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

**Project: October 2011 Competitive Oil and Gas Lease Sale**
**EA Log Number: DOI-BLM-NM-F010-2011-185-EA**
**Location: Locations in San Juan County, New Mexico.**

## Finding of No Significant Impact

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, I have determined the Proposed Alternative (Alternative B) is not expected to have significant impacts on the environment. The impacts of leasing the fluid mineral estate in the areas described with this Environmental Assessment have been previously analyzed in the 2003 Farmington RMP and the 2002 Biological Assessment; and the lease stipulations that accompany the tracts proposed for leasing would mitigate the impacts of future development on these tracts. Therefore, preparation of an Environmental Impact Statement is not warranted.

Prepared by:

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Reviewed by:

_____Date_____
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Approved by:

_____Date_____
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**BUREAU OF LAND MANAGEMENT**
**FARMINGTON FIELD OFFICE**

# ENVIRONMENTAL ASSESSMENT FOR OCTOBER 2011 COMPETITIVE OIL AND GAS LEASE SALE DOI-BLM-NM-F010-2011-185-EA

## 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 parcel(s) in New Mexico, Oklahoma, Texas, and Kansas. A Notice of Competitive Lease Sale (NCLS), which lists lease parcel(s) to be offered at the auction, is published by the BLM 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 BLM NMSO sends a draft parcel list to any Field Office in which parcel(s) are located. Field office staff then review the legal descriptions of the parcel(s) 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 parcel nominated for this sale, along with the appropriate stipulations from the 2003 Farmington Resource Management Plan (RMP) and subsequent amendments were posted online for a two week public scoping period.

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

This EA documents the Farmington Field Office (FFO) review of one (1) parcel nominated for the October 2011 Competitive Oil and Gas Lease Sale that are under the administration of the FFO. It serves to verify conformance with the approved land use plan, provides the rationale for deferring or dropping parcel(s) from a lease sale, as well as providing rationale for attaching additional lease stipulations to specific parcel(s).

The EA was made available for public review and comments for 30 days from May 26 through June 24, 2011. No comments were received..

## 1.0 Purpose and Need

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

The need for the action is established by the BLM's responsibility under the MLA, as amended, to promote the mining 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 iet seq.*)*, and other applicable laws, regulations, and policies.

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

## 1.1 Conformance with Applicable Land Use Plan & Other Environmental Assessments

The applicable land use plan for this action is the 2003 Farmington RMP. The RMP designated approximately 2.59 million acres of federal minerals open for continued oil and gas development and leasing under Standard Terms and Conditions. The RMP, along with the 2002 Biological Assessment, also describe specific stipulations that would be attached to new leases offered in certain areas. Therefore, it is determined that the action alternatives would conform to fluid mineral leasing decisions in the 2003 Farmington RMP and subsequent amendments and are consistent with the goals and objectives for natural and cultural resources. The Federal Land Policy and Management Act of 1976 (FLPMA) established guidelines to provide for the management, protection, development, and enhancement of public lands (Public Law 94-579).

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this EA is tiered to and incorporates by reference the information and analysis contained in the 2003 Farmington RMP and its Final Environmental Impact Statement. While it is unknown precisely when, where, or to what extent well sites or roads would be proposed, the analysis of projected surface disturbance impacts, should a lease be developed, is based on potential well densities listed in the Reasonable Foreseeable Development (RFD) Scenario included in the 2003 Farmington RMP and the 2002 Biological Assessment. While an appropriate level of site-specific analysis of individual wells or roads would occur when a lease holder submits an Application for Permit to Drill (APD), assumptions based on the RFD scenario will be used in the analysis of impacts in this EA.

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).

## 1.2 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.

Farmington Field Office biologists reviewed the proposed action and determined it would be in compliance with threatened and endangered species management guidelines outlined in Biological Opinions Cons. #2-22-01-I-389. No further consultation with the U.S. Fish and Wildlife Service (USFWS) is required at this stage.

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 Section 106 responsibilities of the National Historic Preservation Act (NHPA) are adhered to by following the Protocol Agreement between New Mexico BLM 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. When draft parcel locations are received by the FFO, cultural resource staff reviews the locations to determine if any are within known areas of concern.

Native American consultation is conducted by certified mail regarding each lease sale activity. If Traditional Cultural Properties (TCP) or heritage-related issues are identified, such parcel(s) are withheld from the sale while letters requesting information, comments, or concerns are sent to the Native American representative. If the same draft parcel(s) appear in a future sale, a second request for information is sent to the same recipients and the parcel(s) will be held back again. If no response to the second letter is received, the parcel(s) 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 stipulations need to be attached as lease stipulations. Native American consultation letters were sent out for the October 2011 Lease Sale to Acoma Pueblo, Hopi Tribe, Zuni Pueblo, Navajo Nation President Office, Navajo Nation Historical Preservation Department, and Nageezi Chapter.

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 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 New Mexico State BLM office 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 (BMPs). The surface owners may elect to protest the leasing of the minerals underlying their surface.

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

## 1.3 Identification of Issues

An internal review of the Proposed Action was conducted by an interdisciplinary team of the FFO resource specialists on March 28, 2011 to identify and consider potentially affected resources and associated issues. The USFWS representative was invited to attend but was unable to make it. During the meeting, the interdisciplinary team developed the Proposed Alternative, presented in section 2.2 below.

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/oil_and_gas_lease.html for a two week public scoping period beginning May 10 - 20, 2011.

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

- What effects will the proposed action have on Hopi and Pueblo Culture?

- What effects will the proposed action have on Navajo Culture?
- What effects will the proposed action have on any archaeological findings?
- What effects will the proposed action have on visual resource from Chaco Park?
- What effects will the proposed action have on visual resource from Pueblo Pintado?
- What effects will the proposed action have on any auditory noise?
- What effects will the proposed action have on burrowing owls?
- What effects will the proposed action have on prairie dogs?
- What effects will the proposed action have on an existing shut-in wellbore?

Several issues were considered during project scoping but dismissed from detailed analysis because there would be no potentially significant effects related to the issues resulting from any of the alternatives presented below. The following elements are determined by an interdisciplinary team of resource specialists, following their onsite visit and review of the RMP and other data sources. Areas that were not considered present were: Areas of Critical Environmental Concern, Prime or Unique Farmland, Floodplains, Wild and Scenic Rivers, Wetlands/Riparian Zones, Wilderness or Wilderness Study Areas, and Wild Horses and Burros.

## PROPOSED ACTIONS AND ALTERNATIVES

### 2.0 Alternatives Including the Proposed Action

### 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 preferred 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 one (1) parcel would not be offered for lease during the October 2011 Competitive Oil and Gas Lease Sale. Surface management and any ongoing oil and gas development on surrounding federal, private, and state leases would continue under current guidelines and practices. The no action alternative would not preclude this parcel from being nominated and considered in any future lease sales.

### 2.2 Alternative B – Proposed Action

The Proposed Alternative is to lease for oil and gas lease one (1) nominated lease parcel of federal minerals, covering 480.00 acres administered by the FFO. Standard terms and conditions as well as stipulations listed in the RMP and RMPAs would apply.

Once sold, the lease purchaser has the right to use as much of the leased lands as is necessary to explore and drill oil and gas within the lease boundaries, subject to the stipulations attached to the lease (Title 43 CFR 3101.1-2).

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 lessee 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; ownership of the minerals leased revert back to the federal government and the lease can be resold.

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

The one (1) nominated parcel contains a Cultural Resources Lease Notice stating that all development activities proposed under the authority of these leases are subject to compliance with Section 106 of the NHPA and Executive Order 13007. In addition, site specific mitigation measures and Best Management Practices (BMPs) would be attached as Conditions of Approval (COAs) for each proposed exploration and development activity authorized on a lease.

The parcel recommended for leasing under the Proposed Alternative is presented below in Table 1.

**Table 1 Alternative B: Proposed Alternative Parcel**

| Parcel | Stipulations | Acres |
|---|---|---|
| **NM-201110-025**<br><br>T.0210N, R.0080W, NM PM, NM, Sec. 013 NE, S2W; San Juan County, Farmington FO | **Lease with the following Stipulations:**<br><br>NM-11-LN – Lease Notice-Cultural Resource<br>F-8-VRM – Visual Resource Management Class IV<br>F-41-LN – Lease Notice-Biological Survey<br>F-42-LN – Lease Notice – Chaco Lease Stipulations | 480.00 |

Standard terms and conditions as well as stipulations developed through the parcel review and analysis process would apply as additional lease stipulations (as required by Title 43 CFR 3131.3) to address site specific concerns or new information not identified in the land use planning process.

## 2.3 Alternatives Considered but Eliminated from Detailed Analysis

The alternatives considered but eliminated from detailed analysis identify those parcel(s) that are not in conformance with the current land use plans. Therefore this alternative will not be carried through the remainder of this environmental assessment.

There were no parcel(s) that were considered but eliminated from the detail analysis.

# AFFECTED ENVIRONMENT

## 3.0 Introduction

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.

## 3.1 Air Quality

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. These criteria pollutants include carbon monoxide (CO), nitrogen dioxide ($NO_2$), ozone ($O_3$), particulate matter (PM10 & PM2.5), sulfur dioxide ($SO_2$) and lead (Pb). Regulation of air quality is delegated to the State of New Mexico. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and also includes applications of noise, smoke management, and visibility. The area of the proposed action is considered a Class II air quality area. A Class II area allows moderate amounts of air quality degradation. Air quality in the San Juan Basin near the proposed lease tracts is generally good. A review of the EPA's Green Book web page documents that the San Juan Basin is designated as being in attainment for all air pollutants regulated under the Clean Air Act's National Ambient Air Quality Standards (NAAQS).

The 2003 Farmington Resource Management Plan (RMP) discussed ozone in the Baseline Air Quality and Impact Assessment sections. The December 2003 standard attainment of the ozone was a three-year running average of the annual fourth-highest daily maximum 8-hour ozone concentration of less than 0.084 ppb. During the summers of 2000 through 2002, ozone levels in San Juan County were approaching non-attainment. The New Mexico Air Quality Bureau (NMAQB) held several public meetings to discuss the issue and as a result formed an Early Action Compact (EAC), and coordinated the formation of the Four Corners Ozone Task Force. Additional modeling and monitoring was conducted by Alpine Geophysics, LLC and Environ International Corporations, Inc., in 2003 and 2004. Results of the modeling suggest the episodes recorded in 2000 through 2002 were attributable to regional transport and high natural biogenic source emissions. The model also predicted that the region will not violate the ozone NAAQS through 2007 and that the trends in the 8-hr ozone values in the region will be declining in the future.

Initial work of the Task Force has already resulted in the implementation of one "interim" recommendation: the Bureau of Land Management has required new and replacement internal combustion gas field engines of between 40 and 300 horsepower to emit no more than two grams of nitrogen oxides per horsepower-hour. In New Mexico, all new and replacement engines greater than 300 horsepower must not emit more than 1.5 grams of NOx per horsepower-hour. These requirements apply to oil and gas development within the Farmington BLM's jurisdiction. In March 2008, the EPA revised its Air Quality Index (AQI) for ozone from 0.084 ppm to 0.075 ppm. The New Mexico Environment Department Air Quality Bureau (NMAQB) has determined in a February 22, 2009 report that the 2007 - 2009 ozone design value for San Juan County was 0.069 ppm. Currently, the design value for a county must be greater than the revised 8-hour ozone standard of 0.075 ppm for a nonattainment designation. Therefore, at this time the San Juan County is classified as in attainment with the revised federal ozone standard. Rio Arriba County is unclassified because of there are no ozone monitors sited in Rio Arriba County.

None of the potential lease tracts are located in any of the areas designated by the EPA as non-attainment areas for any listed pollutants regulated by the Clean Air Act.

Additional general information on air quality in these areas is contained in Chapter 3 of the

Farmington Proposed RMP/Environmental Impact Statement.

## 3.2 Climate

The planning area is located in a semiarid climate regime typified by dry windy conditions, limited rainfall. Table 2 summarizes components of climate that could affect air quality in the region.

**Table 2: Components of Climate**

| Climate Component | Temperature |
|---|---|
| Mean maximum summer temperatures | 67.1°F |
| Mean minimum winter temperatures | 32.1°F |
| Mean annual temperature | 52.1°F |
| Mean annual precipitation | 8.83 inches |
| Mean annual snowfall | 14.6 inches |
| Mean annual wind speed | 7.3 mile per hour (mph) |
| Prevailing wind direction | NE during a.m., SW during p.m. |

In addition to the air quality information in the RMPs cited above, new information about greenhouse gases (GHGs) and their effects on national and global climate conditions has emerged since the RMP were prepared. Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring and modeling systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions; what is known is that increasing concentrations of GHGs may accelerate the rate of climate change.

Greenhouse gases that are included in the US Greenhouse Gas Inventory are: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). CO2 and methane (CH4) are typically emitted from combustion activities or are directly emitted into the atmosphere. On-going scientific research has identified the potential impacts of greenhouse gas emissions (including CO2; CH4; nitrous oxide (N2O), water vapor; and several trace gasses) on global climate. Through complex interactions on regional and global scales, these greenhouse gas emissions cause a net warming effect of the atmosphere (which making makes surface temperatures suitable for life on earth), primarily by decreasing the amount of heat energy radiated by the earth back into space. Although greenhouse gas levels have varied for millennia (along with corresponding variations in climatic conditions), recent industrialization and burning of fossil carbon sources have caused CO2 concentrations to increase dramatically, and are likely to contribute to overall climatic changes, typically referred to as global warming. Increasing CO2 concentrations also lead to preferential fertilization and growth of specific plant species.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different

regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. It is not, however, possible at this time to predict with any certainty the causal connection of site specific emissions from sources to impacts on the global/regional climate relative to the Proposed Alternative and subsequent actions of oil and gas development.

Mean annual temperatures have risen across New Mexico and the southwestern U.S. since the early 20th century. When compared to baseline information, periods between 1991 and 2005 show temperature increases in over 95% of the geographical area of New Mexico. Warming is greatest in the northwestern, central, and southwestern parts of the state. Recurrent research has indicated that predicting the future effects of climate change and subsequent challenges of managing resources in the Southwest is not feasible at this time (IPCC,2007; CCSP,2008). However, it has been noted that forests at higher elevations in New Mexico, for example, have been exposed to warmer and drier conditions over a ten year period. Should the trend continue, the habitats and identified drought sensitive species in these forested areas and higher elevations may also be affected by climate change (Enquist and Gori)?

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

## 3.3 Heritage Resources

### 3.3.1 Cultural Resources

Once the decision is made by the lessee to develop a lease, area specific cultural records review would be done to determine if there is a need for a cultural inventory of the areas that could be affected by the subsequent surface disturbing activities. Generally, a cultural inventory will be required and all historic and archeological sites that are eligible for listing in the National Register of Historic Places or potentially eligible to be listed would be either avoided by the undertaking or have the information in the sites extracted through archeological data recovery prior to surface disturbance.

The nominated parcel is located within the archaeologically rich San Juan Basin of northwestern New Mexico. In general, the prehistory of the San Juan Basin can be divided into five major periods: PaleoIndian (ca. 10000 B.C. to 5500 B.C.), Archaic (ca. 5500 B.C. to A.D. 400), Basketmaker II-III and Pueblo I-IV periods (A.D. 1-1540), and the historic (A.D. 1540 to present), which includes Native American as well as later Hispanic and Euro-American settlers. Detailed description of these various periods and select phases within each period is provided in the Bureau of Land Management Farmington Field Office Final Environmental Impact

Statement and Resource Management Plan (2003) and will not be reiterated here. Additional information is also included in an associated document (SAIC 2002).

When a lessee proposes to explore or develop its lease, an area-specific cultural records review would be done, in accordance with Section 106 of the National Historic Preservation Act (NHPA), to determine if there is a need for a cultural inventory of the areas that could be affected by the proposed surface disturbing activities. Generally, a cultural inventory will be required and all historic and archeological sites that are eligible for listing in the National Register of Historic Places (NRHP) or potentially eligible to be listed would be either avoided by the undertaking or have the information in the sites extracted through archeological data recovery prior to surface disturbance.

The BLM FFO has categorized variability in archeological sites by major time period, cultural affiliations/components, average size, and occurrence of features in each of the 20 watersheds within the BLM FFO's jurisdiction (BLM 2003:3-88). The parcel lies approximately 5.5 miles north of the community of Pueblo Pintado in the Chaco watershed.
Based on the RMP and SAIC reports, a total of 14,408 sites representing 22,899 distinct temporal/cultural components have been documented within the Chaco watershed. The most frequently occurring cultural affiliations recorded are Anasazi/Pueblo, Navajo, and Archaic**.**

To assess the cultural resources of the nominated parcel, three avenues of inquiry were considered: literature or file review, Native American consultation, and field reconnaissance. The literature review involved utilizing data sources including computerized data from the Archaeological Records Management Section at the Museum of New Mexico (ARMS; June 2010), BLM site location maps, ethnographic records from previously conducted small and large scale cultural resource surveys, and original General Land Office surveys dating to 1882. Native American consultation involved contacting by mail the Navajo Nation President, Navajo Nation Historic Preservation Office, and affected Navajo chapters. By correspondence dated October 28, 2009, the BLM extended to all the New Mexico pueblos and the Hopi Tribe the opportunity to review and comment of future lease sales; only the Hopi Tribe responded.

Previous cultural resource studies and surveys in the vicinity of the lease have been generally limited to inspections ahead of oil and gas related activities, such as well locations and pipelines, and assorted infrastructure such as domestic water and power lines. In the San Juan Basin, numerous large scale archaeological surveys were also conducted in relation to coal feasibility studies in the 1970s-1980s and several of those survey tracts lie near the parcel. From a review of available data, it appears that site densities in the area are generally low: there is one archaeological site on record in the proposed lease. The one recorded site is a simple artifact scatter of archaic age recorded in 1966 during a survey along the large 345KV power line that passes through the parcel. Approximately 40 acres (8%) of the proposed lease has been inventoried for cultural resources. The figures are most likely slightly higher because not all known surveys have been electronically captured in a GIS environment.

The General Land Office map dating to 1882 did not yield any significant results. No cultural features were noted by the surveyors in the area of the proposed lease.

No reconnaissance for cultural resources in the proposed lease was deemed warranted. The existing data for the lease and its immediate vicinity seems to be a good example of what can reasonably be expected to occur in those areas that have not been archaeologically surveyed.

### 3.3.2 Native American Religious Concerns

Traditional Cultural Prosperities (TCPs) is a term that has emerged in historic preservation management and the consideration of Native American religious concerns. TCPs are places that have cultural values that transcend, for instance, the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites.

Native American communities are most likely to identify TCPs, although TCPs are not restricted to those associations. Some TCPs are well known, while others may only be known to a small group of traditional practitioners, or otherwise only vaguely known.

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

- The American Indian Religious Freedom Act of 1978 (AIRFA; 42 USC 1996, P.L. 95-431 Stat. 469).
    - Possession of sacred items, performance of ceremonies, access to sites
- Executive Order 13007 (24 May 1996).
    - Access and use of sacred sites, integrity of sacred sites
- The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA; 25 USC 3001, P.L. 101-601).
    - Protection, ownership, and disposition of human remains, associated funerary objects, unassociated funerary objects, sacred objects, or objects of cultural patrimony
- The Archaeological Resources Protection Act of 1979 (ARPA; 16 USC 470, Public Law 96-95).
    - Protection or archaeological resources on Federal and Indian lands

For the Proposed Action, identification of TCPs were limited to reviewing existing published and unpublished literature, and ongoing BLM tribal consultation efforts specific to these proposed leases with the Navajo Nation, affected Navajo chapters, and other tribes.

No site specific TCPs or other areas of traditional religious and cultural importance has been identified in the lease parcel or within .75 miles of the parcel.

A review of existing information indicates the proposed action is located approximately five miles north-northeast of the Pueblo Pintado unit of Chaco Culture National Historic Park. A field reconnaissance was completed by BLM resource and management staff on April 20, 2011 and found the Pueblo Pintado is not visible from the parcel.

### 3.3.3 Paleontological Resources

The San Juan Basin has been known to be an important area for mammalian and reptilian fossils since the late 1800s. A variety of paleontological resources exist in the planning area, including animal fossils, fossil leaves, palynomorphs, petrified wood, and trace fossils, occurring in the Triassic, Jurassic, Cretaceous, and Tertiary rocks. Dinosaur and other fossils that have made significant contributions to the scientific record have been found and excavated in the FFO area within the past 5 years.

The BLM uses the Potential Fossil Yield Classification (PFYC) system to identify areas with a high potential to produce significant fossil resource (IM 2008-009). This system has ranked all lands within the FFO management area as a Class 5 designation. Class 5 regions are described as being Very High Potential paleontological resource areas, thus requiring an assessment at the project level (IM 2008-011).

## 3.4 Water Resources

### 3.4.1 Water Quality – Surface/Ground

The San Juan Basin is underlain by sandstone aquifers and unconsolidated sand and gravel aquifers. The Colorado Plateaus Aquifers are sandstone while the Rio Grande Aquifer system is unconsolidated sand and gravel. The primary Colorado Plateaus Aquifers that underlie the vast majority of the San Juan Basin are the Uinta-Animas Aquifer and the Mesa Verde Aquifer. The quality of groundwater in the San Juan Basin generally ranges from fair to poor. The Uinta-Animas contains fresh to moderate saline water while the quality of the Mesa Verde is extremely variable. In general, areas of the aquifer that are recharged by infiltration from precipitation or surface water sources contain relatively fresh water.

Surface water within the area is affected by geology, precipitation, and water erosion. Factors that currently affect surface water resources include livestock grazing management, oil and gas development, and possible impacts from brush control treatments. No perennial surface water is found on public land in the proposed lease areas. Ephemeral surface water within the area may be located in tributaries, playas, alkali lakes and stock tanks.

Groundwater within the area is affected by geology and precipitation. Factors that currently affect groundwater resources in the area include livestock grazing management, oil and gas development, groundwater pumping and possible impact from brush control treatments. Most of the groundwater in the area is used for rural, domestic and livestock purposes.

### 3.4.2 Watershed - Hydrology

The watershed and hydrology in the area is affected by land and water use practices. The degree to which hydrologic processes are affected by land and water use depends on the location, extent, timing and the type of activity. Factors that currently cause short-lived alterations to the hydrologic regime in the area include livestock grazing management, recreational use activities,

groundwater pumping and also oil and gas developments such as well pads, permanent roads, temporary roads, pipelines, and powerlines.

The proposed nominated lease parcel is located within the approximate three million acre Chaco Wash Watershed. The Chaco River is the major drainage within this watershed, flowing northerly through mesas and broad canyons and entering the San Juan River immediately above Shiprock, New Mexico. Chaco River is a major tributary to the San Juan River, with its headwaters south of Crownpoint and Twin Lakes, New Mexico, in the Menefee Formation. There are numerous tributaries to the Chaco River of which Chaco Wash, Ojo Amarillo, Gallegos washes are the largest. Surface within the wash includes public, Navajo Allotted, Navajo Nation, private, and State of New Mexico Lands.

## 3.5 Floodplains

Executive Order 11988 requires federal agencies to consider and evaluate potential effects that a proposed action may have on floodplains. Where applicable, actions should reduce the risk of flood loss, minimize the impact of floods on human safety and restore and preserve the natural and beneficial values served by floodplains. The best available floodplain information for the Farmington Field Office resource area is the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM).

These maps define zones according to varying levels of flood risk; the zones reflect the severity or type of flooding in the area. The FEMA maps display 100-year floodplains as "Zone A" areas, describing them as areas with a "1% annual chance of flooding and a 26% chance of flooding over [a thirty year period]" (FEMA 2009).

## 3.6 Soil

The Soil Conservation Service, now the Natural Resource Conservation Service (NRCS), has surveyed the soils in San Juan County. Complete soil information is available in the Soil Survey of San Juan County, New Mexico, Eastern Part (USDA Soil Conservation Service November 1980). The soil map units represented in the project area are in Table 3.

**Table 3: Soil Map Data**

| Parcel | Soils |
|---|---|
| **NM-201110-025**<br><br>T.0210S, R.0080E, NM PM, NM<br>Sec. 013 NE ¼, S2<br><br>San Juan County | **Blancot-Notal association, gently rolling (BT)** Permeability of the Blancot soil is moderate. Runoff is medium and the hazard of water erosion is moderate and the hazard of soil blowing is moderate. Permeability of the Notal soil is very slow. Runoff is medium and the hazard of water erosion is moderate and the hazard of soil blowing is severe.<br>**Doak-Avalon association, gently sloping(BN)** Permeability of the Doak soil is moderately slow. Runoff of the Doak soil is slow and the hazard of water erosion is slight and the hazard of soil blowing is moderate. Permeability of the Avalon soil is moderate. Runoff of the Avalon soil is medium and the hazard of water erosion is moderate and soil blowing is high. |

## 3.7 Vegetation

Public lands in San Juan, McKinley, Rio Arriba and Sandoval Counties support a diversity of plant communities. These plant communities developed based on site specific topography, soil type and climatic conditions. The planning area contains five major vegetation units, and a non-native cover type represented by urban/agricultural areas. Pages 3-31-3-34 and Map 3-6 of the PRMP/FEIS provide further details on vegetation resources in the leasing area.

The parcel is located in the Pinon-Juniper plant and Great Basin Desert Scrub community. The Pinon-Juniper plant covers 633,000 acres of the northeaster portion of the planning area. The Great Basin Desert Scrub plant community covers approximately 435,000 acres within FFO boundaries and dominates the landscape in the northwestern portion of the planning area.

**PINON-JUNIPER**

The Piñon-Juniper Woodland plant community type occurs primarily in the northeastern portion of the planning area and along the southern boundary. Dense stands generally occur above 6,600 feet in elevation and the dominant tree species are piñon (*Pinus edulis*), Utah juniper, Gambel's oak (*Quercus gambellii*), and true mountain mahogany (*Cercocarpus montanus*), with occasional stringers of ponderosa pine (*Pinus ponderosa*). Common ground cover species are mutton grass (*Poa fendleriana*), western wheatgrass (*Agropyron smithii*), buckwheat (*Eriogonum sp.*), and penstemon (*Penstemon sp.*) (RMP 2003). More open stands are located on drier sites below 6,600 feet elevation where piñon, Utah juniper, big sagebrush and antelope bitterbush (*Purshia tridentata*) are common. Blue grama and galleta are the principal grass species. Relatively large stands of big sagebrush can occur within the open woodlands (RMP 2003).

**GREAT BASIN DESERT SCRUB**

The major shrub species in this type are big sagebrush, shadscale (*Atriplex confertifolia*), greasewood (*Sarcobatus vermiculatus*), and fourwing saltbush (*Atriplex canescens*). Big sagebrush has increased dramatically over the past 125 years. Most areas now dominated by big sagebrush in New Mexico were grassland or savannah in the middle of the last century (Dick-Peddie 1993). Within Great Basin Desert Scrub, big sagebrush usually occurs at higher elevations than the saltbush communities. Other sagebrush species found with big sagebrush are black sage (*Artemisia arbuscula*) and Bigelow sage (*A. bigelovii*). Other shrub species found with saltbush include winterfat (*Ceratoides lanata*), rabbitbrush (*Chrysothamnus sp.*), and Nuttal's saltbush (*Atriplex nuttallii*). Widespread grasses in this vegetation type include alkali sacaton (*Sporobolus airoides*), western wheatgrass (*Agropyron smithii*), Indian ricegrass (*Oryzopsis hymenoides*), and blue grama (Dick-Peddie 1993).

## 3.8 Invasive, Non-native Species and Noxious Weeds

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

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 Bureau coordinates with various agencies, lease operators, and the land user to implement some kind of treatment to remove or control the population.

Noxious weeds, primarily Salt cedar, halogeton and Musk thistle, were determined to exist within the general area of the project. Other New Mexico state listed noxious weeds could occur within the project area as well. Project activities, even with preventative management actions, could result in the establishment and spread of noxious weeds on disturbed sites throughout portions of the project area. Most of the noxious weeds exist mainly along the shoulders of County roads, lease and private roads, and on production pads within the project area.

## 3.9 Special Status Species

### 3.9.1 Threatened or Endangered Species

Under Section 7 of the Endangered Species Act of 1973 (as amended), the BLM is required to consult with the U.S. Fish and Wildlife Service on any proposed action which may affect federal listed threatened or endangered species or species proposed for listing. Based on FFO's field inspection and reviews, it was determined that there are no known threatened or endangered species located within the area of analysis.

**Table 4: Habitat Descriptions and Presence of BLM Farmington Field Office Federally Listed Threatened, Endangered, and Candidate Species**

| Species Name | Conservation Status | Habitat Associations | Potential to Occur in the Proposed Action Area |
|---|---|---|---|
| **BIRDS** | | | |
| Southwestern willow flycatcher (*Empidonax traillii extimus*) | Federal-Endangered | Riparian habitats along rivers, streams, or other wetlands with dense growths of willows or other shrubs and medium sized trees. | There are no riparian habitats suitable for willow flycatchers in the proposed action area. |
| Mexican spotted owl (*Strix occidentalis lucida*) | Federal-Endangered | Mature montane forest and in shaded, woody, and steep canyons. | No montane forests are located within the proposed action area. |
| Yellow-billed cuckoo *(Coccyzus americanus*) | Federal-Candidate | Low to mid-elevation riparian woodlands, deciduous woodlands, and abandoned farms and orchards. | There are no large cottonwood galleries in, or near the proposed action area. |
| Mountain plover *(Charadrius montanus)* | Federal-Proposed | Semi desert, grasslands, open arid areas, bare fields, breeds in open plains or prairie. | Proposed action area does not contain known suitable nesting habitat. |
| **FISH** | | | |
| Zuni bluehead sucker (*Catostomus* | Federal-Candidate | Occupies a variety of habitats from headwater streams to large rivers, but mostly found in moderate to fast | Proposed action area does not contain suitable habitat. |

| | | | |
|---|---|---|---|
| *discobolus yarrow)* | | flowing water above a rubble-rock substrate | |
| **MAMMAL** | | | |
| Black footed ferret (*Mustela nigripes*) | Federal-Endangered | Grassland plains where it occurs in association with prairie dogs. At a minimum, the black-footed ferret requires prairie dog towns of at least 80 acres for suitable habitat. | No prairie dog colonies are located within the proposed action area. |
| **PLANTS** | | | |
| Zuni fleabane (*Erigeron rhizomatus)* | Federal-Threatened | Occupies nearly barren detrital clay hillsides with soils derived from shales of the Chinle or Baca formations (often seleniferous); most often on north or east-facing slopes in open piñon-juniper woodlands at 2,200-2,400 m (7,300-8,000 ft). | Proposed action area does not contain suitable habitat. |

### 3.9.2 Other Special Status Species

In accordance with BLM Manual 6840, the BLM manages certain sensitive species not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. Included in this category are State listed endangered species and Federal candidate species which receive no special protections under the Endangered Species Act. Special status species with potential to occur in the proposed project area are listed in Table 5. The FFO has mapped potential habitats for those species which have readily defined habitat characteristics. A review of the GIS data and field survey indicates there are currently no concerns with special status species relative to the lease sale parcel; however Special Management Species (SMS) with low potential to occur in the proposed project area listed below.

**Table 5: Habitat Descriptions and Presence of BLM FFO Special Status Species.**

| Species Name | Conservation Status | | Habitat Associations | Potential to Occur in the Proposed Action Area |
|---|---|---|---|---|
| | BLM/ FFO | New Mexico | | |
| ***Birds*** | | | | |
| Golden Eagle (*Aquila chrysaetos*) | SMS | | In the West, mostly open habitats in mountainous, canyon terrain. Nests primarily on cliffs and trees. | **Low:** Proposed action area may contain habitat for foraging, but not nesting. |
| Ferruginous hawk *(Buteo regalis)* | SMS | | Open, arid country or grasslands with piñon-juniper plant associations. Nests on ledges or cliff sites, may use the ground. | **Unlikely:** Proposed action area may contain habitat for foraging, but not nesting. |

| Species Name | Conservation Status | | Habitat Associations | Potential to Occur in the Proposed Action Area |
|---|---|---|---|---|
| | BLM/ FFO | New Mexico | | |
| Prairie falcon *(Falco mexicanus)* | SMS | | Arid, open country, grasslands or desert scrub, rangeland; nests on cliff ledges, trees, power structures. | **Unlikely:** Proposed action area does contain habitat for nesting or foraging. No known nests have been documented within lease area. |
| Yellow-billed cuckoo *(Coccyzus americanus*) | SMS | | Low to mid-elevation riparian woodlands, deciduous woodlands, and abandoned farms and orchards. Rare in the San Juan River valley. | **Unlikely:** Proposed action area does not contain suitable riparian area habitat. |
| American peregrine falcon (*Falco peregrinus anatum*) | SMS | NM-T | Open country near lakes or rivers with rocky cliffs and canyons. Tall city bridges and buildings also inhabited. | **Low**: Proposed action area may contain suitable habitat for foraging, but not nesting. |
| Bald eagle (*Haliaeetus leucocephalus)* | SMS | NM-T | Near lakes, rivers and cottonwood galleries. Nests near surface water in large trees. May forage terrestrially in winter | **Unlikely:** Proposed action area do not contain suitable habitat for nesting and unlikely any winter foraging habitat. |
| Burrowing owl *(Athene cunicularia)* | SMS | | Associated with prairie dog towns. In dry, open, short-grass, treeless plains | **Possible:** Proposed action area does not contain known prairie dog towns for nesting, however there are prairie dog town within close proximity. |
| ***Plants*** | | | | |
| Brack's hardwall cactus (*Sclerocactus cloveriae* ssp. *brackii*) | SMS | NM-E | Sandy clay of the Nacimiento Formation in sparse shadscale scrub (5,000-6,000 ft). | **Unlikely:** Nacimiento formation does not occur in the project and action area. |
| Aztec gilia (*Aliciella formosa*) | SMS | NM-E | Salt desert scrub communities in soils of the Nacimiento Formation (5,000-6,000 ft). | **Unlikely:** Nacimiento formation does not occur in the project and action area. |

**Golden Eagle** *(Aquila chrysaetos)*

The golden eagle nests on steep cliffs, typically greater than 30 meters in height, although shorter cliffs (greater than 10 meters) are infrequently used. Nesting cliffs are normally directly adjacent to foraging habitat of desert grasslands or desert scrub, with only sparse shrubs if present, that provides prey of cottontail and jackrabbits. Nests are usually placed in the middle to upper parts of cliffs in sheltered ledges, potholes, or small caves, which provide protection from the elements. No rock ledges suitable for nesting were observed within or immediately surrounding

the project area. No golden eagles or nest were observed during the field inspection of the project area.

**American peregrine falcon** *(Falco peregrines anatum)*
Peregrine falcons occur most frequently along mountain ranges, river valleys, and coastlines. The nest is a scrape or depression dug in gravel on cliff ledge. Rarely, peregrines will nest in a tree cavity or an old stick nest. Some peregrines have readily accepted man-made structures as breeding sites. For example, skyscraper ledges, tall towers, and bridges serve as the ecological equivalent of a cliff ledge. No evidence of this species was observed during the field inspection of the proposed project area.

**Burrowing owl** *(Athene Cunicularia)*
Burrowing Owls can be found in grasslands, rangelands, agricultural areas, deserts, or any other dry, open area with low vegetation. They nest and roost in burrows, such as those excavated by prairie dogs (*Cynomys* spp.). Unlike most owls, Burrowing Owls are often active during the day, although they tend to avoid the mid-day heat. Most hunting is still done from dusk until dawn, like many owls, when they can use their night vision and hearing to their advantage. No evidence of this species was observed during the field inspection of the proposed project area.

## 3.10 Wildlife

The piñon-juniper and Great Basin Desert Scrub plant communities in the northeastern part of the FFO provide habitat for herds of wintering and resident populations of mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*). Mule deer and elk are found most often on FFO land north of US Highway 550, and are much less common south of the highway due to the lack of suitable habitat. Deer and elk population density on FFO land varies by location and time of year.

Several small populations of pronghorn antelope (*Antilocapra americana*) reside in the area north and east of US Highway 550 near Angel Peak and Ensenada Mesa. There are also remnants of a small antelope herd in the Twin Mounds area. Detailed information on other wildlife species and habitats in the FFO is contained on pages 3-39 to 3-42 of the PRMP/FEIS and the background biological resources analysis (SAIC 2002) prepared for the RMP.

The proposed nominated lease parcel is not located in any special wildlife designation.

## 3.11 Livestock Grazing

Livestock grazing is authorized by FLPMA, the Taylor Grazing Act of 1937 and the Public Rangelands Improvement Act of 1978. The principle objective of the rangeland program is to promote healthy, sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangeland to properly functioning condition; to promote the orderly use, improvement and development of the public lands.

There are 167 grazing allotments managed by the Farmington Field Office with 351 grazing authorizations that permit cattle, sheep and horse grazing within the resource area. Of the 351

grazing authorizations, 317 are permitted under section 3 of the Taylor Grazing Act. Of the 167 grazing allotments, there are 4 authorizations issued under section 15 of the Taylor Grazing Act to the Navajo Tribe that authorized grazing on 35 allotments.

There are additional permits under section 15 authorizations that permit grazing on 30 allotments in the Lindrith, New Mexico Area. The FFO currently consults with grazing permittees on a site by site basis as part of the APD process. Additional information on the FFO grazing program can be found on pages 3-54 and 3-55 of the PRMP/FEIS.

The proposed nominated lease parcel is located in the northern part of Pueblo Navajo allotment and in the Nageezi Chapter District as shown in Appendix 1.

### 3.12 Visual Resources

The nominated lease parcel is located in an area designated VRM Class IV. Visual Resource Management (VRM) on public lands is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411.

The Class IV objective is to: "Provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to reduce or eliminate activity impacts through careful location, minimal disturbance, and repeating the basic landscape elements."

The proposed nominated lease parcel is located northeast of Pueblo Pintado, a detached unit of Chaco Culture National Historic Park. During the initial review of this parcel a field inspection was conducted by BLM resource and management staff on April 20, 2011 and found the Pueblo Pintado is not visible from the parcel. There is also a large transmission line, a smaller powerline, and a county road that passes through the parcel. A viewshed analysis was also completed and the analysis showed the parcel was not visible from the middle of the northeast quarter of Pueblo Pintado.

### 3.13 Recreation

The climate, natural landscape, archaeological sites and cultural traditions of the FFO region provide features and attractions for a wide range of activities. Outstanding conditions for sporting and recreational pursuits are enjoyed by local residents and regional and out-of state visitors. Activities that are enjoyed are camping, hiking, fishing, nature viewing, sightseeing, horseback riding, mountain biking, motorized sports, and rock climbing.

The proposed nominated lease is located outside any recreational area; however the nominated lease would be managed by an Extensive Recreation Management Area (ERMA) and subject to general recreation management policies. ERMA are managed to maintain a freedom of recreational choice with a minimum of regulatory constraints. There are few BLM recreational facilities or supervisory efforts exist on these lands.

### 3.14 Minerals Resources

Mineral resources of the FFO are described in detail on pages 3-4 to 3-15 of the PRMP/FEIS (BLM 2003a). The San Juan Basin in New Mexico is a major contributor to the natural gas supply of the nation. In 1997, almost two-thirds of the natural gas produced in New Mexico came from the RMP planning area.

Oil and gas development began in the FFO administrative area in the 1940s. Today, nearly all of the area with high potential for oil and gas production is under prior existing leases held by production. Spacing requirements for well bores are formation dependant, ranging from 40 acres for Gallup oil wells, to 80 acres for Mesa Verde and Dakota natural gas wells, to 160 acres for Fruitland Coal and Pictured Cliffs natural gas wells. Well density will be dependent on the formation productivity.

Coalbed methane is a more recent development of an unconventional source of natural gas, in that the natural gas is methane associated with coal beds found in the Upper Cretaceous Fruitland Formation. The Fruitland and overlying Kirtland Formation both contain coal beds that are mined for coal-fired power plant. Coalbed methane wells tend to be shallower, especially along the northeastern edge of the basin, and thus extracted large amounts of produced water during production.

There is currently one shut-in wellbore located on the nominated parcel that resulted from a previous lease that lapsed. The lease parcel does not conflict with any active coal or sand and gravel operations.

### 3.15 Socioeconomics and Environmental Justice

Executive Order 12898, issued on 11 February 1994, addresses concerns over disproportionate environmental and human health impacts on minority and low-income populations. The impetus behind environmental justice is to ensure that all communities, including minority, low-income, or federally recognized tribes, live in a safe and healthful environment and the October 2011 Oil and Gas Lease Sale will not be out of conformance with this executive order.

The Nageezi Chapter District consists of minorities with some low-income populations. There is a residential site north of the existing wellbore.

## ENVIRONMENTAL IMPACTS

### 4.0 Environmental Consequences

### 4.1 Assumptions for Analysis

The act of leasing the parcel would, by itself, have no impact on any resources in the FFO. All impacts would be linked to as yet undetermined future levels of lease development.

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

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

## 4.2 Effects from the No Action Alternative

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

It is an assumption that the No Action Alternative (no lease option) may result in a slight reduction in domestic production of oil and gas. This would likely result in reduced Federal and state royalty income, and the potential for Federal 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 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 Action Alternatives

### 4.3.1 Air Quality Impacts from All Action Alternatives

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.

The reasonable and foreseeable development scenario developed for the Farmington RMP forecasted 497 wells would be drilled annually on existing and new leases for Federal minerals. Since 2000, an average of 459 wells has been drilled annually. However, it is unknown whether

the petroleum resources specific to these leases in the Proposed Action are gas or oil or a combination thereof, as well as the actual potential for those resources.

Therefore, in order to reasonably quantify emissions associated with well exploration and production activities, certain types of information are needed. Such information includes a combination of activity data such as the types of equipment needed if a well were to be completed successfully (e.g. compressor, separator, dehydrator), the technologies which may be employed by a given company for drilling any new wells, area of disturbance for each type of activity (e.g. roads, pads, electric lines, compressor station), number of days to complete each kind of construction, number of days for each phase of drilling process, type(s), size, number of heavy equipment used for each type of construction (backhoe, dozer, etc.), number of wells of all types (shallow, deep, exploratory, etc.), compression per well (sales, field booster), or average horsepower for each type of compressor. The degree of impact will also vary according to the characteristics of the geologic formations from which production occurs. Since this type of data is unavailable at this time, including scenarios for oil and gas development, it is unreasonable to quantify emissions. What can be said is that exploration and production would contribute to incremental increases in overall air quality emissions associated with oil and gas exploration and production into the atmosphere.

The potential full development of the proposed lease sale was reviewed by the Farmington BLM minerals staff and is estimated at 3 gas wells drilled into the Fruitland coal formation (4.23 Cumulative Impacts). The proposed parcel for leasing is located in T21N, R8W, Section 13 (Appendix 1). The proposed lease parcel is approximately 53 miles south from the Navajo Dam air quality monitoring station established by the New Mexico Environmental Department Air Quality Bureau. Due to the proximity of the proposed lease parcel, the emission of ozone precursors NOx and VOCs resulting from the development of the potential lease will not be analyzed further.

While all of San Juan County is in attainment of all NAAQS including ozone, the Navajo Dam monitoring station is the most closely watched due to the current design value of 0.066ppm ozone. While 0.066ppm is well below the attainment value of 0.075ppm, it is the highest design value of the three monitoring stations in San Juan County. The Western Regional Climate Center web page lists the prevailing winds at Farmington NM to be easterly in the a.m. hours and westerly in the p.m. hours. A review of a wind rose for Farmington prepared by the National Oceanic and Atmospheric Administration (NOAA) verifies the morning easterly and afternoon westerly prevailing wind direction.

**Potential Mitigation:** The BLM encourages industry to incorporate and implement "Best Management Practices" (BMPs), which are designed to reduce impacts to air quality by reducing emissions, surface disturbances, and dust from field production and operations. Typical measures include: adherence to BLM's Notice to Lessees' (NTL) 4(a) concerning the venting and flaring of gas on Federal leases; for natural gas emissions that cannot be economically recovered, 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; implementation of directional drilling and horizontal completion technologies whereby one well

provides access to petroleum resources that would normally require the drilling of several vertical wellbores; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and perform interim reclamation to 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. As a result of recommendations from the Four Corners Air Quality Task Force, the New Mexico Environment Department, Environmental Protection Division requested FFO attach a COA to APDs requiring new and replacement internal combustion gas field engines of between 40 and 300 horsepower to emit no more than two grams of nitrogen oxides per horsepower-hour. FFO has included a COA limiting nitrogen oxides since August of 2005.

In 2009, the legislature of New Mexico passed House Bill 195 which enacted a new section of the Air Quality Control Act to provide for regulation of sources of emissions that cause the formation of ozone. If the environmental improvement board determines that emissions from sources within its jurisdiction cause or contribute to ozone concentrations in excess of ninety-five percent of a national ambient are quality standard for ozone, it shall adopt a plan, including regulations, to control emissions of oxides of nitrogen and volatile organic compounds to provide for attainment and maintenance of the standard. At the present time, ozone concentrations in the San Juan Basin are not within 95% of the standard. In the future, if the ozone concentrations are within 95% of the standard, FFO will cooperate with the State of New Mexico to develop appropriate COAs to attach to APDs that may result from the proposed lease sale.

The FFO recently purchased an infrared camera designed to detect natural gas leaks on and around well pad and pipeline facilities. FFO inspection personnel have been trained to operate the camera and FFO is currently developing a strategy to implement the use of the camera in cooperation with oil and gas operators to detect and eliminate natural gas leaks in well pad and pipeline infrastructure. The majority of the large natural gas producers in the area are members of the Gas STAR program that is administered by EPA. These members of the Gas STAR program operate 78% of the federal wells in the San Juan Basin. Natural Gas STAR is a flexible, voluntary partnership that encourages oil and natural gas companies to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce natural gas emissions.

### 4.3.2 Climate

The assessment of GHG emissions, their relationship to global climatic patterns, and the resulting impacts is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the proposed action on climate—that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. The BLM does not have the ability to associate a BLM action's contribution to climate change with impacts in any particular area. The technology to be able to do so is not yet available. The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific

models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level and determining the significance of any discrete amount of GHG emissions is beyond the limits of existing science. When further information on the impacts to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

Leasing the subject tracts would have no direct impacts to climate change as a result of GHG emissions. Any potential effects to air quality from sale of the lease parcel would occur at such time that the lease was developed. The potential full development of the proposed lease sale is estimated at 3 wells (4.23 Cumulative Impacts). However, it is unknown whether the petroleum resources specific to this lease parcel in the Proposed Action is gas or oil or a combination thereof, as well as the actual potential for those resources.

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 6 for the US, New Mexico and for wells on federal leases in each basin.

**Table 6: 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 |

In order to estimate the contribution of Federal oil and gas leases to greenhouse gases in New Mexico it is assumed that the percentage of total U.S. production is comparable to the percentage of total emissions. Therefore emissions are estimated based on production starting with total emissions for the United States from EPA 2010, and applying production percentages to estimate emissions for the San Juan Basin. It is understood that this is a rather simplistic technique and assumes similar emissions in basins which may have very different characteristics and operational procedures which could be reflected in total emissions. However, the emissions estimates derived in this way, while not precise will give some insight into the order of magnitude of emissions from federal oil and gas leases administered by the Bureau of Land Management (BLM) and allow for comparison with other sources in a broad sense.

**Table 7: 2008 Oil and Gas Field Production Emissions**

| | Oil | | Gas | | Total O&G Production | %U.S. Total GHG missions |
|---|---|---|---|---|---|---|
| (Metric Tons $CO_2e$) | CO2 | CH4 | CO2 | CH4 | | |
| 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 7 shows the estimated greenhouse gas emissions for oil and gas field production for the U.S., New Mexico, and Federal leases by basin. 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 $CO_2e$ have been used in Table 7 to avoid very small numbers. For comparison one million metric tons is equal to one teragram.

Table 7 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 $CO_2e$ from the life cycle of oil and gas. For example, acquisition (drilling and development) for petroleum is responsible for only 8% of the total $CO_2e$ 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).

To estimate the potential emissions from the proposed lease sale, an estimate of emission per well is useful. The Climate Change Supplementary Information Report for the Montana, North Dakota and South Dakota Bureau of Land Management (2010) (Climate Change SIR) was developed for the BLM for use in estimating emissions for a field office resource management plan (RMP). Individual emissions calculators were developed to account for the different types of wells, and likely well depths in the RFDs. Emissions calculators were developed by air quality specialists at the BLM National Operations Center in Denver, Colorado, based upon methods described in the Climate Change SIR (2010). The calculators account for a number of variables, including access and construction needs, equipment and other infrastructure needs, likely production volumes, etc. The BLM NM has modified the calculators and assumptions for use in analyzing a single well and to more closely represent oil and gas wells in the State of New Mexico; specifically the San Juan and Permian Basins.

The calculator was used to estimate $CO_{2eq}$ emissions for the first year of operation and annual operations. The first year emission estimates includes pad construction, well drilling, completion activities, road traffic, and well operations. The annual operation emission estimate includes

fugitive gas, compression engines, and road traffic. Emissions per well for the first year are estimated at 359.4 $CO_{2eq}$ metric tons, and annual operations are estimated at 34.1 $CO_{2eq}$ metric tons per year.

To estimate the potential emissions from the proposed lease sale, an estimate of emission per well is useful. To establish the exact number of Federal wells in the San Juan Basin is problematic due to the ongoing development of new wells, the abandonment of unproductive wells, land sales and exchanges, and incomplete or inaccurate data bases. FFO determined that the most transparent and publicly accessible method of estimating the number of active federal wells in the New Mexico portion of the San Juan Basin was to utilize the BLM New Mexico Geographic Information System (GIS) and the New Mexico Conservation Division ONGARD Data Search Page. ONGARD was searched for all Active, New, and Temporarily Abandoned wells in NM (54,137), then refined the search to include only San Juan, Rio Arriba, Sandoval, and McKinley counties (23,595), and finished the search by limiting the results to Federal wells (16,435).

**Table 8: Potential Greenhouse Gas Emissions Resulting from Proposed Lease Sale Referenced to Estimate from 2008**

| | | |
|---|---|---|
| Total U.S. GHG Emissions From All Sources | 6,956,800,000 metric tons | 100.00 % |
| Total U.S. GHG Emissions From Oil & Gas Field Production | 51,500,000 metric tons | .74% |
| Total New Mexico Emissions From Oil & Gas Field Production | 2,252,603 metric tons | .03% |
| Total San Juan Basin Emissions From Oil & Gas Field Production (16,435 wells) | 647,684 metric tons | .01% |
| Total Estimated GHG Emissions From Oil & Gas from initial construction and first year operation (3) wells | 1,078 metric tons | .0000002% |
| Total Estimated GHG Emissions From Annual Operations (3) wells | 102.2 metric tons | .00000002% |

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

**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 air quality by reducing emissions, surface disturbances, and dust from field production and operations. Typical measures include: adherence to BLM's Notice to Lessees' (NTL) 4(a) concerning the venting and flaring of gas on Federal leases; for natural gas emissions that cannot be economically recovered, 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; implementation of directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and perform interim reclamation to re-vegetate areas of the pad not required for production facilities and to reduce the amount of dust from the pads.

The EPA data show that improved practices and technology and changing economics have reduced emissions from oil and gas exploration and development (Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006). One of the factors in this improvement is the adoption by industry of the BMPs proposed by the EPA's Natural Gas Energy Star program. The Farmington Field Office will work with industry to facilitate the use of the relevant BMPs for operations proposed on Federal mineral leases where such mitigation is consistent with agency policy.

## 4.4 Heritage Resources

### 4.4.1 Cultural Resources

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.

### 4.4.2 Native American Religious Concerns

The proposed actions are 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 parcel recommended to proceed for sale. The parcel 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.

### 4.4.3 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, primarily the areas identified through the Potential Fossil Yield Classification (PFYC) system. While the act of leasing 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 excavation prior to implementation of a project.

## 4.5 Water Resources

### 4.5.1 Water Quality: Surface and Groundwater

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.

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 or closed systems or steel tanks 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 breech, 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.

### 4.5.2 Watershed - Hydrology

While the act of leasing a parcel would produce no impacts, subsequent development of the lease would result in long term and short term alterations to the hydrologic regime. Peak flow and low flow of perennial streams, ephemeral, and intermittent rivers and streams would be directly affected by an increase in impervious surfaces resulting from the construction of the well pad and road. The potential hydrologic effects to peak flow is reduced infiltration where surface flows can move more quickly to perennial or ephemeral rivers and streams, causing peak flow to occur earlier and to be larger. Increased magnitude and volume of peak flow can cause bank erosion, channel widening, downward incision, and disconnection from the floodplain. The potential hydrologic effects to low flow is reduced surface storage and groundwater recharge, resulting in reduced baseflow to perennial, ephemeral, and intermittent rivers and streams. The direct impact would be that hydrologic processes may be altered where the perennial, ephemeral, and intermittent river and stream system responds by changing physical parameters, such as channel configuration. These changes may in turn impact chemical parameters and ultimately the aquatic ecosystem.

Long term direct and indirect impacts to the watershed and hydrology would continue for the life of wells and would decrease once all well pads and road surfacing material has been removed and reclamation of well pads, access roads, pipelines, and powerlines has taken place. Short term direct and indirect impacts to the watershed and hydrology from access roads that are not surfaced with material would occur and would likely decrease in time due to reclamation efforts.

**Potential Mitigation:** The operator would stockpile the topsoil from the surface of well pads which would be used for interim and final reclamation of the well pads. Reserve pits would be recontoured and reseeded as described in attached Conditions of Approval. Upon abandonment of the 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 the attached Conditions of Approval. During the life of the development, all disturbed areas not needed for active support of production operations should undergo “interim” reclamation in order to minimize the environmental impacts of development on other resources and uses. Earthwork for interim and final reclamation must be completed within 6 months of well completion or well plugging (weather permitting). The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

## 4.6 Floodplain

The act of leasing Federal minerals produces no impacts to 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 the floodplain values from removal of vegetation, removal of wildlife habitat, impairment of water quality, decreased flood water retention and decreased groundwater recharge.

**Potential Mitigation:** Surface-disturbing activities will be moved up to 200 meters from floodplains areas. The lease parcel may require a COA for a 200-meter buffer at the APD stage. Site-specific COAs will be incorporated at the APD stage of development.

## 4.7 Soil

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 in shallow rows 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. During the life of the development, all disturbed areas not needed for active support of production operations should undergo "interim" reclamation in order to minimize the environmental impacts of development on other resources and uses. Earthwork for interim and final reclamation must be completed within 6 months of well completion or well plugging (weather permitting). The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

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.

### 4.8 Vegetation

There would be no direct effects to vegetative resources from the sale of the lease parcel. Subsequent exploration/development of the proposed lease 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 parcel. 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.

**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 re-vegetation with native plant species, soil enhancement practices, direct live haul of soil material for seed bank re-vegetation, reduction of livestock grazing, fencing of reclaimed areas, and the use of seeding strategies consisting of native grasses, forbs, and shrubs.

### 4.9 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.

Based on a estimated spacing of 9 acres per well, a range of 45 to 198 acres would have the potential to be directly affected by invasive or non- native species. Due to wind drift or rain flows additional areas may be impacted by the spread or encroachment of noxious weeds.

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.

## 4.10 Special Status Species

### 4.10.1 Threatened or Endangered Species

The FFO reviewed and determined that the proposed action is in compliance with listed species management guidelines outlined in the September 2002 Biological Assessment. No further consultation with the Fish and Wildlife Service is required.

No known prairie-dog colonies occur within the action area to support black-footed ferret. No large, flat grassland expanse with sparse, short vegetation and bare ground is believed to occur in the action area to support mountain plover. No perennial water resources were present to support Colorado pike minnow or razorback sucker. No riparian habitat was present to support southwest willow flycatcher or yellow-billed cuckoo. The proposed action is not located within designated critical habitat for the Mexican spotted owl or the Colorado pike minnow.

**Potential Mitigation:** A biological survey may be required to determine any impacts on individual project proposals. Any potential impacts to federally-listed species will be determined based on the biological survey report.

### 4.10.2 Other Special Status Species

There may be nesting burrowing owls within the proposed lease area. There are several known prairie dog towns within one mile of the lease area, as well as rodent burrows that could accommodate nesting burrowing owls within the proposed lease area. The BLM/FFO has specific management measures to ensure that nesting burrowing owls are protected during the breeding season.

**Potential Mitigation:** A preconstruction survey for burrowing owls may be required for proposed projects scheduled to be constructed within known habitat during the nesting season of April 1 to July 31. Occupied burrowing owl nests will not be disturbed within a 50 meters radius from April 1 to August 15. After August 15, any project that will cause destruction of the nest burrow can only begin after confirmation that the nest burrow is no longer occupied. See Appendix 3: Lease Stipulation Summary-Biological Survey.

## 4.11 Wildlife

The types and extent of impacts expected from oil and gas development to wildlife species and habitats from development are similar to those described in the 4.9 Special Status Species Section. Although reclamation and restoration efforts for surface disturbance could provide for the integrity of other resources, these efforts may not always provide the same habitat values (e.g. structure, composition, cover, etc.) in the short or in some instance, the long-term in complex vegetative community types (e.g., shrub oak communities). The short-term negative impact to wildlife would occur during the construction phase of the operation due to noise and habitat destruction. In general, most wildlife species would become habituated to the new facilities. For other wildlife species with a low tolerance to activities, the operations on the well pad would continue to displace wildlife from the area due to ongoing disturbances such as vehicle traffic, noise and equipment maintenance. The conditions of approval would alleviate most losses of wildlife species, such as; fencing the reserve pits, netting storage tanks, installation or other modifications of cones on separator stacks, and timing stipulations. The magnitude of above effects would be dependent on the rate and location of the oil and gas development, but populations could likely not recover to pre-disturbance levels until the activity was completed and the vegetative community restored.

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

## 4.12 Livestock Grazing

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, re-vegetation of disturbed sites, installation of cattleguards, and fugitive dust control.

### 4.13 Visual Resources

Visual resource management is divided into four VRM classes. In the tracts proposed for leasing only VRM class IV are represented.

The VRM Class IV objective is to provide for management activities which require major modification of the existing landscape character. Every attempt, however, should be made to reduce or eliminate activity impacts through careful location, minimal disturbance, and repeating the basic landscape elements. Facilities, such as condensate and produced water or oil storage tanks that rise above eight feet, would provide a geometrically strong vertical and horizontal visual contrast in form and line to the characteristic landscape and vegetation, which have flat, horizontal to slightly rolling form and line. The construction of an access road, well pad and other ancillary facilities would slightly modify the existing area visual resources. Through color manipulation, by painting well facilities to blend with the rolling to flat vegetative and/or landform setting with a gray-green color. The view is expected to favorably blend with the form, line, color and texture of the existing landscape. The flat Juniper Green from the supplemental environmental colors also closely approximates the gray green color of the setting. All facilities, including the meter building, would be painted this color. Adverse visual impacts can be avoided by gradually moving into a more appropriate vegetative/landform setting color scheme.

Through color manipulation, by painting well facilities to blend with the rolling to flat vegetative and/or landform setting with a gray-green the view is expected to favorably blend with the form, line, color and texture of the existing landscape.

The proposed lease parcel is located northeast of Pueblo Pintado, a detached unit of Chaco National Historical Park. Chaco National Historical Park is listed as an endangered historic place by the National Trust for Historic Preservation and is considered a World Heritage Site.

While the act of leasing this parcel would produce no direct impacts, subsequent development of the lease would lead to finalizing the completion of an existing wellbore. This will result in finalizing the construction of the well pad, access roads, and pipelines. This completion may impact the visual and auditory of Pueblo Pintado. However, impacts to Pueblo Pintado, if any, would be minimal because a stipulation requiring additional mitigations are applied to protect the view from Pintado for the nominated lease parcel.

**Potential Mitigation:** Special painting schemes may be required for all facilities to closely approximate the vegetation within the setting. All facilities, including the meter building, would

be painted this color. If the proposed area is in a scenic corridor a low profile tank less than eight feet in high may be recommended for the proposed action.

Sensitive view sheds in the vicinity of the proposed parcel are from Pueblo Pintado. If development is visible from the key observation points of Pueblo Pintado, a condition of approval at the APD level may be utilized to minimize visual impacts as viewed from the key observation points.

### 4.14 Recreation

While the act of leasing Federal minerals produces no direct impacts, subsequent development of a lease would generate impacts to recreation activities. In public land that are small or land locked by allotted, private or state land, recreation opportunities that could occur in this area would be limited or non-existent due to land patterns. In isolated tracks of public land that generally do not have access through allotted land, state land or county or state roads, oil and gas activities would have little or no affect on the recreational opportunities in this area. In larger blocks of public land recreation activities that could occur within this area are limited to access from BLM lands, county roads, allotted or through state land.

### 4.15 Minerals Resources

If the proposed lease parcel is not lease, the existing wellbore that is ready for completion would be plugged. The amount and location of direct and indirect effects cannot be predicted until the site-specific APD stage of development. The lease parcel appeared to present no conflict with the development of other mineral resources such as coal or sand and gravel.

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

### 4.16 Socio-economics and Environmental Justice

No minority or low income populations would be directly affected in the vicinity of the proposed actions from subsequent proposed oil or gas projects. Indirect impacts could include a small increase in activity and noise disturbance in areas used for grazing, and wood gathering. However, these impacts would apply to all public land users in the project area.

### 4.17 Cumulative Impacts

The Farmington Field Office manages Federal hydrocarbon resources in San Juan, Sandoval, Rio Arriba, and McKinley counties. There are approximately 23,595 wells in these counties. About 16,435 of the wells in these counties are Federal wells. Data from 2000 - 2010 indicate on average approximately 459 wells are drilled in these counties annually on Federal mineral lands. Estimates of total surface disturbance for this lease sale action are based on full field development. Full field development assumes development of every spacing unit and has a total complement of roads, pads, power lines, gravel sources and pipelines. Exploration and

development of hydrocarbon resources outside of well-developed areas increases the distance required for roads, pipelines, and power lines.

The parcel offered is not within or near well-developed fields. However there is an existing transmission line, a smaller power line and a county road that passes through the parcel. There is one shut-in wellbore that is ready for completion that is located on the parcel as a result of a previous lease that has lapsed.

All other existing wells have been plugged and abandon. Production is marginal in this area of the San Juan Basin. The surface disturbance assumptions shown in the following estimate impacts associated with oil and gas exploration and development drilling activities for the following parcel:

**Parcel #25, 480.00 acre tract**
Considering spacing requirements and potential formation development, a maximum of three wells may be required to develop this tract from three well pads (three well pads with one well each). The existing access road, pipeline, and power line would be utilized by the additional wells.

*3 well pads, 3 wells*

- 1.5 acres of access roads: 1,300 x 50 foot including road, pipeline ROW, & power line.
- 0.5 acres of Interim road reclamation.
- 3.5 acres of Initial well pad.
- 2.5 acres of Interim well reclamation: reseeding & restabilizing after well pad construction.
- 0.5 acres per twinned well(s).
- 15.0 acres of Total Long Term Disturbance.

**Full Field Development**

| | | | | | Access Road | | | | Well Pad | | | | Twin Wells | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parcel | Acres | Well Pad(s) | Amount of Wells per Pad | # of Wells | Road, Pipeline ROW, Power line | Interim Reclamation | Total Access Road Disturbance | **Total Disturbance** | Well Pad | Interim Reclamation | Well Pad Disturbance | **Total Disturbance** | Wells | Acres per Well | **Total Disturbance** | **Total LT Acres Disturbance** |
| a | b | c | d | e=c*d | f | g | h=f-g | i=c*h | j | k | l=j-k | m=c*l | n | o | p=n*o | q=i+m+p |
| 25 | 480.00 | 3 | 1 | 3 | 1.5 | 0.5 | 1.0 | **3.0** | 3.5 | 2.5 | 1.0 | **3.0** | 0 | 0.5 | **0.0** | **6.0** |

**Total Wells 3**

**Total Disturbance 6.0**

A total of 3 wells for the nominated lease parcel may be drilled under a full development of all geologic formations that may have hydrocarbon potential. If this unlikely situation would occur, the estimated long term surface disturbance would be 6.0 acres for the parcel.

North of the nominated lease parcel, the area has been industrialized with oil and gas well development. The surface disturbance for each project that has been permitted has created a spreading out of land use fragmentation. The cumulative impacts fluctuate with the gradual

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

### 4.17.1 Climate Change

This section incorporates an analysis of the contributions of the proposed action to GHG emissions and a general discussion of potential impacts to climate. The EPA's Inventory of US Greenhouse Gas Emissions and Sinks found that in 2007, total U.S. GHG emissions were over 7 billion metric tons and that total U.S. GHG emissions have increased by 17% from 1990 to 2007. Emissions increased from 2006 to 2007 by 1.4 percent (99.0 Tg. $CO_2$e). The following factors were primary contributors to this increase: (1) cooler winter and warmer summer conditions in 2007 than in 2006 increased the demand for heating fuels and contributed to the increase in the demand for electricity, (2) increased consumption of fossil fuels to generate electricity and (3) a significant decrease (14.2 percent) in hydropower generation used to meet this demand (EPA 2009).

On-going scientific research has identified the potential effects of anthropogenic GHG emissions such as carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$) and several trace gasses; changes in biological carbon sequestration; and other changes due to land management activities on global climate. Through complex interactions on a global scale, GHG emissions cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although natural GHG atmospheric concentration levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase.

Analysis of cumulative impacts for reasonably foreseeable development (RFD) of oil and gas wells on public lands in the Farmington Field Office was presented in the 2003 RMP. Potential development of all available federal minerals in the field office, including those in the proposed lease parcel was included as part of the analysis.

This incremental contribution to global GHG gases cannot be translated into effects on climate change globally or in the area of this site-specific action. As oil and gas production technology continues to improve, and because of the potential development of future regulation or legislation, one assumption is that reductions in the rate or total quantity of GHG emissions associated with oil and gas production are likely. As stated in the direct/indirect effects section under climate change, the assessment of GHG emissions and the resulting impacts on climate is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the proposed action on global or regional climate that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. Therefore, the BLM does not have the ability to associate an action's contribution in a localized area to impacts on global climate change. Further, an IPCC assessment states that difficulties remain in attributing observed temperature changes at smaller than continental scales. It is currently beyond the scope of existing science to

predict climate change on regional or local scales resulting from specific sources of GHG emissions.

Currently, global climate models are inadequate to forecast local or regional effects on resources (IPCC, 2007; CCSP 2008). However, there are general projections regarding potential impacts to natural resources and plant and animal species that may be attributed to climate change from GHG emissions over time; however these effects are likely to be varied, including those in the southwestern United States. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened/endangered plants may be accelerated. Due to loss of habitat or competition from other species whose ranges may shift northward, the population of some animal species may be reduced or increased. Less snow at lower elevations would likely impact the timing and quantity of snowmelt, which, in turn, could impact water resources and species dependant on historic water conditions (Karl et al, 2009).

The New Mexico Greenhouse Gas Inventory and Reference Case Projection 1990-2020 (Inventory) estimates that approximately 17.3 million metric tons of GHGs from the natural gas industry and 2.3 million metric tons of GHGs from the oil industry are projected in 2010 as a result of oil and natural gas production, processing, transmission and distribution. As of 2008, there were 23,196 oil wells and 27, 778 gas wells in New Mexico (NM well statistics).[1]

When compared to the total GHG emission estimates from the total number of oil and gas wells in the State, the average number of oil and gas wells drilled annually in the Field Office and associated GHG emission levels, represent an incremental contribution to the total regional and global GHG emission levels. The number of oil and gas wells that would eventually result from the proposed action would therefore likely represent an even smaller incremental contribution to GHGs emissions on a global scale.

## 5.0 Consultation/Coordination

This section includes individuals or organizations from the public and its' users, the interdisciplinary team, and permittees that were contacted during the development of this document

**Table 9: Summary of Contacts during preparation of document**

| ID Team Member | Title | Organization |
|---|---|---|
| Jim Copeland | Archaeologist | BLM |
| John Kendall | T & E Biologist | BLM |
| Sarah Scott | Natural Resource Specialist | BLM |
| Dave Mankiewicz | Assistant Field Manager, Minerals | BLM |

[1] In 2000, approximately 17 million metric tons and 2.3 million metric tons were respectively attributed to natural gas and oil activities. As of 2002, the Inventory indicates that there approximately 21,771 oil wells and 23,261 gas wells in the State. Uncertainties remain with respect to: the quality of historical field data, processing, and pipeline use of natural gas, does not factor in reclaimed wells and total number of new wells drilled per year; CO2 emissions from enhanced oil recovery, which have not been estimated; and refinery fuel use-EIA indicates less than half the refinery fuel use as indicated by refinery permit data. In addition, it is not feasible to estimate the actual number of wells that would be drilled as a result of the lease.

| | | |
|---|---|---|
| Jeff Tafoya | Range Management Specialist | BLM |
| Janelle Alleman | Outdoor Planner | BLM |
| John Hansen | Wildlife Biologist | BLM |
| Mike Flaniken | Environmental Protection Specialist | BLM |
| Barney Wegener | Natural Resource Specialist | BLM |
| Dale Wirth | Range & Multiple Resource-Branch Chief | BLM |
| Stan Dykes | Weeds | BLM |
| Darlene Horsey | Land Use Planner | BLM |
| Sherrie Landon | Paleontologist | BLM |
| Scott Hall | Realty | BLM |

## 5.1 Agencies, Persons and Organizations Consulted

Agencies
Thetis Gamberg, USFWS Biologist
Barbara West, Chaco Canyon National Historical Park

Tribes Consulted
Navajo Nation-President Office
Navajo Nation-Historic Preservation
Hopi Tribe
Acoma Pueblo
Zuni Pueblo
Nageezi Chapter

## 5.2 Public Involvement/Comments Received

The parcel nominated for this sale, along with the appropriate stipulations from the RMP was posted online for a two week review period during May 10 through 20, 2011.

The Environmental Assessment was posted online for a 30-day review period during May 26 through June 24, 2011. In addition, A courtesy letter, dated April 22, 2011 was mailed to the Hopi Tribe informing them of BLM's intent to release this parcel. Chaco Alliance, Chaco Canyon National Historical Park, New Mexico State Historical Preservation Office, San Juan Citizens Alliance and Acoma Historic Preservation Office were cc'd. Two (2) comments were received via e-mail dated June 27, 2011 from the Chaco Alliance group and regular mail on June 16, 2011 from the Hopi Tribe.

Both entities requested consultation of the nominated parcel being released for this sale. This parcel as mentioned is within a 5-6 mile radius of Pueblo Pintado, a detached unit of Chaco Canyon National Historic Park. Both parties requested BLM to withdraw the parcel from the sale, due to its proximity to Pueblo Pintado and requested consultation meetings. Consultation meeting is in the process of being schedule with the Chaco Alliance group and consultation meeting with The Hopi Tribe has been scheduled.

This EA will be made available for a protest period for 30 days beginning July 21 through August 19, 2011.

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## 7.1 Authorities

Code of Federal Regulations (CFR) 3100
40 CFR All Parts and Sections inclusive Protection of Environment, Revised as of October 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: TABLE1. EXISTING LEVEL OF DEVELOPMENT ON LEASE PARCEL**

| Lease Parcel Number NM201110 | Acres (per | ACEC, SDA, | Allotment | Chapter | VRM Class | # Active Wells | Miles of Road (approx.) | Watershed Sub Basin | Stipulations/Comments |
|---|---|---|---|---|---|---|---|---|---|
| 025 | 480.00 | N/A | Pueblo Navajo Community-6018 | Nageezi | 4 | 0 | 3.00 | Chaco Arizona | **1. NM-11-LN**<br>**2.F-8-VRM-Class IV**<br>**3. F-41-LN**<br>**4. F-42-LN** |
| | | | | | | | | | |

**Appendix 2: Draft Parcel List Received from New Mexico State Office for**
October 19, 2011 Oil and Gas Lease Sale.

**NEW MEXICO PUBLIC DOMAIN-NW**

NM-201110025 480.000 Acres
T.0210N, R.0080W, NM PM, NM
Sec. 013 NE,S2;
San Juan County
Farmington FO
NMNM 100295
5th review
Formerly Lease No.
Stipulations:
Prior to lease issuance the successful bidder will be required to submit a $10,000 Bond or maintain adequate bonding to assume liability for Well No.4 Federal 21-8-13

| | |
|---|---|
| NM-11-LN | LEASE NOTICE – CULTURAL RESOUCES |
| F-8-VRM | VISUAL RESOURCE MANAGEMENT – Class IV |
| F-41-LN | LEASE NOTICE - BIOLOGICAL SURVEY |
| F-42-LN | LEASE NOTICE – CHACO LEASE STIPULATION |

**Appendix 3: Lease Stipulation Summary**

| Stipulation | Description/Purpose |
|---|---|
| **NM-11- LN** | **LEASE NOTICE – CULTURAL RESOUCES**<br>All development activities proposed under the authority of this lease are subject to compliance with Section 106 of the National Historic Preservation Act and Executive Order 13007. Compliance could require intensive cultural resource inventories, Native American consultation and mitigation measures to avoid adverse effects |
| **F-8-VRM** | **VISUAL RESOURCE MANAGEMENT CLASS IV OBJECTIVES SPECIAL STIPULATION**<br>Surface activities are subject to Visual Resource Management (VRM) Class IV restrictions. Activities that may attract attention and/or dominate the view, may require mitigation methods such as special painting stipulations or site placement as determined on a case-by-case basis. |
| **F-41-LN** | **LEASE NOTICE - BIOLOGICAL SURVEY**<br>A biological survey may be required prior to any surface disturbing activity on BLM managed lands. Proposed activities may be subject to seasonal closures within sensitive species habitat. Federal land management agencies are mandated to manage special status species so they should not need to be listed under Endangered Species Act (ESA) in the future. |
| **F-42-LN** | **LEASE NOTICE - CHACO LEASE STIPULATIONS**<br>Surface activities are subject to Chaco Lease Stipulation restrictions. All development for new and existing leases that may attract attention, dominate the view(s) and/or are visible from the Chaco Canyon National Historic Park and Pueblo Pintado may require mitigation methods such as, but not limited to, site placement, site disturbance, site contouring, low profile tanks or painting stipulations as determined on a case-by-case basis to minimize the visual impacts. |