the event of an

incident caused by, or activity associated with oil and gas exploration and development that would otherwise put such water resources at risk.

Response: As discussed in the response to comment 1 above, the BLM has discretion to defer parcels from leasing pending further evaluation of potential environmental conflicts. Parcel NM-201301-009 is being deferred until the BLM can work with Rio Arriba County to adequately address potential issues regarding the community water supply.

6. Since the exact extents, both horizontally and vertically, of the community of Cebolla's aquifer are currently unknown, as are the locations of possible private wells and aquifers within or nearby any of the proposed lease sites, it should be noted that any number of the proposed lease parcels (not only parcel NM-201301-009) are locations where oil and gas drilling may pose a threat to the local water supply and are therefore possibly inappropriate locations for oil and gas exploration and development.

Response: In the event parcels are leased, any subsequent drilling, whether considered exploratory or for development of a fluid mineral resource, would be subject to Federal regulations under the Onshore Oil and Gas Orders, which requires wells to be cased and cemented as well as pressure tested to ensure well holes are completely isolated from any aquifer or ground water source. This specific regulation protects these water sources from potential contamination during the drilling and production of oil and gas. Drilling plans, also required under these regulations, are site-specific and are specifically designed for the particular geologic features of the subsurface and the known depth to ground water.

In addition, any subsequent drilling would be environmentally reviewed in compliance with the National Environmental Policy Act (NEPA), which requires the preparation of an environment assessment or environmental impact statement with public involvement. This process would further ensure that concerns related to ground water contamination are fully addressed.

It is true that the exact extent horizontally of most aquifers is unknown because the limits of porous and permeable water pathways containing sand and gravel layers are limited only by the far reaching extents of the environment which deposited them in the Chama Basin. However, vertical limits of most aquifers have been well established by the rock record (from previous drilling), have been recorded in geologic columns, and are published data.

7. Public scoping was not completed in the communities of Cebolla and Canjilon. It would be in the best interest of the local residents of Canjilon to have a public meeting with the BLM.

Response: BLM decisions on the availability of areas for oil and gas leasing and, if so, under what terms and conditions or constraints are made through the land use planning process. The Taos Field Office completed the planning process in May 2012 with its approval of the Taos Resource Management Plan. During this process, extensive public

outreach was made through various media and lines of communication to maximize opportunities for public involvement. Oil and gas leasing was identified by the BLM as one of the primary planning issues to be addressed in the plan, a key message conveyed through the outreach efforts.

Notice of public scoping specifically for the January 2013 lease sale was provided by letters to private surface owners overlying the Federal minerals nominated for the lease sale, letters to various governmental agencies and Native American tribes, and online posting. However, because the BLM recognizes that “further evaluation” is necessary to consider leasing some of the parcels—those being deferred—because of the potential conflicts, additional scoping and public involvement opportunities will be provided, during which the BLM will use other reasonable means to ensure that members of the local population are aware of any subsequent proposal to lease, including a public meeting in the community.

8. The BLM’s EA does not mention the level of development that might occur on the leased parcels. For instance, how many wells per acre are considered as part of this proposal, and what would the development consist of if the parcels are fully developed?

Response: Section 4.1 presents the level of development that can be reasonably assumed on a given parcel if leased. Full field development is not a reasonable assumption due to the speculative nature of the potential for the leases to produce recoverable resources.

9. The EA does not indicate whether or not fracking would occur within the lease parcels. Fracking is a serious concern for many local residents, as it is known to cause problems with dangerous gases and contamination of municipal waters. The BLM needs to confirm whether or not fracking would be allowed by those who would be permitted to explore and extract oil and gas resources.

Response: Hydraulic fracturing is a common process in the San Juan and Chama Basins and has been applied to nearly all wells drilled. There are no verified instances of hydraulic fracturing adversely affecting groundwater in the San Juan Basin (USDI/BLM 2011a, page 54).

Fracking can be expected to be utilized within the lease parcels during development after an exploratory well is drilled. However, not all wells are fracture treated as some flow freely without stimulation, but this is rare. Operators, in their attempt to make a well an economic venture, test the reservoir by hydraulically fracturing the rock open and then propping it open under high pressure to see if hydrocarbons can flow back to the wellbore in economic quantities.

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 and in the San Juan Basin since the 1950s. Over the last 10 years, advances in multi-stage and multi-zone hydraulic

fracturing has allowed development of oil and gas fields that previously were uneconomic, including the San Juan Basin.

10. The EA does not apply stipulation NM-12-NSO Occupied Structures or Dwellings to parcels NM-201301-001, NM-201301-004, or NM-201301-006 where there are families who live in close proximity.

Response: The BLM's preferred alternative is to defer parcels NM-201301-001, NM-201301-004, or NM-201301-006 pending further evaluation. See response to comment 1 above.

11. The EA does not address fire suppression in case there is an explosion or accident. For example, what measures would be taken to stop a wildfire from reaching urban interface areas? Canjilon is in the path of the prevailing winds if a fire broke out at a well pad, especially from pads that could be developed in parcels NM-201301-004 and NM-201301-005.

Response: Potential indirect impacts associated with the exploration and development of oil and gas resources would be carefully analyzed through subsequent environmental review in compliance with NEPA, upon which mitigation measures identified through review process would be applied.

12. The EA should indicate what is considered surface disturbance (i.e., depth of disturbance)?

Response: Surface disturbance is any modification, use, or occupancy of the surface of a lease parcel authorized by approval of an Application for Permit to Drill (APD). An APD package, submitted for approval by the BLM, must include a Surface Use Plan and is evaluated through the NEPA process (subsequent to the issuance of a lease). Any surface disturbing activities would observe best management practices presented in the BLM's *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development—The Gold Book*. Section 2.3 is changed to indicate what is considered surface disturbance.

13. The EA should describe the anticipated depth of the "surface" drilling or provide a definition of surface drilling.

Response: See response to comment 12 above. (The EA makes not reference to the term "surface drilling.")

14. If waste material is to be removed during drilling activities on the leased parcels, the EA should disclose where it would be stored, the type of storage, and whether or not wildlife species would be able come into contact with it.

Response: This information would be carefully considered and evaluated as part of subsequent NEPA analysis prepared prior to the approval of an APD. It is not, however, within the scope of analysis at the leasing stage.

15. The visual resources would be impacted if development occurred along Forest Service lands immediately south of Cebolla.

Response: See response to comment 14 above.

16. The BLM needs to consider how day-to-day operations of wells on the lease parcels might affect Forest Service lands.

Response: See response to comment 14 above.

17. The BLM needs to indicate if it has done a thorough research of the land status of these parcels. Existing special use permits (e.g., powerlines, rights-of-way, or other easements) that cross BLM land and continue onto Forest Service lands need to be considered.

Response: A BLM Land Law Examiner carefully researched both the surface and mineral estate as part of the review process for nominated parcels. In addition, specific land use authorizations would be carefully considered and evaluated as part of subsequent NEPA analysis prepared prior to the approval of an APD.

18. The BLM must consider potential impacts to deer and elk and how that would impact big game migration and hunting (e.g., private outfitter/guides).

Response: Sections 3.1.1 and 4.3.1.1 provide an analysis on potential impacts to big game habitat and migration corridors.

6.0 References

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- New Mexico Department of Agriculture. 2009. New Mexico Noxious Weeds List. <http://nmdaweb.nmsu.edu>.
- New Mexico Environmental Department (NMED). 2012. 2012-2014 State of New Mexico Clean Water Act 303(d)/305(b) Integrated Report.
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- Rio Arriba County. 2010. Rio Arriba County Comprehensive Plan. New Mexico.
- U.S. Department of Energy/National Energy Technology Laboratory. 2008. Development of Baseline Data and Analysis of Life Cycle Greenhouse Gas Emissions of Petroleum Based Fuels. <http://www.netl.doe.gov/energy-analyses/pubs/NETL%20LCA%20Petroleum-Based%20Fuels%20Nov%202008.pdf>
- USDI-Bureau of Land Management (BLM). 1986. Visual resource inventory handbook. H-8410-1.
- USDA-Soil Conservation Service. 1987. Soil survey of Rio Arriba County Area, New Mexico.
- Western Regional Climate Center. 2011. Westmap. http://www.cefa.dri.edu/Westmap/Westmap_home.php.

6.1 Authorities

- Code of Federal Regulations (CFR) 3100
40 CFR All Parts and Sections inclusive Protection of Environment, Revised as of July 1, 2001.
43 CFR, All Parts and Sections inclusive - Public Lands: Interior. Revised as of October 1, 2000.
- U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). 2001. The Federal Land Policy and Management Act, as amended. Public Law 94-579.

APPENDIX 1

January 2012 Oil & Gas Lease Sale – Taos Field Office Parcels

Parcels and applicable stipulations are presented in the table below, followed by summaries of each stipulation.

Parcel	Stipulations	Acres
<p><u>NM-201301-001</u></p> <p>T.0260N, R.0040E, 23 PM, NM Sec. 002 LOTS 3,4; 002 S2NW,SE; 003 LOT 5; 003 S2NENE; 003 S2N2,SW,N2SE,SWSE; 010 ENE,W2NE,NW,N2S2; 011 E2E2,SWNW,W2SW; 011 E2E2NWN,NWNENWNE; 011 N2NWNWNE,E2NESWNE; 011 2SWNE,SWSWNENW; 011 W2NWSNW,S2SENW</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-RIP Protection of Riparian and Aquatic Areas TFO-NSO-NHT Protection of National Historic Trails WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation</p>	1570.26
<p><u>NM-201301-002</u></p> <p>T.0260N, R.0040E, 23 PM, NM Sec. 005 LOTS 3,4; 005 S2NW,SW; 006 LOTS 1-4; 006 S2N2,N2SW,SE; 008 NWNW</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation</p>	895.36
<p><u>NM-201301-003</u></p> <p>T.0260N, R.0040E, 23 PM, NM Sec. 018 LOTS 2; 018 E2,S2NW,SW</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources</p>	626.27

	TFO-NSO-RIP Protection of Riparian and Aquatic Areas WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation	
<u>NM-201301-004</u> T.0260N, R.0040E, 23 PM, NM Sec. 021 N2S2,SWSW,SESE; 022 ALL; 023 S2; 014 S2; 015 SW	TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-RIP Protection of Riparian and Aquatic Areas TFO-NSO-NHT Protection of National Historic Trails WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation	1680.00
<u>NM-201301-005</u> T.0260N, R.0040E, 23 PM, NM Sec. 019 S2; 028 E2NE,S2; 029 NE,E2NW,S2; 030 NENE,W2E2,W2,SESE; 031 ALL	TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-RIP Protection of Riparian and Aquatic Areas TFO-NSO-NHT Protection of National Historic Trails WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation	2480.00
<u>NM-201301-006</u> T.0260N, R.0040E, 23 PM, NM Sec. 027 ALL; 033 ALL; 034 ALL; 035 ALL	TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-RIP Protection of Riparian and Aquatic Areas TFO-NSO-NHT Protection of National Historic Trails WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation	2560.00
<u>NM-201301-007</u> T.0270N, R.0040E, 23 PM, NM	TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources	520.00

Sec. 010 S2SE; 015 E2,NWSW,S2SW	TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-NHT Protection of National Historic Trails WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation	
<u>NM-201301-008</u> T.0270N, R.0040E, 23 PM, NM Sec. 011 S2SW,SE	TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation	240.00
<u>NM-201301-009</u> T.0270N, R.0040E, 23 PM, NM Sec. 012 SW,N2SE,SWSE; 013 NW	TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-V Protection of Visual Resources WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation	440.00
<u>NM-201301-010</u> T.0270N, R.0040E, 23 PM, NM Sec. 014 N2,SW,N2SE,SESE	TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-NHT Protection of National Historic Trails WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation	600.00

<p><u>NM-201301-011</u></p> <p>T.0270N, R.0040E, 23 PM, NM Sec. 021 N2,SW,N2SE,SWSE; 022 NWN,N2NW</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation</p>	<p>720.00</p>
<p><u>NM-201301-012</u></p> <p>T.0270N, R.0040E, 23 PM, NM Sec. 023 S2NW,N2SW</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-RIP Protection of Riparian and Aquatic Areas TFO-NSO-NHT Protection of National Historic Trails WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation</p>	<p>160.00</p>
<p><u>NM-201301-013</u></p> <p>T.0270N, R.0040E, 23 PM, NM Sec. 026 LOTS 7-14; 035 LOTS 11-16, 18-20</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-RIP Protection of Riparian and Aquatic Areas TFO-NSO-NHT Protection of National Historic Trails NM-12-NSO Occupied Structures or Dwellings WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation</p>	<p>30.947</p>
<p><u>NM-201301-014</u></p> <p>T.0270N, R.0040E, 23 PM, NM Sec. 027 LOTS 9-11</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources WO-ESA-7 Endangered Species Act Section 7 Consultation</p>	<p>17.44</p>

	WO-NHPA Cultural Resource and Tribal Consultation	
<p><u>NM-201301-015</u></p> <p>T.0270N, R.0040E, 23 PM, NM Sec. 028 NWSW; 033 NW, NWSW</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-RIP Protection of Riparian and Aquatic Areas WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation</p>	240.00
<p><u>NM-201301-016</u></p> <p>T.0270N, R.0050E, 23 PM, NM Sec. 006 NESW,N2SE; 007 LOTS 1-3; 007 E2NE,NESW,SE; 018 NENE</p>	<p>TFO-TL-W1 Protection of Wildlife Resources TFO-CSU-W1 Protection of Wildlife Resources TFO-CSU-W2 Protection of Wildlife Resources TFO-CSU-W3 Protection of Wildlife Resources TFO-CSU-W4 Protection of Raptor Habitat TFO-CSU-W7 Protection of Prairie Dog Habitat TFO-CSU-V Protection of Visual Resources TFO-NSO-RIP Protection of Riparian and Aquatic Areas WO-ESA-7 Endangered Species Act Section 7 Consultation WO-NHPA Cultural Resource and Tribal Consultation</p>	549.82

Summary of Lease Stipulations:

TFO-TL-W1 Protection of Wildlife Resources

All or portions of the lease area contain key wildlife habitat where timing limitations are applied to protect big game species. The timing limitations are species-specific (i.e., big game winter range: January 1 to April 30; bighorn sheep calving range: May 1 to June 30; and pronghorn fawning areas: May 1 to July 15) and are applied depending on the presence of the habitat.

Note: For the January 16, 2013 Lease Sale, only the big game winter and spring range timing limitation (January 1 to April 30) applies.

TFO-CSU-W1 Protection of Wildlife Resources

In big game winter and spring ranges and migratory corridors, road densities will average no more than .5 miles per square mile to minimize habitat fragmentation and disturbance.

TFO-CSU-W2 Protection of Wildlife Resources

Surface-disturbing or long-term noise producing activities that exceed 75dbA at the edge of the well pad will only be authorized when the operator demonstrate that the area is essential for

operations and upon submission of a satisfactory surface use plan that provides protection for key wildlife habitat.

TFO-CSU-W3 Protection of Wildlife Resources

Surface-disturbing or long-term noise producing activities that exceed 75dbA will not be allowed within a 400 meter protective spatial buffer of an existing or planned wildlife habitat improvement project. These parameters may be may be increase or otherwise modified as part of conditions of approval if greater protection of the habitat is found warranted.

TFO-CSU-W4 Protection of Raptor Habitat

Raptor surveys will be required prior to any surface disturbing activities on the lease. Raptor nests and bald eagle roosting sites will be avoided respectively:

Bald eagle: 0.5-1.0 miles (January 1 – August 31)
Golden eagle: 0.5 mile (January 1 – August 31)
Peregrine falcon: 1.0 mile (February 1 – August 31)
Prairie falcon: 0.5 mile (April 1 – August 31)
Osprey: 0.25 mile (April 1 – August 31)
Cooper's hawk: 0.25 (March 15 – August 31)
Northern goshawk: 0.5 mile (March 1 – July 31)
Red-tailed hawk: 0.125 mile (February 1 – July 15)
Ferruginous hawk: 1.0 mile (February 1 – July 15)
All other raptor species: 0.25 mile (March 1 - June 30)

TFO-CSU-W7 Protection of Prairie Dog Habitat

Surveys for prairie dog colonies will be required prior to any surface disturbing activities on the lease. Colonies will be avoided respectively:

Gunnison Prairie Dog: 0.25 mile (April 1-September 15)
Black Tailed Prairie Dog: 0.25 mile (April 1-September 15)

TFO-CSU-V Protection of Visual Resources

To minimize impacts to scenic quality, operations on the lease may be subject to color and low profile requirements, and facilities may be moved greater than 200 meters to avoid visual contrast. Visual simulations may also be required as part of surface use plan.

TFO-NSO-RIP Protection of Riparian and Aquatic Areas

Surface waters, riparian-wetland areas, and floodplains will have no surface occupancy within 200 meters of the outer edge of the 100-year floodplains or potential riparian-wetland.

TFO-NSO-NHT Protection of National Historic Trails

No surface occupancy is allowed within .5 mile of the Old Spanish or El Camino Real de Tierra Adentro National Historic Trails.

NM-12-NSO Occupied Structures or Dwellings

All or a portion of the lease contains dwellings or structures occupied by one or more persons where no surface occupancy will be allowed.

NM-SCU-S Protection of Slopes and Soils

Surface disturbance will not be allowed on slopes over 30 percent. Special measures will be applied to occupancy of areas containing fragile soils.

Lease Notice - Potential Occurrence of National Historic Trail Features

This lease has potential to contain resources, including ancillary resources, associated with the Old Spanish or Camino Real de Tierra Adentro National Historic Trails that may require special mitigation measures such as avoidance, data recovery, and stabilization.

Lease Notice - Occurrence of Rangeland Monitoring Plots

This lease contains one or more rangeland monitoring plot, consisting of approximately two acres, which may require avoidance from any surface disturbing activities.

APPENDIX 2

Maps: Taos Field Office Parcels

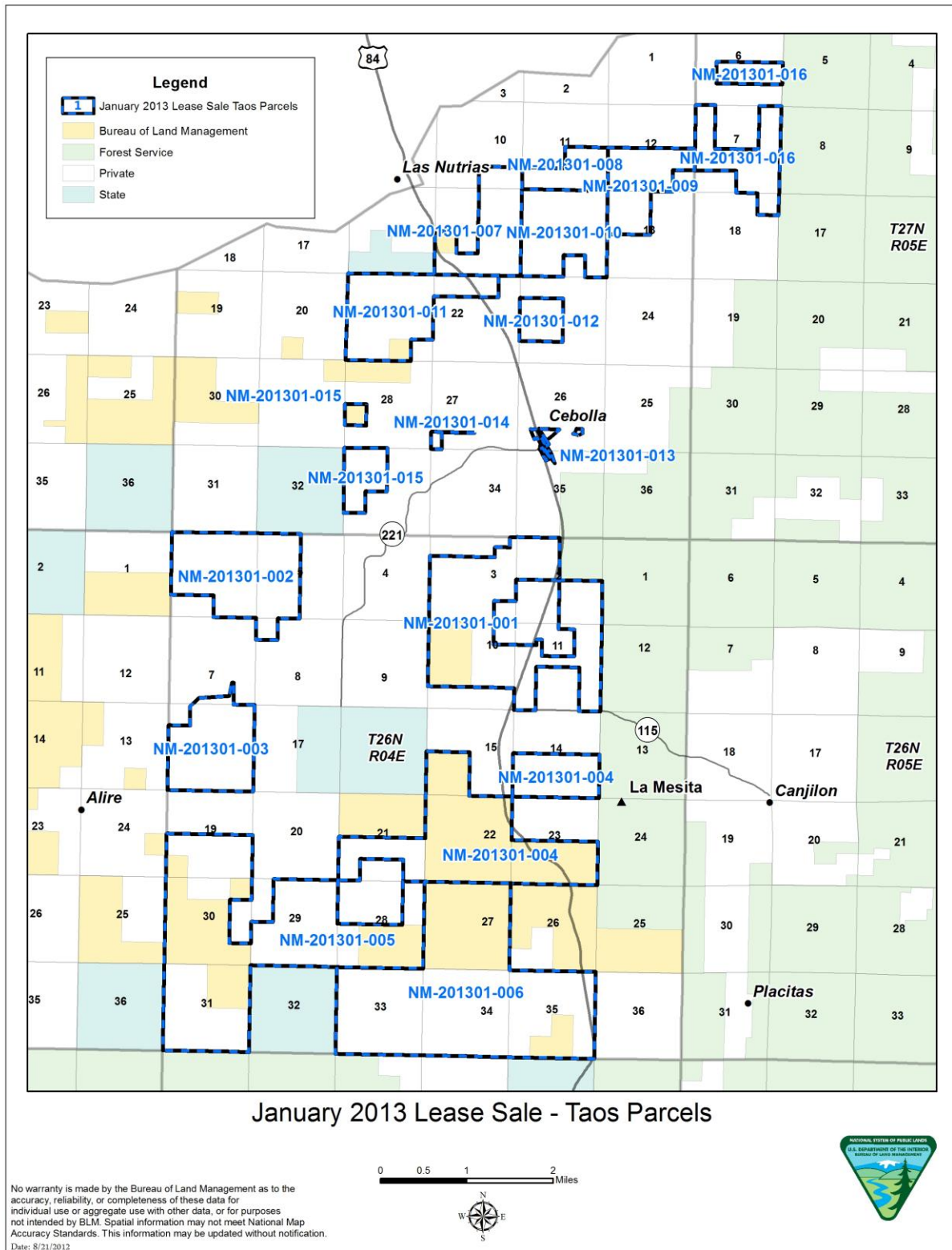


Figure 1

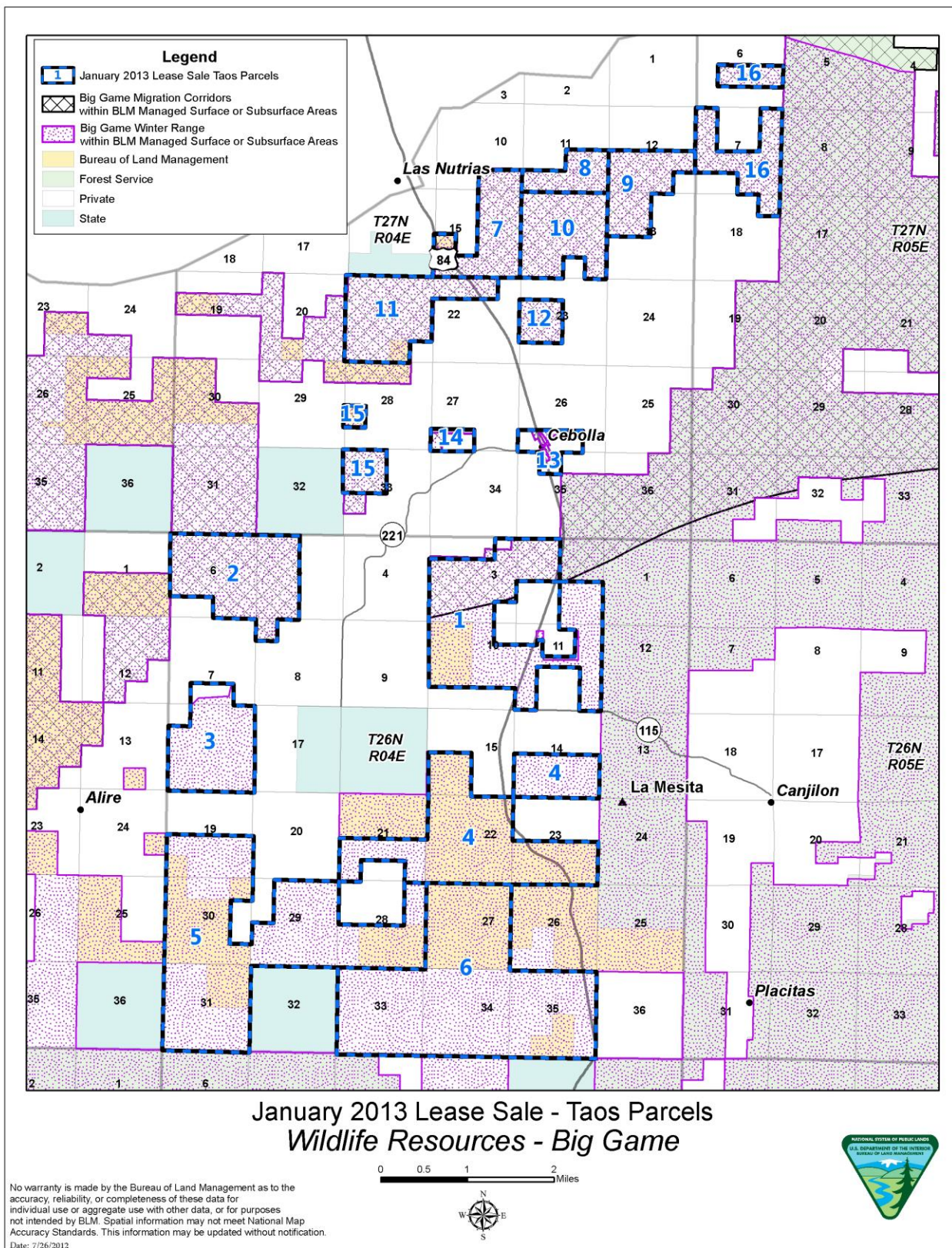


Figure 2

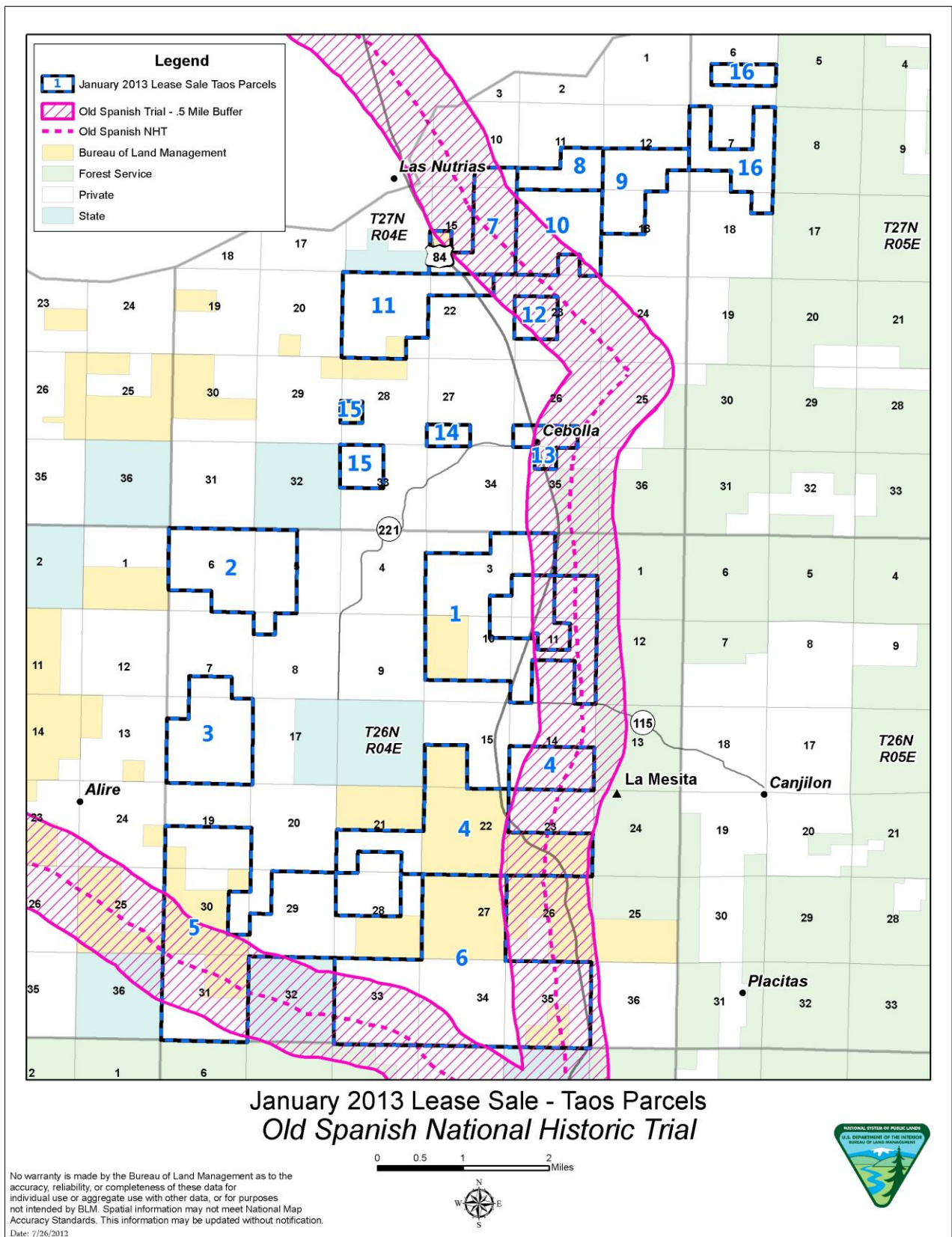


Figure 3

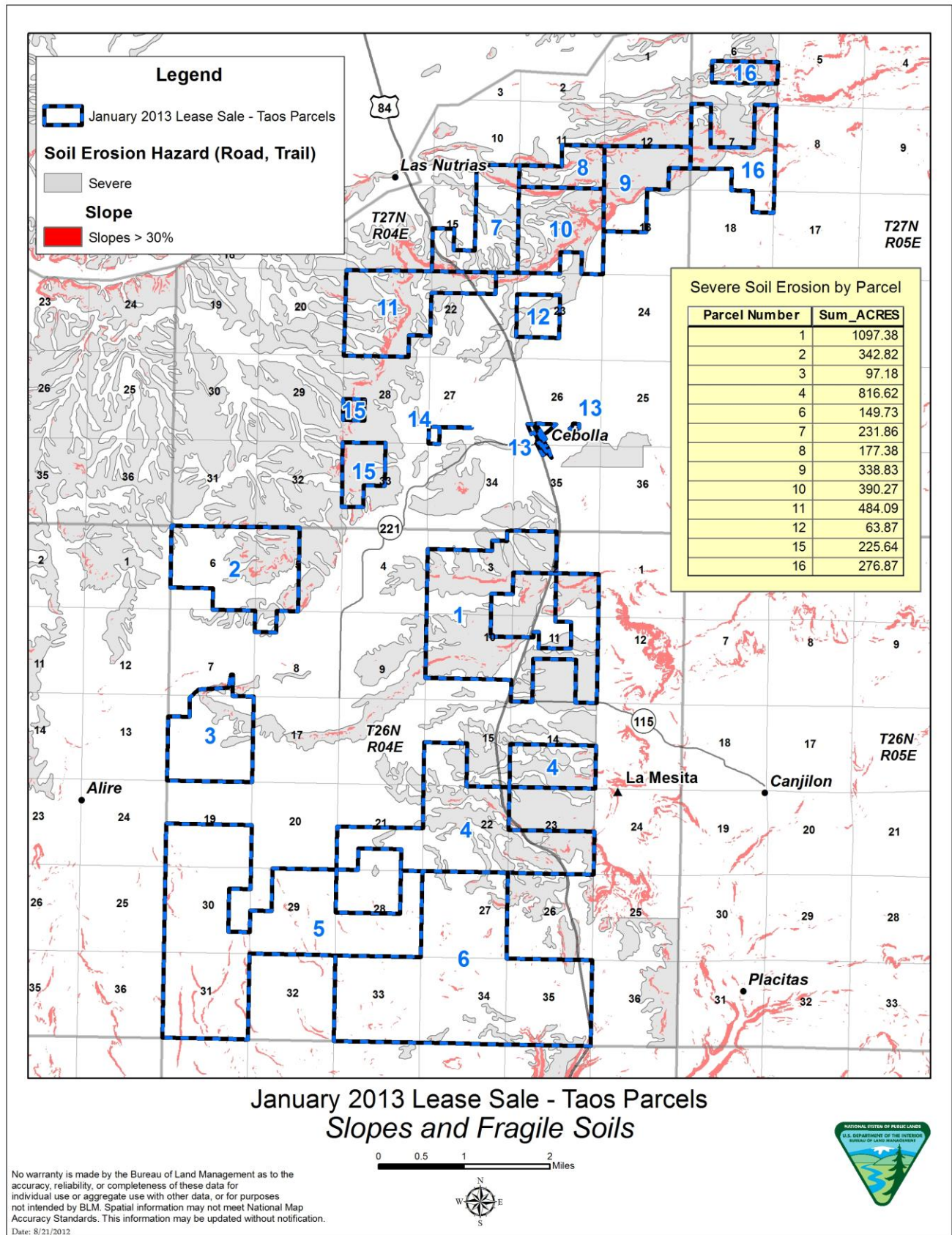
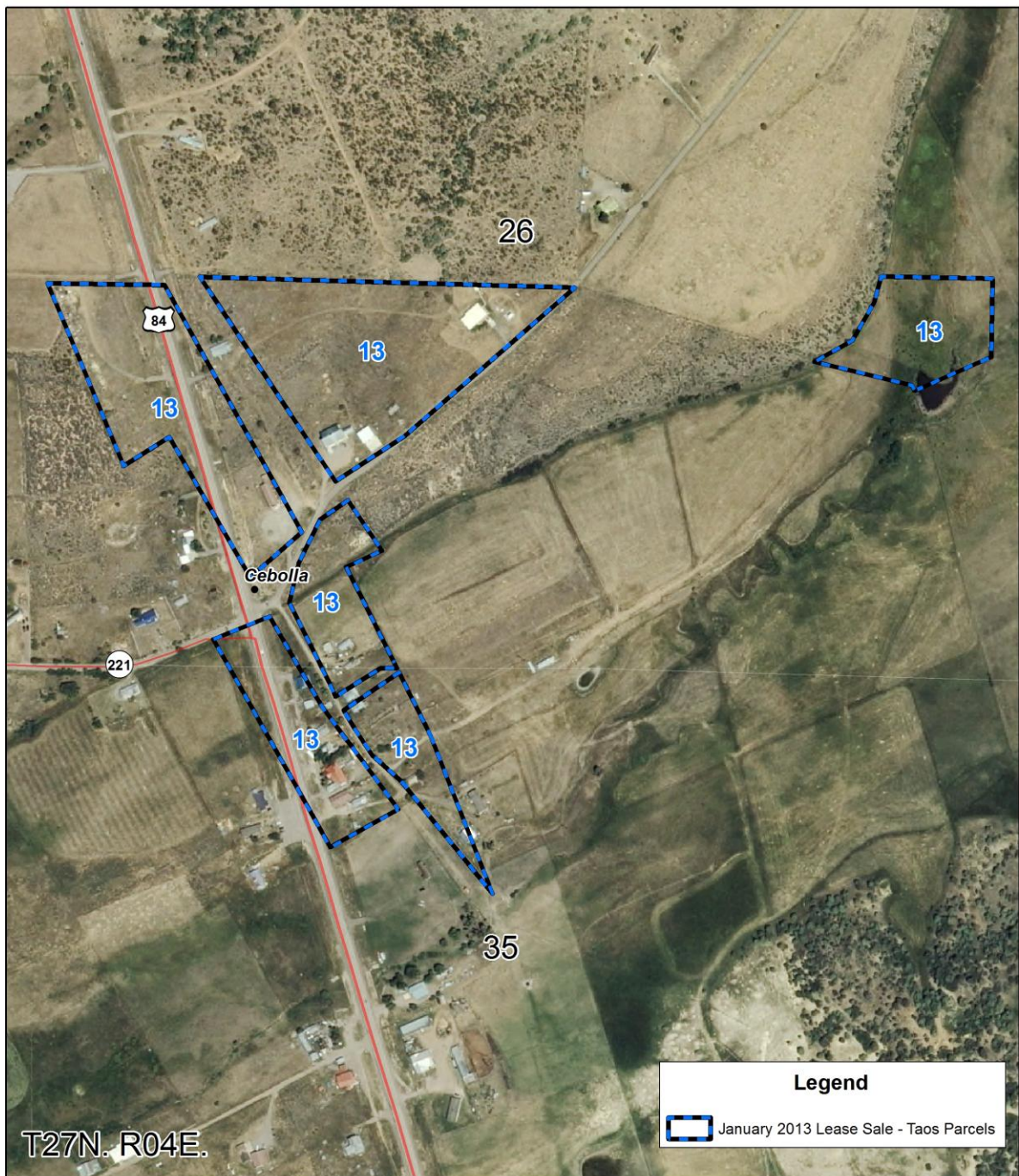


Figure 4



January 2013 Lease Sale - Taos Parcels *Occupied Dwelling or Structures*

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
 Date: 7/27/2012

Figure 5