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

**Environmental Assessment DOI-BLM-NM-F010-2013-0080**

# WPX Energy Production, LLC
# Lybrook 23-8-16 No. 201H Oil and Gas Well Project

**November 2012**

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## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| ARPA | Archaeological Resources Protection Act |
| AUM | Animal Unit Month |
| BLM | Bureau of Land Management |
| CAA | Clean Air Act |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| dBA | decibels |
| EA | Environmental Assessment |
| EMNRD | New Mexico Energy, Minerals, and Natural Resources Department |
| EO | Executive Order |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act of 1973 |
| FFO | Farmington Field Office |
| FLPMA | Federal Land Policy and Management Act |
| GHG | Greenhouse Gases |
| LAC | La Plata Archaeological Consultants |
| MBTA | Migratory Bird Treaty Act |
| MLA | Mineral Leasing Act |
| MOU | Memorandum of Understanding |
| NAAQS | National ambient air quality standards |
| NAGPRA | Native American Graves Protection and Repatriation Act of 1990 |
| NCI | Nelson Consulting, Inc. |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservatin Act of 1966 |
| NMAC | New Mexico Administrative Code |
| NMDA | New Mexico Department of Agriculture |
| NMED | New Mexico Environment Department |
| NMPIF | New Mexico Partners in Flight |
| $NO_x$ | Nitrogen Oxide |
| NPDES | National Pollution Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| NRHP | National Register of Historic Places |
| NSA | Noise Sensitive Areas |
| NTL | Notice to Lessees |
| OCD | New Mexico Oil Conservation Division |
| OHV | Off-Highway Vehicle |
| OPLA-PRP | Omnibus Public Lands Act of 2009 - Paleontological Resources Preservation |
| PFYC | Potential Fossil Yield Classification |
| PRMP/FEIS | Proposed Resource Management Plan/Final Environmental Impact Statement |
| RFDS | Reasonable Foreseeable Development Scenario |
| RMP | Resource Management Plan |
| ROD | Record of Decision |
| ROW | Right-of-Way |
| SDA | Specially Designated Area |
| SMS | Special Management Species |
| U.S. | United States |
| $ug/m^3$ | micrograms per cubic meter |
| USACE | U.S. Army Corps of Engineers |
| USC | U.S. Code |
| USFWS | U.S. Fish and Wildife Service |
| USGS | U.S. Geological Survey |
| VRI | Visual Resource Inventory |
| VRM | Visual Resource Management |
| WPX | WPX Energy Production, LLC |

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# 1. PURPOSE AND NEED FOR ACTION

## 1.1. Background

WPX Energy Production, LLC (WPX) has applied for Rights-of-Way (ROW) with the Bureau of Land Management (BLM) for the proposed Lybrook 23-8-16 No. 201H, a Lybrook Gallup well, and associated access road. The proposed action is the approval of these ROW's by the BLM's Farmington Field Office (BLM-FFO), located in Farmington, New Mexico.

The proposed project would include the construction of a well pad and access road, the horizontal drilling and possible production of the proposed well on the well pad, the usage of facilities throughout the life of the well, and the final abandonment of facilities. The primary objective of the proposed well is to produce oil; however, it is likely that natural gas would be a byproduct of oil production.

Oil and natural gas, vital components of the nation's energy supply, account for approximately 36 and 25 percent of total energy consumed in the United States (U.S.), respectively. These energy sources are used in residential and commercial buildings, in transportation, and by industry (U.S. Energy Information Administration 2012). Common uses for natural gas include space heating, water heating, cooling, cooking, waste treatment and incineration, metals preheating, drying and humidification, glass melting, food processing, fueling industrial boilers, vehicle fueling, and electricity generation. Gases such as butane, ethane, and propane can be extracted from natural gas to be used for products such as fertilizers and pharmaceuticals. Natural gas can also be used to create methanol, which is utilized in the production of formaldehyde, acetic acid, fuel cell sources, and additives for cleaner burning gasoline (Natural Gas Supply Association 2011). Most oil goes into fuels, including gasoline, jet fuel, and home-heating oil. Additionally, non-fuel compounds extracted from oil are used to develop lubricants; asphalt for roads; tar for roofing; waxes for food wrapping; solvents for paints; cosmetics and dry-cleaning products; plastics; and foams (U.S. Energy Information Administration 2012).

Approximately 84 percent of natural gas and 55 percent of oil consumed in the U.S. is produced in the U.S. Additionally, U.S.-produced natural gas and oil are also exported to other countries (U.S. Department of Energy 2011). Within the U.S., oil and natural gas reserves are concentrated within distinct fields. The BLM-FFO management area is within the San Juan Basin, one of the most prolific gas-producing basins in the country. Currently, the San Juan Basin produces small amounts of oil (BLM 2003a).

Taxes and royalties on oil, natural gas, and carbon dioxide production contribute approximately 25 percent of New Mexico's general fund. Additionally, the oil and gas industry is one of the largest private sector employers in the state (New Mexico Bureau of Geology and Mineral Resources 2012). Furthermore, the federal government receives royalties, or a share of the production income, for extracted federal minerals. In 2011, federal natural gas royalties totaled over 2 billion dollars (Office of Natural Resources Revenue 2012).

The proposed project area is located within the BLM-FFO management area in San Juan County, New Mexico, approximately 37.7 miles southwest of the town of Bloomfield, 6.6 miles west-southwest of the town of Lybrook, and 1.8 areal-mile south of U.S. Highway 550 (see Figure 1, Appendix A). The proposed project area is on BLM-FFO surface. The minerals associated with the proposed project are not federally managed.

## 1.2. Purpose and Need for Action

The purpose of the proposed action is to authorize access across BLM surface while protecting the environmental resources to the maximum extent possible.

The need for the proposed action is also established by the BLM's responsibility under the MLA and the Federal Land Policy and Management Act of 1976 (FLPMA, 43 USC 1701 et seq.) to respond to a request for a ROW Grant over BLM surface.

## 1.3. Conformance with Applicable Land Use Plan(s)

The proposed action is in conformance with the 2003 BLM-FFO Resource Management Plan (RMP). Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this site-specific Environmental Assessment (EA) tiers into and incorporates by reference the information and analysis contained in the BLM-FFO Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS) (BLM 2003a). The BLM-FFO's RMP was approved by the September 29, 2003 Record of Decision (ROD) (BLM 2003b).

Specifically, the proposed project supports the following BLM policy:

> It is the policy of the BLM to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at reasonable market prices. At the same time, the BLM strives to ensure that mineral development is carried out in a manner that minimizes environmental damage and provides for the rehabilitation of affected lands. (BLM 2003b)

Development of energy-related ROWs, such as access roads, pipelines, and powerlines, is one of the primary activities of the BLM-FFO lands program. Such ROWs receive environmental review on a case-by-case basis (BLM 2003b). As required by the National Environmental Policy Act of 1969, as amended (NEPA, 42 USC 4321 et seq.), this EA addresses site-specific resources and effects of the proposed action that were not specifically covered within the PRMP/FEIS.

## 1.4. Relationship to Statutes, Regulations or Other Plans

The operator would comply with applicable federal, state, and local laws and regulations. Necessary permits and approvals for the proposed project would be obtained prior to project implementation.

Many requirements regulating specific environmental elements are found in the appropriate elements sections of this EA (Chapter 3). Several permits, licenses, consultations, or other requirements are discussed below.

### *1.4.1. Clean Water Act*

Under Section 402 of the Clean Water Act, as amended (CWA, 33 USC 1251 et seq.), the U.S. Environmental Protection Agency (EPA) regulates storm water discharges from industrial and construction activities under the National Pollution Discharge Elimination System (NPDES) program. Under 40 CFR 122.26, uncontaminated storm water discharge associated with oil and gas development is typically exempt from NPDES regulation. However, permits are required if discharge results in a reportable quantity for which notification is required (pursuant to 40 CFR 117.21, 40 CFR 302.6, or 40 CFR 110.6) or if the discharge contributes to a violation of a water quality standard.

Under Section 401 of the CWA, an applicant for a federal license or permit to conduct an activity that may result in a discharge into a water of the U.S. must provide the federal agency with a Section 401 certification declaring that the discharge would comply with the CWA. The certification would be granted by the New Mexico Environment Department (NMED).

Under Section 404 of the CWA, the EPA regulates the discharge of dredged or fill material into waters of the U.S., including wetlands. The Section 404 program is administered by the EPA and U.S. Army Corps of Engineers (USACE). Under the CWA, the USACE has jurisdiction over “Waters of the U.S.” These waters are considered jurisdictional because they have a “significant nexus” to traditional navigable waters. A Section 404 permit is required for projects that would result in discharged material into a water of the U.S. Determining jurisdiction and/or a significant nexus can be a time-consuming process; therefore, the BLM-FFO assumes that the USACE has jurisdiction over any U.S. Geological Service (USGS) watercourse (any “blue line” on USGS 1:24,000 topographic maps). The proposed access road would cross four ephemeral drainages, including one ephemeral, unnamed USGS watercourse over which the USACE is assumed to have jurisdiction (Appendix C, Photograph 6). Along the proposed access road, the average ordinary high-water mark of the four ephemeral drainages ranges from approximately 2 to 6 feet in width and less than 1 foot to 2 feet in depth. Activities associated with the proposed project would be permitted under Nationwide Permit No. 14 for Linear Transportation Projects.

### *1.4.2. National Historic Preservation Act*

Section 106 of the National Historic Preservation Act of 1966 (NHPA, 16 USC 470) requires federal agencies to take into account the effects of their actions on historic properties, and allow the Advisory Council on Historic Preservation a reasonable opportunity to comment. Compliance with the requirements of the NHPA is met by following the Protocol Agreement between the New Mexico BLM and New Mexico State Historic Preservation Officer, which is authorized by the Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (1997).

### *1.4.3. Clean Air Act*

The Clean Air Act of 1972, as amended (CAA, 42 USC 7401 et seq.), establishes national ambient air quality standards (NAAQS) to control air pollution. In New Mexico, the NMED has adopted most of the CAA into the New Mexico Administrative Code (NMAC). The NMED issues construction and operating permits for air quality and enforces air quality regulations and permit conditions.

### *1.4.4. New Mexico State Regulations*

The New Mexico Oil Conservation Division (OCD), which is in the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), regulates oil and gas operations in New Mexico. The OCD has the responsibility of gathering production data, permitting new wells, establishing pool rules and allowables, issuing discharge permits, enforcing rules and regulations, monitoring underground injection wells, ensuring that abandoned wells are properly plugged, and ensuring that the land is responsibly restored. Oil and gas regulations administered by OCD are contained in NMAC 19.15. These regulations include the following, with which the operator would comply:

- The EMNRD requires operators to follow “pit rule” guidelines (NMAC 19.15.17) to reduce groundwater contamination from industry-related activities.
- 
- NMAC 19.15.15 establishes requirements for well acreage spacing, obtaining approval of unorthodox well locations, and pooling or communitizing small acreage oil lots.
- 
- NMAC 19.15.16.19 requires the disclosure of hydraulic fracture constituents.

# 1.5. Scoping, Public Involvement, and Issues

## *1.5.1. Scoping and Public Involvement*

Scoping is "the process by which the BLM solicits internal and external input on the issues, impacts, and potential alternatives that will be addressed in an [Environmental Impact Statement] or EA as well as the extent to which those issues and impacts will be analyzed in the NEPA document" (BLM 2008b).

Internal BLM-FFO scoping was conducted to identify potential issues and alternatives for the proposed action.

Per BLM NEPA Handbook H-1790-1, external scoping for EAs is optional (BLM 2008b). Based on the size and scale, routine nature, and potential effects of the proposed action, preliminary external scoping was not conducted for the proposed project. The public was informed that a copy of this EA is available at the BLM-FFO and on the BLM-FFO website (http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office/ffo_nepa.html) for review and comment.

## *1.5.2. Issues*

### 1.5.2.1. Issues Analyzed

Issues are identified during scoping. Issues are analyzed if the issue is necessary to make a reasoned choice between alternatives or if the issue is significant (BLM 2008b).

The following issues were identified during scoping as potential issues of concern for the proposed action. These issues will be addressed in this EA.

- How would activities associated with the proposed project impact air resources?
- How would activities and surface disturbance associated with the proposed project impact cultural resources?
- How would activities and surface disturbance associated with the proposed project impact the introduction or spread of invasive, non-native plant species?
- How would activities and equipment associated with the proposed project impact noise levels in the area?
- How would surface disturbance associated with the proposed well pad and access road impact paleontological resources?
- How would activities associated with the proposed project impact public health and safety?
- How would surface disturbance associated with the proposed well pad and access road impact rangeland?
- How would surface disturbance associated with the proposed well pad and access road impact the potential for soil erosion?
- How would vegetation disturbance, fragmentation, and activities associated with the proposed project impact BLM Special Status Species?
- How would surface disturbance associated with the proposed well pad and access road impact vegetation?

- How would activities and surface disturbance associated with the proposed project impact visual resources?

- How would surface disturbance associated with the proposed well pad and access road impact surface water resources?

- How would activities and surface disturbance associated with the proposed project impact wildlife, including migratory birds?

#### 1.5.2.2. Issues Considered but not Analyzed

The following issues were identified during scoping as issues of concern that would not be impacted by the proposed action or that have been covered by prior environmental review. These issues will not be discussed in this EA.

- **Environmental Justice:** The proposed project would not result in disproportionate adverse impacts to minority or low-income populations. San Juan County has a disproportionately high minority population (U.S. Census Bureau 2010). However, the PRMP/FEIS determined that the positive effects of additional jobs, economic activity, and government revenue from energy development would benefit all residents, including minorities (BLM 2003a).

- **Native American Religious Concerns**: The proposed project would not impact any known Traditional Cultural Properties, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with/hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (2 USC 1996) or Executive Order (EO) 13007. There are currently no known remains that fall within the purview of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA, 25 USC 3001) or the Archaeological Resources Protection Act (ARPA, 16 USC 470) within the proposed project area (La Plata Archaeological Consultants [LAC] 2012, Copeland 2012).

- **U.S. Fish and Wildlife Service (USFWS)-Listed Species:** Under Section 7 of the Endangered Species Act of 1973 (ESA, 16 USC 1531-1544), all federal agencies are required to consult with the USFWS or National Marine Fisheries Service if they are proposing an action that may affect listed species or designated c habitat. Consultation with the USFWS was conducted as part of the PRMP/FEIS to address the cumulative effects of RMP implementation (Consultation No. 2-22-01-1-389, Appendix M of the PRMP/FEIS). Based on a review of species currently listed by the USFWS as occurring in San Juan County, as well as their range and habitat within the proposed project area, the potential does not exist for USFWS-listed species to occur within the proposed project area (USFWS 2012). In addition, water for drilling the proposed well would be purchased from the San Juan Basin Water Haulers Association. Thus, no USFWS-listed fish species would be affected by unanticipated surface water depletions resulting from the proposed project. Therefore, there is no need for additional Section 7 consultation.

# 2. PROPOSED ACTION AND ALTERNATIVE(S)

## 2.1. Proposed Action

The BLM is proposing to approve WPX's Lybrook 23-8-16 No. 201H ROW. The proposed project includes drilling, production, and final abandonment of an oil and natural gas well and the construction, use, and final abandonment of an associated well pad and access road. The primary objective of the proposed well is to produce oil; however, it is likely that natural gas would be a byproduct.

The proposed project would commence after the ROW is approved. Construction plats associated with the proposed project are provided in Appendix B.

### *2.1.1. Location of Proposed Project Area*

The proposed project area is located within the BLM-FFO management area in San Juan County, New Mexico. The proposed project area is located within the San Juan Basin of northwestern New Mexico, approximately 6.6 miles west-southwest of the town of Lybrook and 2.3 road-miles south and east of the U.S. Highway 550 and County Road 7900 intersection. The proposed access road is located along gently rolling hills dominated by a sagebrush shrubland vegetation community with scattered oneseed juniper (*Juniperus monosperma*) and piñon pine (*Pinus edulis*) trees. The proposed well pad is located within a hilly area comprised of moderate to steep slopes, open piñon-juniper woodlands, and two main head-cut, ephemeral drainages with several small associated erosional drainages. The elevation at the proposed wellhead is approximately 6858 feet above mean sea level.

Horizontal drilling would be utilized for the proposed project. The wellhead and bottom hole locations are provided in Table 2-1.

**Table 2-1: Wellhead and Bottom Hole Locations**

| Wellhead/ Bottom Hole | Geographical Coordinate System (Universal Transverse Mercator, North American Datum of 1983) | | Legal Land Description (New Mexico Principal Meridian) | | |
|---|---|---|---|---|---|
| | Latitude[1] | Longitude[2] | Footages[3] | Section | Township (T) & Range (R) |
| Wellhead | 36.22390º N | 107.67904º W | 1491 feet FSL, 248 feet FEL | 16 | T23N, R08W |
| Bottom Hole | 36.22618º N | 107.69483º W | 2300 feet FSL, 340 feet FWL | 16 | T23N, R07W |

[1] N: North
[2] W: West
[3] FSL: From South Line, FEL: , FWL: From West Line

Maps of the proposed project area can be found in Appendix A. The proposed project area is plotted on 7.5-minute U.S. Geological Survey quadrangle maps (Figures 2 and 3) and 2011 San Juan County East National Agriculture Imagery Program aerial photo (Figure 4). Photographs of the proposed project area can be found in Appendix C.

## *2.1.2. Description of Proposed Project*

For a detailed description of design features and construction practices associated with the proposed project, please refer to the ROW case files, serial number NMNM 129594 and NMNM 129595on file at the BLM-FFO. The plats (Appendix B) provide additional details. WPX would comply with BLM guidance and standards established in *The Gold Book: Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (*Gold Book*, BLM and USFS 2007). WPX would adhere to stipulations listed in the Conditions of Approval attached to the ROW Grant.

The hauling of equipment and materials for the proposed project on public roads would comply with Department of Transportation regulations. WPX would notify the public of potential hazards by posting signage, as necessary.

Liquid and solid wastes would be disposed of at an appropriate waste-disposal site. The proposed project area would be maintained in a sanitary condition. Hazardous substances would be handled and disposed of according to federal law.

Employees, contractors, and sub-contractors associated with the proposed project would be informed by the project proponent that cultural and paleontological sites are to be avoided by personnel, personal vehicles, and company equipment. Workers would be informed that it is illegal to collect, damage, or disturb some such resources, and that such activities are punishable by criminal and/or administrative penalties under the provisions of the ARPA and Paleontological Resources Preservation under the Omnibus Public Lands Act of 2009 (OPLA-PRP, Public Law 11-11, Title VI, Subtitle D, Sections 6301-6312, 123 Stat. 1172, 16 USC 470aaa).

It would be the operator's responsibility to monitor, control, and eradicate all invasive, non-native plant species within the proposed project area throughout the life of the proposed project. WPX's weed-control contractor would contact the BLM-FFO regarding acceptable weed-control methods. If WPX's weed-control contractor does not hold a current Pesticide Use Permit, a Pesticide Use Permit would be submitted prior to pesticide application. Only pesticides authorized for use on BLM lands would be used. The use of pesticides would comply with federal and state laws. Pesticides would be used only in accordance with their registered use and limitations. WPX's weed-control contractor would contact the BLM-FFO prior to using these chemicals.

Vehicles would be restricted to proposed disturbance areas and existing areas of surface disturbance, such as existing roads.

Worker safety incidents would be reported to the BLM-FFO as required under Notice to Lessees (NTL) - 3A (USGS 1979).

WPX would comply with Onshore Oil and Gas Order No. 2, issued under Onshore Oil and Gas Operations (43 CFR 3160). This Order details minimum standards for drilling and final abandonment on federal lands.

The well location would have an informational sign, as required by Onshore Oil and Gas Operations regulations (43 CFR 3160).

The BLM's regulatory jurisdiction over field production operations has resulted in the development of Best Management Practices designed to reduce impacts to air quality by reducing all emissions from field production and operations. Typical measures could include flaring hydrocarbons and gases at high temperatures in order to reduce emissions of incomplete combustion, requiring that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored, ensuring that compressor engines 300 horsepower or less have nitrogen oxide ($NO_x$) emissions limited to 2 grams per horsepower hour, revegetating areas not required for production facilities to reduce the amount of dust, and watering dirt roads during periods of high use in order to reduce fugitive dust emissions. Magnesium chloride, organic-based compounds, or polymer compounds could be also be applied to roads or other surfaces to reduce fugitive dust. Petroleum-based products or produced water would not be used.

Wildlife hazards associated with the proposed project would be fenced, covered, and/or contained in storage tanks, as necessary.

A pipeline would not be constructed as part of the proposed project, as it is not yet known whether or not the proposed well would produce oil or gas. If it is determined that a pipeline is required for the well, the well would be shut in until a pipeline could be separately permitted and constructed.

Under the proposed action, the following general phases would occur.

#### 2.1.2.1. Pre-Construction Surveys

If construction activities would occur during migratory bird breeding season (May 15 through July 31), a migratory bird nest survey would take place one to two days prior to construction. This survey would be conducted by a BLM-FFO-approved biologist using BLM-FFO protocol. If active nests are located within the proposed project area, the BLM-FFO biologist would be notified and project activities would not be permitted until fledging has occurred. If postponement is not an option, the operator would contact the USFWS's Migratory Bird Permit Office regarding permitting.

#### 2.1.2.2. Construction of Access Road and Well Pad

During the construction phase of the proposed project, the proposed 3984-foot, 30-foot-wide access road and 500-foot-by-400-foot well pad, including the construction zone, would be cleared of vegetation and leveled in preparation for drilling. The size of the proposed well pad (400 feet by 300 feet) is slightly larger than typical well pads in the BLM-FFO area. This is because the equipment (such as tanks) associated with the new hydraulic fracturing design requires a larger area. The construction phase of the proposed project is estimated to take approximately one week.

Trees greater than six inches in diameter at breast height would be chopped down, delimbed, and stacked off site for public use. Shrub and herbaceous vegetation, trees less than six inches diameter breast height, and slash within the proposed project area, would be mulched and incorporated into the topsoil.

The top six inches of topsoil within the proposed project area would be stockpiled for use during reclamation. The proposed access road and well pad area would be leveled with a D-8 bulldozer to provide space and a level surface for vehicles and equipment. Excavated materials from cuts would be used on fill portions of the location. The maximum well pad cut would be 16 feet on the northeast (Corner 3) side of the proposed well pad. The maximum fill would be 15 feet on the southwest (Corner 6) and south-central side of the proposed well pad.

The proposed access road would be built up 18 to 24 inches following *Gold Book* standards. Culverts would be installed beneath the proposed access road, where needed.

An existing dirt road from County Road 7900 to the western terminus of the proposed access road would be upgraded by WPX.

A temporary, 15-foot deep, 150-foot-by100-foot reserve pit would be excavated within the southwestern portion of the proposed well pad. Cut material from these excavations would be stockpiled on the location or used to construct the back walls of the burn pit (where a gas flare is burned during drilling to relieve well bore pressure). The pit would meet OCD guidelines and rules (NMAC 19.15.17).

Should any active raptor nests be observed within one-third mile of the proposed project area or should any active bird nests, cultural resources, paleontological resources, or Special Status Species (listed by the USFWS or BLM) be observed within the proposed project area prior to or during construction, construction would cease and the BLM-FFO would immediately be contacted. The BLM-FFO would then ensure evaluation of the resource. Should a discovery be evaluated as significant (eligible for the National Register of Historic Places (NRHP), protected under the NAGPRA, protected under the ARPA, protected under the ESA, etc.), it would be protected in place until mitigation could be developed and implemented according to guidelines set by the BLM.

#### 2.1.2.3. Drilling and Completion

Once construction is complete, a drilling rig would be transported to the proposed well pad and assembled. Horizontal drilling typically takes approximately 30 days. Once drilling is complete, the well would be completed (the process in which the well is enabled to produce oil and natural gas). Completion typically takes 30 days.

Facilities and equipment on the location during this time could include the following:

- Drilling rig,
- Generator(s),
- Water and mud tanks,
- Mud pumps,
- Safety stations,
- Equipment and material storage units,
- Fuel storage,
- Dog House (equipment control room),
- Construction trailers, and
- Various service company equipment (cement trucks, frac trucks & equipment, wireline trucks, etc.).

Approximately 10 to 40 personnel would be on the proposed site at any time during drilling and completion.

During this process, vehicles would use the proposed access road, as well as developed roads and highways in the region. Traffic would include light vehicles (such as cars and pick-up trucks) and heavy vehicles (such as water trucks and large tractor-trailers hauling equipment).

Surface casing would be installed to a depth necessary to penetrate past freshwater zones. The casing would be pressure-tested to ensure that a seal has been created.

Water for drilling would be obtained from San Juan Basin Water Haulers Association and trucked to the location. WPX would ensure that water would be obtained legally and that all required permits would be obtained prior to obtaining water.

During drilling and completion, the reserve pit will be fenced on three sides to protect livestock and wildlife. Drill cuttings, drill water, and completion fluids would be placed in the reserve pit. Any other fluids or hazards on the locations would also be contained or fenced and properly maintained to ensure the safety of livestock and wildlife. Once the completion rigs leave the location, a fence would be constructed around the fourth side of the reserve pit. This pit would be allowed to dry naturally, or the free fluids in the pit would be trucked to an approved disposal facility or reused at another well site. Once the pit is dried, it would be backfilled and the fences would be removed.

#### 2.1.2.4. Interim Reclamation

If the well proves to be productive, portions of the proposed project area that would not be required for production equipment, vehicular access, and adequate room to accommodate a work-over rig, if needed, would be reclaimed within 120 days of construction. Interim reclamation could occur simultaneously with production. The BLM-FFO would be notified at least 48 hours prior to the start of interim reclamation activities.

During this phase, a bulldozer and a tractor with seeding capabilities would be used for reclamation purposes. Approximately four personnel would be required to conduct interim reclamation.

Areas reclaimed during interim reclamation would include the well pad construction zone and portions of the well pad not required for production; please see Section 2.1.3 (Summary of Proposed Surface Disturbance) for specific acreage information. Slopes would be re-contoured to pre-construction topographical contours, if possible. The goal of interim reclamation would be to diminish the evidence of

cuts, fills, and flat well pad surfaces. Reclaimed areas would be seeded using the BLM-FFO standard, weed-free seed mixture.

In addition, approximately 1245 feet of an old, existing roadway that was originally used to access a well that has since been plugged and abandoned will be reclaimed north and south of the proposed access road to match the surrounding area. This portion of the old, existing roadway will be re-contoured to pre-construction topographical contours and seeded with the BLM-FFO standard, weed-free seed mixture.

Additional drainage diversions within the proposed project area would be diverted upon interim reclamation, as needed.

#### 2.1.2.5. Production

The production phase of wells varies; the lifetime could be up to 40 years per well.

Production equipment that would remain on the well pad could include the following:

- Wellhead,
- Production unit,
- Meter run,
- Compressor,
- Flare stack,
- Water tanks, and
- Oil tanks.

The permanent equipment installed on the well pad would be painted Juniper Green to blend with the natural environment.

During production, normal upkeep would be required to monitor production and resolve any problems. Typically, one pick-up truck would visit the site daily during the normal work week. Trucks would be used to remove wastewater stored in tanks at the location. The frequency of water-hauling would depend upon the amount of water produced by the well; the frequency could vary from once a day to once a month. Oil transport trucks would also visit the location; frequency would depend upon production. Occasionally, a work-over rig could be required for downhole maintenance.

Production would comply with noise standards outlined in NTL 04-2 FFO (BLM 2004).

#### 2.1.2.6. Final Abandonment

If the well proves to be unproductive, or when the well is no longer commercially viable, it would be plugged and abandoned. The final abandonment phase typically takes one week.

During this phase, a bulldozer and a tractor with seeding capabilities would be used for reclamation purposes. Approximately four personnel would be required to conduct final reclamation.

Downhole well abandonment would be carried out under current BLM-FFO regulations.

Surface equipment would be removed. An aboveground marker would be placed over the plugged hole. The marker would contain individual well identification information.

If the retention of the proposed well pad and/or access road is/are not considered necessary for the management and multiple uses of natural resources, it/they would be reclaimed. The goal of final reclamation would be to return the disturbed areas associated with the proposed project to pre-construction conditions, if possible, by diminishing the evidence of cuts, fills, and flat well pad surfaces. Disturbed areas would be re-contoured to pre-construction topographical contours and seeded with the BLM-FFO standard, weed-free seed mixture. Water bars would be installed across the road, and a dead-end ditch and earthen barricade would be constructed at the entrance to reclaimed areas. Measures would be taken to control sedimentation and erosion, as necessary.

### *2.1.3. Summary of Proposed Surface Disturbance*

The proposed access road would be 30.00 feet in width and approximately 3984.00 feet in length, or 2.74 acres. However, approximately 790 feet of the old, existing roadway (0.54 acre) that was originally used to access a well that has since been plugged and abandoned will be utilized for accessing the proposed well pad. Therefore, the proposed access road would total 2.20 acres of new disturbance.

The proposed well pad would measure 300.00 feet by 400.00 feet (2.75 acres). The construction zone associated with the well pad would be 50.00 feet wide (1.84 acres). Approximately 0.10 acre of the construction zone would overlap the proposed access road. Therefore, the proposed well pad and construction zone would add an additional 4.49 acres of new disturbance to the proposed project.

During interim reclamation, the proposed construction zone and the majority of the proposed well pad would be reclaimed. An approximate 250.00-foot-by-180.00-foot (1.03-acres) well pad area would be required for long-term production of the well. The access road (2.20 acres) would also remain disturbed for the long term.

New surface disturbance associated with proposed project facilities is summarized in the table below.

**Table 2-2: Potential New Surface Disturbance**

| Well | Initial Surface Disturbance (acres) | Barren Surface Remaining After Interim Reclamation (acres) |
|---|---|---|
| Access Road | 2.20 | 2.20 |
| Well Pad & Construction Zone | 4.49 | 1.03 |
| **Total** | **6.69** | **3.23** |

The proposed project area would encompass 6.69 acres. Of this, 3.46 acres would be reclaimed during interim reclamation and the remaining 3.23 acres would be reclaimed during final reclamation.

## 2.2. No Action

Under the No Action Alternative, the Lybrook 23-8-16 No. 201H would not be approved. The proposed well would not be drilled, and current land and resource uses would continue to occur in the proposed project area.

BLM NEPA Handbook H-1790-1 states that for EAs on externally initiated proposed actions, the No Action Alternative generally means that the proposal would be rejected or the application would be denied (2008b). This option is provided in 43 CFR 2884.23(a)(2).

## 2.3. Alternatives Considered but Eliminated from Detailed Study

Natural gas and oil wells can be drilled vertically or directionally/horizontally. Vertical drilling places a well pad directly above the bottom hole, while directional/horizontal drilling allows for flexibility in the placement of the well pad and associated surface facilities. Directional/Horizontal drilling often allows for “twinning,” or drilling two or more wells from one shared well pad. Directional/Horizontal drilling applications throughout the San Juan Basin have become relatively routine. Generally, the use of this technology is applied when it is necessary to avoid or minimize impacts to surface resources.

Factors such as reservoir depth, angle of deviation, lateral displacement, completion technique, and risk are considered before deciding on the use of directional/horizontal drilling applications. In addition, operating factors such as production efficiency; rod, pump, and tubing wear; and workover frequency is also a consideration. Generally, directional/horizontal well completion and operating costs are 20 to 25 percent higher than vertical well drilling costs. The primary economic factors that determine the feasibility of directional/horizontal applications include, but are not limited to, incremental drilling, completion, and

operating costs; oil and gas reserves; rates of production; oil and gas prices; royalties and taxes; and return on investment.

Originally, WPX proposed to locate the Lybrook 23-8-16 No. 201H well head and well pad approximately 265 feet north of the current proposed location (Appendix A, Figure 5). The previous location was located within badland habitat and soil type, rather than open piñon-juniper woodlands. The number of trees within the previously proposed well pad site totaled approximately 50 piñon pines or oneseed junipers (95 percent mature, 4 percent juvenile, and 1 percent standing dead); whereas, the current proposed location will result in the removal of approximately 160 to 170 piñon pine or juniper trees (50 percent mature, 49 percent juvenile, and 1 percent standing dead). The proposed well pad was moved to the current proposed location because the soil material (not Badland soil) in the current proposed well pad site will be more suitable for drilling because there would be more soil stability, less erosion, and less difficulty for re-seeding the site during interim and final reclamation. Additionally, the new proposed access road will be shorter than the original, staked access road by approximately 334 feet. The new proposed well pad location and the shortened access road will have less drainage issues than the previously proposed location. The current proposed project area would result in fewer disturbances; therefore, the previous project area was not considered feasible.

# 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Under the No Action alternative, current land and resource issues within the proposed project area would continue; there would be no new impacts from oil and gas development. The No Action alternative will serve as the baseline for comparing the environmental impacts of the analyzed alternatives, and will not be further evaluated in this EA (BLM 2008b).

## 3.1. Air Resources

### *3.1.1. Affected Environment*

Additional general information on air quality in the area is contained in Chapter 3 of the PRMP/FEIS (2003a). New information about greenhouse gases (GHGs) and their effects on national and global climate conditions has emerged since the RMP was prepared. Ongoing scientific research has identified the potential impacts of GHG emissions (such as carbon dioxide [$CO_2$], methane [$CH_4$], nitrous oxide, water vapor, and several trace gases) on global climate. Through complex interactions on a global scale, GHG emissions may cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably, and may contribute to overall climatic changes. These changes are typically referred to as “global warming.”

The EPA’s inventory data describes “Natural Gas Systems” and “Petroleum Systems” as the two major categories of U.S. sources of GHG gas emissions. The inventory identifies the contributions of natural gas and petroleum systems to total $CO_2$ and $CH_4$ emissions (natural gas and petroleum systems do not produce noteworthy amounts of any of the other GHGs). 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 PRMP/FEIS discussed ozone in the Baseline Air Quality and Impact Assessment sections. The NAAQS at the time was 0.084 parts per million. In March of 2008, the EPA announced a new primary eight-hour standard of 0.075 parts per million. In addition, on October 17, 2006, the EPA issued a final ruling on the lowering of the NAAQS for particulate matter measuring 2.5 microns (PM2.5) or smaller. This ruling became effective on December 18, 2006. It stated that the 24-hour standard for PM2.5 was lowered to 35 micrograms per cubic meter (ug/m$^3$) from the previous standard of 65 ug/m$^3$. This revised NAAQS was promulgated to better protect the public from short-term particle exposure.

This EA incorporates an analysis of the contributions of the proposed project to GHG emissions, and a general discussion of potential impacts to climate.

Air quality and climate are the components of air resources, which include applications, activities, and management of the air resource. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision-making process.

The EPA has the primary responsibility for regulating air quality, including the regulation of seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states, including New Mexico. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology, and terrain. Air quality also includes applications of noise, smoke management, and visibility. Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. GHGs and the potential effects of GHG emissions on climate are not regulated by the EPA; however, climate has the potential to influence renewable and

non-renewable resource management.

#### 3.1.1.1. Air Quality

The proposed project area is within a Class II air quality area. A Class II area allows moderate amounts of air quality degradation. The primary sources of air pollution in the area are dust caused by blowing wind on disturbed or exposed soil, and exhaust emissions from motorized equipment.

Air quality in the area near the proposed project area is generally good. The proposed project area is not within an EPA-designated “non-attainment area” for any listed pollutants regulated by the CAA. During the summers of 2000 through 2002, ozone levels in the Four Corners area of the San Juan Basin were approaching non-attainment. 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 eight-hour ozone values in the region will be declining in the future. At the present time, San Juan County is classified as “in attainment” with the Federal ozone standard of 0.075 parts per million.

GHGs, including $CO_2$ and $CH_4$, and the potential effects of GHG emissions on climate are not regulated by the EPA under the CAA. However, climate has the potential to influence renewable and non-renewable resource management. The EPA’s Inventory of U.S. Greenhouse Gas Emissions and Sinks found that in 2007, total U.S. GHG emissions were over 7 billion metric tons. This inventory also found that total U.S. GHG emissions had increased by 17 percent between 1990 and 2007. Emissions increased from 2006 to 2007 by 1.4 percent (99.0 teragrams $CO_2$ equivalent). The following factors were primary contributors to this increase: 1) cooler winter and warmer summer conditions in 2007, as compared to 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 (14.2-percent) decrease in hydropower generation used to meet this demand (EPA 2009).

The levels of these GHGs are expected to continue increasing. The rate of increase is expected to slow as greater awareness of the potential environmental and economic costs associated with increased levels of GHGs results in behavioral and industrial adaptations.

#### 3.1.1.2. Climate

Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change. Global mean surface temperatures have increased nearly 1.0 degree Celsius (1.8 degree Fahrenheit) from 1890 to 2006 (Goddard Institute for Space Studies 2007). In 2007, the Intergovernmental Panel on Climate Change (2007) predicted a warming of about 0.2° C per decade for the next two decades, and then a further warming of about 0.1° C per decade. The National Academy of Sciences supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions (2006). 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 is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere than in the Southern Hemisphere.

A 2007 U.S. Government Accountability Office Report on Climate Change found that "federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include the following: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses." It is not, however, possible to predict with any certainty regional or site-specific effects on climate relative to the proposed action and subsequent actions.

In New Mexico, a recent study indicated that mean annual temperatures have exceeded global averages by nearly 50 percent since the 1970s (Enquist and Gori 2008). Similar to trends in national data, increases in mean winter temperatures in the Southwest have contributed to this rise. When compared to baseline information, periods between 1991 and 2005 show temperature increases in over 95 percent of the geographical area of New Mexico. Warming is greatest in the northwestern, central, and southwestern parts of the state.

## *3.1.2. Impacts from the Proposed Action*

### 3.1.2.1. Direct and Indirect Impacts

Air quality would temporary be directly impacted by pollution from exhaust emissions, chemical odors, and dust from motorized equipment associated with the proposed project. Most dust dissemination would discontinue once the construction phase is completed. Most air pollution from motorized equipment would discontinue at the completion of the drilling phase. The winds that frequent northwestern New Mexico generally disperse odors and emissions. The significant threshold for particulate matter of 35 ug/m³ daily PM2.5 NAAQS is not expected to be exceeded under the proposed project.

Consumption of oil and gas developed from the proposed well is expected to produce GHGs, $NO_x$, and volatile organic compounds. 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.

The assessment of GHG emissions and climate change is in its formative phase. It is currently not feasible to know with certainty the net impacts from the proposed project on climate. 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. 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.

### 3.1.2.2. Cumulative Impacts

Increased development in the Four Corners area, including a proposed coal-fired power plant, increased oil and gas development, and population growth, are all contributing to air quality concerns. Many residents are concerned about potential health impacts from other pollutants. An overall haze and plume of nitrogen oxides can often be seen in the skies, impacting visibility, and there are concerns for the ecosystem due to the deposition of mercury and nitrogen.

Over the last 10 years, the leasing of federal oil and gas minerals within the BLM-FFO has resulted in an average of approximately 450 to 500 wells drilled on federal leases annually. These wells contribute an incremental increase to the total emissions (including GHGs) from oil and gas activities in New Mexico.

Potential impacts of development include increased airborne soil particles blown from new well pads or roads; exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities; and potential releases of GHGs, $NO_x$, and volatile organic compounds during drilling or production activities. The amount of increased emissions cannot be quantified at this time, since it is unknown how many wells might be drilled, the types of equipment needed if a well were to be completed successfully (e.g. compressor, separator, dehydrator), or what technologies may be employed by a given company for drilling any new wells. The degree of impact will also vary according to the characteristics of the geologic formations from which production occurs.

The Reasonable Foreseeable Development Scenario (RFDS) developed for the PRMP/FEIS demonstrated that 522 wells would be drilled annually for federal minerals (BLM 2003a). This level of exploration and production would contribute a small incremental increase in overall hydrocarbon emissions, including GHGs, $NO_x$, and volatile organic compounds, released into the planet's atmosphere. When compared to total national or global emissions, the amount released as a result of potential production from the proposed well would not have a measurable effect on climate change due to

uncertainty and incomplete and unavailable information. Therefore, it is not possible to determine the effects on climate change on a regional, national, or global scale.

Currently, development of federal minerals in New Mexico's San Juan Basin is at a lower level than forecast in the RFD Scenario prepared in 2001 for the PRMP/FEIS. The impacts forecast by the RFD are still valid. At the time the 2003 PRMP/FEIS was written, ozone readings did not represent a violation of the NAAQS for this pollutant. The NMAQB has determined that the 2007 – 2009 ozone design value for San Juan County is 0.070 parts per million. The design value for the county must be greater than the revised eight-hour ozone standard of 0.075 parts per million for a nonattainment designation.

Regional and global transportation, metropolitan traffic, fires (including wildfires, controlled burns, and use of domestic fireplaces), and power plant emissions from the west are also parts of the equation. In August 2006, regional air quality modeling conducted for the Northern San Juan Basin Coal Bed Methane FEIS Project determined that potential cumulative visibility impacts to Federal Prevention of Significant Deterioration Class I Areas (Mesa Verde National Park and the Weminuche Wilderness Area) could occur at some unspecified time in the future.

The NAAQS are set for the most common and widespread pollutants. The standards are concentrations of air pollution above which the EPA has determined that serious health and welfare consequences could occur. If the concentrations are below the NAAQS, there are no expected adverse effects to humans and the environment.

The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. However, potential impacts to natural resources and plant and animal species, including those in the southwestern U.S., due to climate change are likely to be varied. 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 northward and to higher elevations, and extinction of endemic Threatened or Endangered plants may be accelerated.

Due to loss of habitat or increased 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 dependent upon historic water conditions. Forests at high elevations in New Mexico, for example, have been exposed to warmer and drier conditions over a 10-year period. Should the trend continue, the habitats and identified drought-sensitive species in these forested areas and higher elevations may also be more affected by climate change.

## 3.2. Cultural Resources

### *3.2.1. Affected Environment*

The proposed project 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 (aka Anasazi; 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 (2003) and will not be reiterated here. Additional information is also included in an associated documented, Cultural Resources Technical Report (CRTR; SAIC 2002).

LAC conducted a Class I literature review and Class III (100-percent) cultural field survey for the proposed project. The results of these studies are provided in Cultural Report No. LAC Report 2012-29aa. The BLM-FFO concurred with the findings of this report in BLM Report No. 2013(IV)032F.

The proposed project area, as well as a 100-foot buffer area, were surveyed for cultural resources in accordance with the *Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2005). Within one-quarter mile of the proposed project area, there are five previously recorded cultural sites and two isolated occurrences. One of the five previously recorded sites (LA29322) is located within the proposed project area. The four remaining previously recorded sites are not within 500 feet of the proposed project (LAC 2012). Site LA29322 is discussed further below.

Site LA29322 is a mid-Twentieth Century Navajo site appearing to represent a dismantled camp or residence (LAC 2012). This site is not eligible for inclusion in the NRHP (LAC 2012, Dussinger 2012).

## *3.2.2. Impacts from the Proposed Action*

#### 3.2.2.1. Direct and Indirect Impacts

The proposed project would not directly affect cultural resources eligible for National Register of Historic Places (BLM Report No. 2013(IV)032F ).

Direct effects to cultural resources normally include alterations to the physical integrity of the resource. If a cultural resource is significant for other than its scientific information, direct effects may also include the introduction of audible, atmospheric, or visual elements that are out of character for the cultural site.

There is the potential for the proposed project to have an indirect effect on cultural resources. A potential indirect effect of the proposed project would be the increase in human activity in the area as a result of project activities. Additionally, the proposed access road could result in increased access to the area, which would increase the potential for unauthorized removal of or alteration to cultural resources in the vicinity.

#### 3.2.2.2. Cumulative Impacts

**There will be no cumulative impact on cultural resources as no significant cultural sites are within the area of potential affect. A positive cumulative effect is the additional scientific information yielded by the archaeological survey.**

# 3.3. Invasive and Non-Native Plant Species

## *3.3.1. Affected Environment*

Management of invasive and non-native species is mandated under several pieces of legislation, including the Lacey Act, as amended (16 USC 3371-3378); the Federal Noxious Weed Act of 1974, as amended (7 USC 2801 et seq.); the New Mexico Noxious Weed Management Act of 1998; and EO 13112 regarding Invasive Species. Under EO 13112, federal agencies are ordered not to authorize or carry out actions that would cause or promote the introduction of invasive species.

In the San Juan Basin, invasive plants are frequently found in areas that have been disturbed by surface activities. A mission of the BLM-FFO is to detect new invasive plant species populations, prevent the spread of these new populations, manage existing populations, and eradicate invasive populations. This is to be accomplished in a timely manner, using the safest environmental methods available. For all actions on BLM-FFO lands that involve surface disturbance or reclamation, reasonable steps are required to prevent the introduction or spread of invasive plants (BLM 2003a).

The U.S. Department of Agriculture has designated certain plants as federally listed noxious weeds (Natural Resources Conservation Service [NRCS] 2010). The New Mexico Department of Agriculture (NMDA) has designated certain plants as state-listed noxious weeds (NMDA 2009). A total of 212 invasive and poisonous weed species have been identified on BLM-FFO lands. The PRMP/FEIS lists the invasive, non-native plant species of concern in the BLM-FFO area (BLM 2003a).

During the site survey of the proposed project area, no federally or state-listed noxious weeds or BLM-FFO-designated invasive, non-native species of concern were identified within the proposed project area.

## *3.3.2. Impacts from the Proposed Action*

### 3.3.2.1. Direct and Indirect Impacts

Within the proposed project area, effects from invasive, non-native species would be low for the short and long term.

Increased vehicle traffic, including interstate traffic, to and within the proposed project area could result in the establishment of invasive, non-native plant species within the proposed project area. Likewise, the disturbed and/or barren surfaces created by the proposed project could increase the likelihood of invasive, non-native plant species establishment and spread. However, successful reclamation (which would utilize the BLM-FFO standard, weed-free seed mixture) and the control of weeds within the proposed project area throughout the life of the proposed project would reduce the likelihood of weed establishment.

### 3.3.2.2. Cumulative Impacts

The spatial analysis area for cumulative invasive, non-native plant species impacts is the BLM-FFO planning area. Within the BLM-FFO planning area, energy, utility, residential, and commercial development; livestock and wildlife grazing; wind; and agriculture have contributed to the introduction and spread of invasive, non-native plant species. For all actions on public lands that involve surface disturbance or rehabilitation, steps are required to prevent the introduction and spread of noxious weeds. These requirements include using weed-free seed mixtures and weed seed-free hay, mulch, and straw. In addition, the BLM-FFO mission for invasive weed management is to detect new invasive weed populations, prevent the spread of new invasive weed populations, manage existing populations, and eradicate invasive populations (BLM 2003b). Adherence to BLM-FFO stipulations reduces the introduction and spread of invasive, non-native weeds. The proposed project could contribute minimally to the potential cumulative invasive, non-native species impacts.

# 3.4. Noise

## *3.4.1. Affected Environment*

Increases in noise have the potential to affect natural resource values and management in BLM Specially Designated Areas (SDAs), such as Special Management Areas, Areas of Critical Environmental Concern, and Research Natural Areas. The BLM has designated certain areas within the BLM-FFO planning area as Noise Sensitive Areas (NSAs), which include some visitor use areas, wilderness areas, semi-private recreation areas, habitat for Threatened or Endangered species, raptor nesting/roosting sites, recreational trails, and sites where people live and work. Within NSAs, noise-control measures are either receptor or boundary focused, as determined by BLM-FFO management guidelines for each NSA.

According to NTL 04-2 FFO, for oil and gas operations that operate on a continual (greater than 8 hours per day), long-term (greater than one week in duration) basis, sound levels at designated receptors or boundaries must be less than or equal to 48.6 A-weighted decibels (dBA) over a continuous 24-hour period. The NTL 04-2 BLM-FFO sound level requirement does not apply to transient operations (e.g., construction, drilling, completion, workover activities), short-term events (e.g., venting a well, compressor start-ups), or temporary non-oil and gas sound sources. The NTL 04-2 FFO provides further detail on noise standards related to oil and gas activities (BLM 2004).

The proposed project area is not located within one mile of a residence or commercial area. The proposed project area is located within an NSA associated with the Lybrook Fossil Area SDA (BLM 2003c). Currently, noise levels within the proposed project area are relatively low.

## *3.4.2. Impacts from the Proposed Action*

### 3.4.2.1. Direct and Indirect Impacts

In the vicinity of the proposed project area, a moderate, short-term noise increase and a low, long-term noise increase would be anticipated as a result of the proposed project. Noise level thresholds within NSAs, occupied dwellings/buildings, or incorporated cities or townships would not be exceeded by the proposed project.

During the construction and drilling phases of the proposed project, sound levels would be elevated above pre-existing levels for 24 hours per day. Continual (more than eight hours per day), long-term (longer than one week) project operations would not result in an exceedance of 48.6 dBA over a continuous 24-hour period within an NSA. During the operation phase of the proposed project, noise levels would vary depending on equipment used for the proposed project. Operational noise could be produced by oil and gas equipment, such as compressors and pump jacks, and by vehicles periodically visiting the well site for maintenance activities. Noise levels associated with oil and gas activities are described above and in the PRMP/FEIS (2003a).

### 3.4.2.2. Cumulative Impacts

The spatial analysis area for cumulative noise impacts is the BLM-FFO planning area. Increases in the level of sound generated from the extraction, production, and transportation of oil and gas has occurred in the San Juan Basin over the last several decades. Noise from oil and gas compressors has been identified by the public as an issue of primary concern in the BLM-FFO area (BLM 2003a, BLM 2004). Increased sound levels are associated with oil- and gas- operation activities, including well drilling, pump jack operations, produced water injection facilities, and gas compressor facilities. These sound levels range from 71 to 89 decibels, as weighed to reflect human hearing sensitivities to particular frequencies (dBA). These sound levels are estimated at a distance of 50 feet from the noise source. Sound levels above approximately 120 decibels begin to be registered as uncomfortable to the human ear (BLM 2003a). The proposed project would contribute minimally to the overall noise cumulative impacts in the San Juan Basin.

# 3.5. Paleontology

## *3.5.1. Affected Environment*

Fossils found on BLM-managed lands are considered part of our national heritage and are afforded protection. The BLM manages fossil resources for their scientific, educational, and recreational values. On public lands, paleontological resources are managed under authorities and policies that govern the preservation of the resource. These authorities include the BLM-FFO PRMP/FEIS and ROD (BLM 2003b); OPLA-PRP; FLPMA; NEPA; BLM's Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands (Instruction Manual 2008-009); and BLM's Assessment and Mitigation of Potential Impacts to Paleontological Resources (Instruction Manual 2009-011). These authorities provide for civil and criminal penalties and also require that public lands be managed to preserve and protect the quality of the paleontological resources' scientific values.

The BLM's PFYC System is a predictive modeling tool that was developed to provide baseline guidance for assessing and mitigating paleontological resources. It is intended to be utilized at an intermediate point in analyses and should be used to assist in determining the need for further mitigation assessments or actions (BLM 2009). The PFYC System is based on the fact that occurrences of paleontological resources are often closely tied to the geologic units that contain them. This classification system does not reflect rare or isolated occurrences of significant fossils or individual localities; the system reflects the relative occurrence on a formation- or member-wide basis. However, it is recognized that local differences have to be taken into account. Under the PFYC System, geologic units are classified based on their relative abundance of vertebrate fossils or scientifically significant invertebrate/ plant fossils and their sensitivity to adverse impacts.

The proposed project area is located within the paleontologically rich area of the San Juan Basin in northwestern New Mexico. The BLM used the PFYC System to identify areas with a high potential to produce significant fossil resources (BLM 2008d). Under this system, all lands within the BLM-FFO management area were designated as Class 5 (Very High Potential) for paleontological resources. Class 5 areas require an assessment of paleontological resources at the project level (BLM 2009).

The proposed project area is located within the 25,703-acre Lybrook Fossil Area SDA. The goal of this SDA is to facilitate scientific research and protection of paleontological resources (BLM 2003a).

The proposed project area is located within the Nacimiento Formation, a geologic unit ranked as PFYC Class 5 (BLM 2008d). A project-specific assessment could be required for the proposed project.

The Nacimiento Formation is a heterogeneous, non-marine formation composed of shale, siltstone, and sandstone. This formation was deposited in floodplain, fluvial, and lacustrine settings during the early and middle Paleocene (approximately 64.5 to 61.0 million years ago). The formation outcrops very low in the section, deep in the canyons where years of erosion have exposed it.

Many fossils are known from the Nacimiento Formation. Fossils belonging to a number of different organisms have been found here, including plants (mostly dicotyledonous angiosperms), gastropods, freshwater bivalves, cartilaginous fish and bony fish, salamanders, turtles, champsosaurs, amphisbaenians, lizards, snakes, crocodilians, birds, and a variety of archaic mammals. Mammalian groups represented in the fossils include multituberculates, didelphid marsupials, insectivorans, plesiadapiforms, carnivorans, taeniodonts, mesonychids, condylarths, and cimolestans. Fauna recovered from this formation are the basis for the Puercan and Torrejonian North American Land Mammal Ages.

The proposed project would be assessed individually based on the analyses conducted for the BLM FFO PRMP/FEIS using the BLM's PFYC system, Geographic Information System-based locality data, known paleontological locality information, existing paleontological reports for the area, aerial photographs, soils maps, a site-specific paleontological survey (if required), and scientific publications for the area. If preliminary analysis indicates that the proposed project area falls within a paleontology SDA or that the proposed project has a high probability of impacting paleontological resources, additional site-specific surveys, reporting, and stipulations would be required. These stipulations could include, but are not limited to, altering the location or scope of the project, installing temporary or permanent fencing or other physical barriers, monitoring earth-disturbing construction, requiring project area reduction and/or specific construction avoidance zones, and educating employees.

## *3.5.2. Impacts from the Proposed Action*

### 3.5.2.1. Direct and Indirect Impacts

In November 2012, the BLM paleontology resources staff conducted a paleontology survey within the proposed project area. The survey resulted in no paleontological issues within the proposed project area. BLM-FFO paleontology resources stipulations, if any, will be attached to the approved ROW Grant.

Direct effects of the proposed project to fossil localities could result from ground-disturbing activities or the disturbance of the stratigraphic context in which the fossils are located. Alterations to the physical integrity of bedrock or potential fossil-yielding alluvium could occur, which could have a direct effect on unidentifiable or irretrievable fossil resources. The proposed project could also create indirect impacts to areas by changing erosion patterns. Additionally, as a result of the proposed access road, there could be an increase in accessibility to the area. Increased accessibility could result in increased human activity in the area, which could lead to looting or vandalism of paleontological resources in the areas.

### 3.5.2.2. Cumulative Impacts

The spatial analysis area for cumulative paleontological impacts is the BLM-FFO planning area. Development within the BLM-FFO planning area has the potential to impact paleontological resources directly and indirectly. Paleontological surveys and subsequent mitigation are required for projects that occur within paleontology SDAs. However, unidentified or irretrievable fossils could be directly damaged

by disturbances to bedrock or alluvium. Indirectly, development has altered erosional patterns and increased human access to fossils. These impacts are not quantifiable. The proposed project could contribute minimally to potential cumulative paleontological impacts.

# 3.6. Public Health and Safety

## *3.6.1. Affected Environment*

Worker safety is regulated under the Occupational Safety and Health Act of 1970, as amended (29 USC 651).

The proposed project area is fairly remote. The nearest town, Bloomfield (population 8112 [U.S. Census Bureau 2010]), is approximately 37.7 miles to the northeast, and U.S. Highway 550 is located approximately 1.8 areal-miles to the north. There are no designated recreation areas, commercial areas, or residential areas within one mile of the proposed project area. However, the location is accessible to the public by an existing dirt road.

The nearest hospital is San Juan Regional Medical Center in Farmington, New Mexico. This hospital is approximately 45 air miles or 56 road miles from the proposed project area.

## *3.6.2. Impacts from the Proposed Action*

### 3.6.2.1. Direct and Indirect Impacts

As a result of the proposed project, short- and long-term effects to public safety would be low.

The proposed project would affect transportation. During construction, the proposed project would result in increased traffic on area roads; some vehicles would be hauling heavy equipment. Therefore, there would be an increased potential for traffic accidents. Following construction, traffic levels would be similar to current levels; long-term effects on transportation would be low.

During construction, drilling, and maintenance activities, the operation of heavy equipment poses potential safety concerns. Existing facilities (such as oil and gas wells and pipelines) could be damaged or ruptured, posing a risk to human safety.

During the operation of the proposed well, facility failure (such as pipeline ruptures) could represent a potential danger to the public. Unauthorized individuals accessing the proposed project area could be injured by production equipment, such as pump jacks.

### 3.6.2.2. Cumulative Impacts

The general BLM-FFO region has been developed by the oil and gas industry for over six decades, which contributes to public health and safety concerns in the area.

Transportation issues are a primary safety concern. Vehicles associated with the oil and gas industry utilize the developed highway and county road systems. In addition, the oil and gas industry constructs and utilizes dirt access roads in the area. These roads, most of which are accessible by the public, are often hazardous, particularly during and following periods of inclement weather.

Additional safety concerns in the region include wildfire; oil and gas facility leakage or rupture; moving equipment (such as pump jacks); oil and gas explosions; and the handling, storage, and disposal of wastes, chemicals, or condensate.

The proposed project would contribute minimally to the cumulative public safety impacts in the region.

# 3.7. Rangeland

### 3.7.1. Affected Environment

The proposed project area is within BLM-FFO Grazing Allotment No. 5083, Largo Community. This allotment, 100 percent of which is public, includes multiple authorizations. Portions of the allotment are permitted for cattle and sheep. A total of 3040 federal animal unit months (AUMs) are provided by this 47,698-acre allotment. Therefore, there are 16.00 acres per AUM within the allotment. Within the 6.69-acre proposed project area, there are approximately 0.4 AUMs.

As discussed in Sections 3.10 (Vegetation), the vegetation community within the proposed access road is sagebrush shrubland and the vegetation community within the proposed well pad is open piñon-juniper woodland. No fences or permanent livestock water sources or improvements are located within the proposed project area.

### 3.7.2. Impacts from the Proposed Action

#### 3.7.2.1. Direct and Indirect Impacts

The proposed project would have moderate short-term effects and low long-term effects on rangeland.

The noise and human activity associated with proposed project activities could disturb livestock within or near the proposed project area. This disturbance would likely be greatest during the construction and drilling phases of the proposed project. During the production phase of the proposed project, human presence within the proposed project area would be sporadic.

The proposed project would also remove livestock forage. During the construction phase of the proposed project, all vegetation within the 6.69-acre proposed project area would be cleared; an estimated 0.4 AUM would be lost for the short term. Of this, 3.23 acre would remain as barren surface throughout the life of the well; there would be a long-term loss of less than 0.2 AUMs.

Reseed vegetation within reclaimed areas would consist of native plants species included in the BLM-FFO standard seed mixture, as well as “volunteers,” or species that are not deliberately planted. The effects of the proposed project on livestock forage would depend on the success of reclamation. It is possible that disturbed areas could become established with volunteer plant species of poor grazing quality, such as invasive, non-native plant species. However, if interim and final reclamation are successful, the proposed project could benefit livestock grazing for the long term by providing better quality forage than the forage that currently exists within the proposed project area.

#### 3.7.2.2. Cumulative Impacts

The spatial analysis area for cumulative rangeland impacts is the BLM-FFO planning area. Much of the land in the San Juan Basin is considered to be suitable for livestock grazing. Forage-damaging activities within the San Juan Basin include oil and gas development, urban and other development, OHV traffic, and grazing. According to the PRMP/FEIS, the effects of these activities on forage removal are considered minimal when compared to the acreage of available rangeland (BLM 2003a).

## 3.8. Soil

### 3.8.1. Affected Environment

Soils in the San Juan Basin were formed primarily from two kinds of parent material: alluvial sediment and sedimentary rock. The alluvial sediment is material that was deposited in river valleys and on mesas, plateaus, and ancient river terraces. This material has been mixed and sorted in transport and has a wide range of mineralogy and particle size. The parent material of sedimentary rock consists mainly of sandstone and shale bedrock. These shale and resistant sandstone beds form prominent structural benches, buttes, and mesas bounded by cliffs.

The NRCS mapped the soils in the proposed project area. Complete soil information is available in the NRCS's *Soil Survey of San Juan County, New Mexico: Eastern Part*. Within the proposed project area, one soil map unit is present, Fruitland-Persayo-Sheppard complex (hilly slopes) (NRCS 2009).

The Fruitland-Persayo-Sheppard complex (hilly slopes) is composed of 40 percent Fruitland and similar soils, 30 percent Persayo and similar soils, and 25 percent Sheppard and similar soils. Available water capacity for this soil is very low to moderate. This soil complex has a low to moderate potential for water erosion and moderate to high potential for wind erosion. The Fruitland-Persayo-Sheppard complex (hilly slopes) is generally found within sandy, shale hills, and deep sand ecological sites. The potential plant community for this soil complex is usually comprised of James' galleta (*Pleuraphis jamesii*), Indian ricegrass (*Achnatherum hymenoides*), needleandthread (*Hesperostipa comata*), New Mexico feathergrass (*Hesperostipa neomexicana*), grama (*Bouteloua* spp.), dropseed (*Sporobolus* spp.), purple threeawn (*Aristida purpurea*), sandhill muhly (*Muhlenbergia pungens*), squirreltail (*Elymus elymoides*), alkali sacaton (*Sporobolus airoides*), plains pricklypear (*Opuntia polycantha*), soaptree yucca (*Yucca elata*), Mormon tea (*Ephedra viridis*), fourwing saltbush (*Atriplex canescens*), sagebrush (*Artemisia* spp.), broom snakeweed (*Gutierrezia sarothrae*), rabbitbrush (*Chrysothamnus* spp.), piñon pine, and juniper (*Juniperus* spp.) (NRCS 2009).

The parent material of Fruitland soils primarily consists of slope alluvium from sandstone and shale. This soil is considered a well-drained soil, with the depth to water table and depth to restrictive layer being more than 80 inches. Fruitland soils are typically found along alluvial fan and stream terrace landforms (5- to 30-percent slopes) (NRCS 2009).

The parent material of Persayo soils primarily consists of residuum weathered from shale. This soil is considered a well-drained soil, with the depth to water table being more than 80 inches and depth to restrictive layer ranging from 5 to 20 inches. Persayo soils are typically found along breaks, hill, and ridge landforms (5- to 30-percent slopes) (NRCS 2009).

The parent material of Sheppard soils primarily consists of eolian deposits over mixed alluvium. This soil is considered a somewhat excessively drained soil, with the depth to water table and depth to restrictive layer being more than 80 inches.Sheppard soils are typically found along dune landforms (5- to 30-percent slopes) (NRCS 2009).

## *3.8.2. Impacts from the Proposed Action*

### 3.8.2.1. Direct and Indirect Impacts

The proposed project would result in low short- and long-term effects to soils.

New surface disturbance associated with the proposed project would be approximately 6.69 acres. Of this, approximately 3.23 acre would remain as bare, compacted surface for the life of the proposed project.

Construction activities would result in the mixing, displacement, and compaction of soils within the proposed project area. Soils within the proposed project area are classified as having low to moderate water erosion potential and moderate to high wind erosion potential (NRCS 2009). The removal of vegetation within the proposed project area could result in increased soil erosion during construction activities. Terrain within the proposed project area is flat and even. Therefore, erosion would be expected to be minor. Following construction, the compaction of soils, reclamation of portions of the proposed project area, and implementation of erosion-control measures would further limit erosional soil impacts.

### 3.8.2.2. Cumulative Impacts

Within the San Juan Basin, cumulative impacts to soils result from the total amount of short- and long-term surface disturbance. Such surface disturbance results from oil and gas development, OHV traffic, grazing, and other development activities. Soil disturbance often results in erosion and sedimentation. These impacts are reduced by the reclamation of disturbed areas, such as pipeline routes and plugged and abandoned well pads (BLM 2003a).

The spatial analysis area for cumulative soil impacts is the Chaco Watershed. There were 30 existing wells and 28,999 acres of existing well pad and road disturbance within the Chaco Watershed, as of the publication date of the PRMP/FEIS. The road density was approximately 1.7 miles per square mile. Under the RFDS for the BLM-FFO planning area, approximately 71 additional oil or gas wells and an associated 264 acres of additional, initial surface disturbance are projected in the watershed by 2023. The road density is expected to increase by less than 1 percent. Surface disturbances, especially bare soil associated with unpaved roads, can result in increased sedimentation. Actual erosion and sedimentation associated with projected oil and gas development cannot be quantified because the location of each development project is not yet known (BLM 2003a).

The proposed project would comprise approximately 1 percent of the surface disturbance acreage estimated in the RFDS. The proposed project would contribute minimally to cumulative soil impacts.

## 3.9. Special Status Species

### *3.9.1. Affected Environment*

Special status species include species listed or proposed for listing by the USFWS, as well as BLM-designated Special Status Species (BLM 2008a, BLM 2008c).

BLM-designated Special Status Species include BLM Sensitive Species and BLM-FFO Special Management Species (SMS).

In compliance with federal laws, including the FLPMA, the BLM is responsible for designating BLM Sensitive Species and implementing measures to conserve these species and their habitats. Throughout the U.S., BLM State Directors designate BLM Sensitive Species in cooperation with state fish and wildlife agencies. Sensitive species, or a distinct population segment of the species, are at risk across all or a significant portion of their range. These species are native species that depend on ecological refuge or specialized or unique habitats on BLM lands. In order for a species to be considered “Sensitive”, there must be evidence that their habitat is threatened with alteration such that the viability of the species in the area would be at risk. Additionally, management by the BLM must have the capability of significantly affecting the conservation status of the species and their associated habitat (BLM 2008a). New Mexico BLM State Directors have developed a list of BLM Sensitive Species for the State of New Mexico (BLM 2011a, BLM 2011b, BLM 2011c, BLM 2012a).

In accordance with BLM Manual 6840 and BLM-FFO policy, the BLM-FFO has prepared a list of BLM-FFO SMS (BLM 2008a, BLM 2008c). BLM-FFO SMS include some BLM Sensitive Species and other species for which the BLM-FFO has determined special management is appropriate (BLM 2008c).

Based on known range and habitat, seven BLM Special Status Species have the potential to occur within the proposed project area. These species, their habitat descriptions, and their potential to occur within the proposed project area are provided in Table 3-1.

**Table 3-1: BLM Special Status Species with Potential to Occur within Proposed Project Area**

| Species | Status | Occurrence Within BLM-FFO Region | Habitat | Potential to Occur in Proposed Project Area (PPA) |
|---|---|---|---|---|
| **BIRDS** | | | | |

**Table 3-1: BLM Special Status Species with Potential to Occur within Proposed Project Area**

| Species | Status | Occurrence Within BLM-FFO Region | Habitat | Potential to Occur in Proposed Project Area (PPA) |
|---|---|---|---|---|
| American peregrine falcon (*Falco peregrinus anatum*) | SMS | Summer/ breeding range (Sibley 2000). Known to nest in BLM-FFO (BLM 2003a). | Rugged, semi-open to wooded areas in montane regions. Areas with rocky cliffs, outcrops, and canyons that are at least 30 feet high and often near water. In New Mexico, typically nests on cliff ledges (New Mexico Partners in Flight [NMPIF] 2007, Wheeler 2003). | POSSIBLE: Though PPA is not in preferred habitat, peregrine falcons could potentially use PPA for foraging. No appropriate nesting sites available within or near PPA. The nearest recorded peregrine falcon nest is approximately 10.0 miles north-northeast of PPA (BLM 2012b). |
| Ferruginous hawk (*Buteo regalis*) | Sensitive & SMS | Year-round range (NMPIF 2007). Known to nest in BLM-FFO (BLM 2012b). | Open areas with broad expanses of prairie grassland or shrub-steppe vegetation, areas with low to moderate agricultural coverage, transitional edges between grasslands and piñon-juniper woods, sagebrush shrublands, and desert scrub (NMPIF 2007, NatureServe 2010). Nests in elevated locations on the ground (if in grasslands), in isolated tree stands, on rock outcrops/spires, or on utility poles (NMPIF 2007). | POSSIBLE: Ferruginous hawks could potentially use sagebrush shrubland within the PPA for foraging. No appropriate nesting spires available within or near PPA. The nearest recorded ferruginous hawk nest is located approximately 14.4 miles southwest of PPA (BLM 2012b). |
| Golden eagle (*Aquila chrysaetos*) | SMS | Year-round range (Sibley 2000). Known to nest in BLM-FFO (BLM 2012b). | Open to semi-open country with elevated perches, including grasslands, prairies, open woodlands, shrublands, and barren areas. Prefers hilly or montane regions. Nests on rock ledges on cliffs or in large trees (NatureServe 2010, NMPIF 2007, Wheeler 2003). | POSSIBLE: Sagebrush shrubland within the PPA provides potential foraging habitat for golden eagles. No appropriate nesting sites are available within or near PPA. The nearest recorded golden eagle nest is 14.5 miles northeast of PPA (BLM 2012b). |

**Table 3-1: BLM Special Status Species with Potential to Occur within Proposed Project Area**

| Species | Status | Occurrence Within BLM-FFO Region | Habitat | Potential to Occur in Proposed Project Area (PPA) |
|---|---|---|---|---|
| Loggerhead shrike *(Lanius ludovicianus)* | Sensitive | Year-round range (Sibley 2000). Known to occur within BLM-FFO (BLM 2011a). | In New Mexico, open country with short vegetation, including desert grasslands and shrublands, open woodlands, and juniper savannahs (BLM 2011a). | POSSIBLE: This species could potentially use the vegetation communities within PPA for nesting and/or foraging. |
| Prairie falcon (*Falco mexicanus*) | SMS | Year-round range (NMPIF 2007). Known to nest in BLM-FFO (BLM 2012b). | Arid, very open areas with short grass or scrub vegetation. Nests on cliffs at least 20 feet high. Breeding cliffs may be within semi-open to dense woodlands several miles from open foraging habitat (Wheeler 2003). | POSSIBLE: Sagebrush shrubland within the PPA provides potential foraging habitat for prairie falcons. No appropriate nesting sites are available within or near PPA. The nearest recorded prairie falcon nest is 19.4 miles northeast of PPA (BLM 2012b). |
| **MAMMALS** | | | | |
| Spotted bat (*Euderma maculatum*) | Sensitive | Known to occur within BLM-FFO (BLM 2011b). | Ponderosa pine forests, piñon-juniper woodlands adjacent to sandstone cliffs, open semi-desert shrublands. Often over streams or water holes in ponderosa or mixed conifer forests. Roost in cracks and crevices of canyons and cliffs (BLM 2011b). | POSSIBLE: Habitat within the PPA provides potential foraging habitat for spotted bats. No appropriate roost sites within or near PPA. |
| Townsend's big-eared bat (*Corynorhinus townsendii*) | Sensitive | Known to occur within BLM-FFO (BLM 2011b). | Desert scrub, desert mountains, oak-woodlands, piñon-juniper woodlands, and coniferous forests. Roost mostly in caves, mines, or abandoned buildings (BLM 2011b). | POSSIBLE: Habitat within the PPA provides potential foraging habitat for Townsend's big-eared bat. No appropriate roost sites within or near PPA. |

No sign of these BLM Special Status Species was observed during the survey of the proposed project area.

## *3.9.2. Impacts from the Proposed Action*

### 3.9.2.1. Direct and Indirect Impacts

There would be low short- and long-term effects to BLM Special Status Species as a result of the proposed project.

If the species listed in the table above do occur within the vicinity of the proposed project area, audial and visual disturbances associated with the proposed project (including construction, drilling, and reclamation) may deter these species and/or their prey from utilizing the proposed project area and the immediate vicinity for foraging. Audial and visual disturbances associated with the proposed project could also potentially deter loggerhead shrikes from nesting in the immediate area.

The proposed project would not disturb eagles or their nests. Therefore, the proposed project would comply with the Bald and Golden Eagle Protection Act (16 USC 668-668c).

The proposed project would result in the conversion of the sagebrush shrubland and open piñon-juniper woodland vegetation communities within the proposed project area. This habitat conversion could result in the removal of potential BLM Special Status Species foraging habitat. Vegetation would be cleared from 6.69 acres for the short term. For the long-term, approximately 3.23 acre would remain barren of vegetation; the remaining 3.46 acres would be converted to a reseed community (discussed in Section 3.10 [Vegetation]). Unvegetated areas could still be used for foraging by BLM Special Status Species, but would not likely be preferred over vegetated areas.

#### 3.9.2.2. Cumulative Impacts

The spatial boundary analyzed for cumulative BLM Special Status Species impacts is the BLM-FFO planning area.

Within the BLM-FFO planning area, direct impacts to nesting raptor Special Status Species on federal lands are avoided via project stipulations in the vicinity of recorded raptor Special Status Species nests. However, disturbances in the area, including oil and gas development, residential and commercial development, livestock grazing, mining, and agriculture, could result in the reduction or modification of potential raptor Special Status Species foraging habitat. Within the BLM-FFO planning area, it is estimated that by 2023, approximately 128,000 acres (or 1.5 percent of the 8,274,100-acre BLM-FFO planning area) of native vegetation would be impacted by oil and gas development (BLM 2003a). The proposed project would contribute less than 0.1 percent of the surface disturbance estimated in the PRMP/FEIS.

## 3.10. Vegetation

### *3.10.1. Affected Environment*

In the vicinity of the proposed project area, the general region is characterized by unvegetated badland hills, sagebrush shrubland flats, and piñon-juniper woodlands along gentle to steep slopes.

The vegetation community crossed by the proposed access road is sagebrush shrubland. Big sagebrush *(Artemisia tridentata*) and blue grama (*Bouteloua gracilis*) are the dominant plant species within this vegetation type. Other species include James' galleta (*Pleuraphis jamesii*), alkali sacaton (*Sporobolus airoides*), Indian ricegrass (*Achnatherum hymenoides*), goldenaster (*Heterotheca* sp.), buckwheat (*Eriogonum* spp.), many-flowered ipomopsis (*Ipomopsis multiflora*), paintbrush (*Castilleja* sp.), spiny phlox (*Phlox hoodii*), pricklypear (*Opuntia* sp.), broom snakeweed (*Gutierrezia sarothrae*), Whipple cholla (*Cylindropuntia whipplei*), narrowleaf yucca (*Yucca angustissima*), antelope bitterbrush (*Purshia tridentata*), greasewood (*Sacrobatus vermiculatus*), rubber rabbitbrush (*Ericameria nauseosa*), shadscale (*Atriplex confertifolia*), and fourwing saltbush (*Atriplex canescens*). There are also scattered piñon pine and oneseed juniper trees within this vegetation community. Ground cover (including litter) ranges from approximately 20 to 70 percent.

The vegetation community intersected by the proposed well pad is open piñon-juniper woodland. The dominant species consist of piñon pine, oneseed juniper, big sagebrush, antelope bitterbrush, and blue grama. Other species include James' galleta, Indian ricegrass, wallflower (*Erysimum_* sp.), scarlet globemallow (*Sphaeralcea coccinea*), tansyaster (*Machaeranthera_* sp.), many-flowered ipomopsis, pricklypear, narrowleaf yucca, rubber rabbitbrush, Gambel oak (*Quercus gambelii*), and Rocky Mountain

juniper (*Juniperus scopulorum*). Ground cover (including litter) ranges from approximately 50 to 65 percent.

## *3.10.2. Impacts from the Proposed Action*

### 3.10.2.1. Direct and Indirect Impacts

The proposed project is expected to have moderate short-term effects and low long-term effects on area vegetation.

The proposed project would result in the disturbance of approximately 6.69 acres of sagebrush shrubland and/or open piñon-juniper woodland. During the construction phase of the proposed project, all vegetation within the limits of the proposed project area, including approximately 160 to 170 piñon pine or juniper trees (50 percent mature, 49 percent juvenile, and 1 percent standing dead), would be cleared. Of this disturbance, approximately 3.23 acres would remain as compacted, barren surface throughout the life of the well; the remaining 3.46 acres would be reclaimed during interim reclamation. Unless needed to meet other resource needs, the barren portion of the proposed project area would be reclaimed during final interim reclamation.

During reclamation, the BLM-FFO standard, weed-free seed mixture would be utilized. The establishment of re-seed vegetation within the reclaimed area is expected to take three to five growing seasons, depending on precipitation. Re-seed vegetation would consist of plant species included in the seed mixture, as well as “volunteers,” or species that are not deliberately planted. Within reclaimed areas, it is not expected that the vegetation community would return to native conditions within 20 years (BLM 2003a).

### 3.10.2.2. Cumulative Impacts

The spatial boundary analyzed for cumulative vegetation impacts is the BLM-FFO planning area. Great Basin Desert Scrub (which includes sagebrush shrubland) comprises approximately 435,500 acres, or 31 percent, of the BLM-FFO planning area. Piñon-juniper woodland comprises approximately 633,400 acres, or 45 percent, of the BLM-FFO planning area (BLM 2003a).

Within the BLM-FFO planning area, disturbances to native vegetation include oil and gas development, residential and commercial development, OHV traffic, livestock grazing, mining, agriculture, and vegetative treatments. Although many permitted disturbances, such as oil and gas development, include re-seeding activities associated within interim or final reclamation, it is not expected that native vegetation would recover in reclaimed areas within a 20-year period; therefore, re-seeded areas are included in calculations of long-term vegetative disturbance.

Within the BLM-FFO planning area, it is estimated that by 2023, approximately 128,000 acres (or 1.5 percent of the 8,274,100-acre planning area) of native vegetation would be impacted by oil and gas development. Data regarding current and projected acreage disturbance within each BLM-FFO vegetation community type is not available; however, piñon-juniper woodlands and Great Basin desert scrub vegetation types would be the plant communities most impacted by this development (BLM 2003a). The proposed project would contribute less than 0.1 percent of the cumulative native vegetation disturbance estimated in the PRMP/FEIS.

# 3.11. Visual Resources

## *3.11.1. Affected Environment*

The BLM classifies visual resources using a Visual Resource Inventory (VRI), which consists of scenic quality, sensitivity, and distance zone. In 2009, a new VRI was completed for the BLM-FFO area. There

are four VRI classes (Classes I through IV) which identify the relative value of the visual resources. Class I is the most valued, while Class IV is of least value (BLM 1986).

The BLM has developed a Visual Resource Management (VRM) classification system designed to maintain or enhance visual qualities and describe the different degrees of modification allowed in the landscape. There are four VRM classes (Classes I through IV) which identify suggested degrees of allowed human modification in a landscape. Class I allows the least modification and Class IV allows the most (BLM 2003a).

The proposed project area is within 2003 VRM Class IV. Class IV allows for major modifications of the characteristic landscape and the level of change in the basic landscape elements due to management activities to be high (BLM 2003a).

The proposed project area is located within 2009 VRI Class IV. The proposed project area is located on flat, even terrain. There are sagebrush shrublands and open juniper woodlands in the surrounding area. The elevation is approximately 6858 feet above mean sea level. The vegetation community consists of sagebrush shrubland and open piñon-juniper woodland. Natural colors and contrast in the landscape include a spectrum of greens and browns. Land use in the area generally consists of oil and gas production and permitted livestock grazing.

Due to terrain and location, the proposed project area is not visible from residences, designated recreation areas, or commercial areas.

### *3.11.2. Impacts from the Proposed Action*

#### 3.11.2.1. Direct and Indirect Impacts

The proposed project would result in moderate short-term and long-term effects to visual resources.

Construction activities, which would cause increased dust, traffic, equipment, and human presence and activity, would result in moderate, short-term impacts to visual resources within the immediate vicinity of the proposed project area. The proposed project would also result in moderate, short-term impacts to visual resources due to the removal of 6.69 acres of vegetation.

There would be moderate, long-term impacts to visual resources due to the conversion of sagebrush shrubland and/or open piñon-juniper woodland to barren surface (3.23 acre) and a reseed community (3.46 acres). This conversion would result in an alteration in the texture and color of the ground and a reduction in the roughness and complexity of the surface. Additionally, well facilities would be visible on the proposed well pad, creating possible color contrasts, a change in the texture of the landscape due to the smooth surface of tanks, and a break in the horizontal landscape plane.

#### 3.11.2.2. Cumulative Impacts

On all BLM-FFO lands, the VRM classification system provides the visual management standards for the design, development, and rehabilitation of projects. Visual design standards are incorporated into all surface-disturbing projects (BLM 2003a).

The spatial boundary analyzed for cumulative visual resources impacts includes the general U.S. Highway 550 travel corridor in which the proposed project area is located. The proposed well and associated facilities would not be visible to individuals travelling along U.S. Highway 550. Existing visual disturbances in this general area include highway disturbances, other oil and gas well pads, dirt and/or gravel access roads and county roads, and utility corridors. As oil and gas development increases in the BLM-FFO region, it is possible that more development could occur within the travel corridor in the foreseeable future. The proposed project would contribute to the cumulative visual resources impacts within the local viewshed.

## 3.12. Water Resources – Surface Water and Groundwater

## 3.12.1. Affected Environment

The proposed project area is within the Chaco Watershed (BLM 2003a, USGS 2009). Watersheds found within the BLM-FFO region are discussed in detail in the PRMP/FEIS (2003a).

Water quality of perennial streams in the BLM-FFO area varies. In general, water quality of ephemeral washes is very poor due to the highly erosive and saline soils, sparse vegetative cover, and rapid runoff conditions that are characteristic of the BLM-FFO area (2003a).

The proposed well pad is located within a hilly area comprised of moderate to steep slopes that are sloping to the west-southwest. Two ephemeral, erosional, head-cut drainages and several small associated erosional drainages are located within the proposed well pad. Within the proposed well pad, vegetative ground cover ranges from 50 to 65 percent. This ground cover helps to prevent soil erosion in the proposed project area, thereby reducing the amount of sedimentation flowing into drainages during wind and precipitation events.

The proposed access road is located along gently rolling hills sloping to the south-southeast. The proposed access road would cross four ephemeral drainages. Along the proposed access road, vegetative ground cover ranges from 20 to 70 percent. This ground cover helps to prevent soil erosion in the proposed project area, thereby reducing the amount of sedimentation flowing into drainages during wind and precipitation events.

Drainage from the proposed project area flows from an unnamed ephemeral watercourse to Betonnie Tsosie Wash (ephemeral), approximately 4.7 miles southwest of the proposed project. From this point, Betonnie Tsosie Wash flows southwestward for approximately 11.5 miles before draining into Escavado Wash.

Under Section 404 of the CWA, the USACE has jurisdiction over “Waters of the U.S.” These waters are considered jurisdictional because they have a “significant nexus” to traditional navigable waters. Determining jurisdiction and/or a significant nexus can be a time-consuming process; therefore, the BLM-FFO assumes that the USACE has jurisdiction over any USGS watercourse (any “blue line” on USGS 1:24,000 topographic maps). As discussed above, the proposed access road would cross one ephemeral, USGS watercourse over which the USACE is assumed to have jurisdiction (Appendix C, Photograph 6).

## 3.12.2. Impacts from the Proposed Action

### 3.12.2.1. Direct and Indirect Impacts

Low short- and long-term effects to surface waters would be expected as a result of the proposed project.

Potential direct effects to surface water quality could occur as a result of accidental contamination associated with spilled fluids, such as fuel, lubricants, and drilling fluids.

For the short term, the proposed project would result in soil disturbance and the clearing of 6.69 acres of vegetation. For the long term, the proposed project would result in the conversion of 3.23 acres of vegetated surface to barren surface. The exposure of soils would result in augmented surface flows and an increased likelihood of wind and water erosion within the proposed project area. Erosion would most likely occur during and after precipitation events. Erosion could subsequently result in increased sedimentation of washes downstream of the proposed project area. Additionally, the alteration of drainage patterns within the proposed project area could result in increased or decreased sedimentation. Erosion is expected to be minor.

The proposed access road would cross a watercourse over which the USACE is assumed to have jurisdiction. As proposed, the proposed access road would be permitted under Nationwide Permit No. 14 for Linear Transportation Projects.

#### 3.12.2.2. Cumulative Impacts

As discussed in the PRMP/FEIS, the primary cumulative impacts on water quality in the BLM-FFO planning area are due to surface disturbances associated with oil and gas development and urban expansion, which can cause increased sedimentation into drainages. Cross-country OHV traffic, overgrazing, and vegetation management on non-public lands could also contribute to increased sedimentation (BLM 2003a).

The spatial boundary analyzed for cumulative water resources impacts is the Chaco Watershed. There were 30 existing wells and 28,999 acres of existing well pad and road disturbance within the Chaco Watershed, as of the publication date of the PRMP/FEIS. The road density was approximately 1.7 miles per square mile. Under the RFDS for the BLM-FFO planning area, approximately 71 additional oil or gas wells and an associated 264 acres of additional, initial surface disturbance are projected in the watershed by 2023. The road density is expected to increase by less than 1 percent. Surface disturbances, especially bare soil associated with unpaved roads, can result in increased sediment yields into drainages. Actual sediment yields associated with projected oil and gas development cannot be quantified because the location of each development project is not yet known (BLM 2003a).

The proposed project would comprise approximately 1 percent of the surface disturbance acreage estimated in the RFDS. The proposed project would contribute minimally to cumulative water resources impacts.

# 3.13. Wildlife

## *3.13.1. Affected Environment*

The objectives of the BLM wildlife management program are to “ensure optimum populations and a natural abundance and diversity of fish and wildlife values by restoring, maintaining, and enhancing habitat conditions for consumptive and non-consumptive uses” (BLM 2003a). The sagebrush shrubland open piñon-juniper woodland found within the proposed project area provides habitat for a variety of vertebrate and invertebrate species.

The following wildlife species and/or their signs were recorded during the November 2012 site survey of the proposed project area: canine tracks, small rodent burrows, slate-colored juncos (*Junco hyemalis*), mountain bluebird (*Sialia currucoides*), piñon jay (*Gymnorhinus cyanocephalus*), western scrub-jay (*Aphelocoma californica*), American robin (*Turdus migratorius*), American crow (*Corvus brachyrhynchos*), coyote (*Canis latrans*) scat.

#### 3.13.1.1 Mammals

The proposed project area is found within the east-northeas portion of the BLM-FFO management area, the portion of the BLM-FFO where mule deer *(Odocoileus hemionus)* and elk *(Cervus elaphus)* are most often found. The piñon-juniper woodland and Great Basin desert scrub plant communities in this portion of the BLM-FFO management area provide habitat for these species; the habitat within the proposed project area would likewise provide big game habitat. Much of the U.S. National Forest land that is located within the northeastern portion of the BLM-FFO management area is managed as year-long big game habitat and critical wintering habitat. Several BLM-designated SDAs in this portion of the BLM-FFO management area are also managed to protect mule deer and elk habitat (BLM 2003a). No downward trend is apparent for elk or deer populations in this area (Ramakka 2007).

As stated above, canine tracks, coyote scat, and small rodent burrows were identified during the site survey of the proposed project area. The nearest recorded prairie dog (*Cynomys leucurus*) colony is 10.8 miles to the northwest of the proposed project area; no sign of prairie dogs was recorded during the site survey.

#### 3.13.1.2 Migratory Birds

Under the Migratory Bird Treaty Act (MBTA, 16 USC 703-712), it is unlawful to take, kill, or possess migratory birds. EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies to act to further implement the MBTA. A National Memorandum of Understanding (MOU) between the BLM and the USFWS was signed on April 12, 2010. Included in the MOU is the stipulation that the BLM evaluate effects of projects on migratory birds. The BLM should first identify where take may have a measurable negative effect on populations, focusing first on priority habitats, species of concern, and key risk factors. The BLM should then implement approaches to lessen such take.

NMPIF has divided New Mexico's habitat types into three priority levels: Priority A (highest), Priority B (high), and Priority C (moderate to low). These priority levels are based on importance to birds, degree of threat, and opportunities for habitat protection. Great Basin Shrub, the habitat type found along the proposed access road, is ranked as Priority B with high conservation potential. Piñon-juniper woodland, the habitat type found within the proposed well pad, is ranged as Priority A with moderate conservation potential (NMPIF 2007).

NMPIF has composed a list of "priority" migratory bird species in need of conservation action or monitoring in New Mexico (NMPIF 2007). The USFWS has developed a list of Birds of Conservation Concern within the U.S (USFWS 2008). Using these lists as a guide, the BLM-FFO has developed a list of 13 "migratory bird species of concern" that regularly occur within the BLM-FFO management area and that could be impacted by projects in the area (Kendall 2012).

The BLM-FFO migratory bird species of concern that could occur within the proposed project area include the following (BLM 2003a, NatureServe 2010, NMPIF 2007, Sibley 2000):

- Ash-throated flycatcher (*Myiarchus cinerascens*),
- Bendire's thrasher *(Toxostoma bendirei)*,
- Black-throated gray warbler (*Dendroica nigrescens*),
- Black-throated sparrow *(Amphispiza bilineata)*,
- Cassin's kingbird (*Tyrannus vociferans*),
- Gray flycatcher (*Empidonax wrightii*),
- Gray vireo (*Vireo vicinior*),
- Juniper titmouse (*Baeolophus ridgwayi*),
- Loggerhead shrike *(Lanius ludovicianus)*,
- Piñon jay,
- Sage sparrow *(Amphispiza belli)*, and
- Sage thrasher *(Oreoscoptes montanus)*.

Aside from these species of concern, many additional migratory bird species could potentially utilize the proposed project area for nesting or foraging.

## *3.13.2. Impacts from the Proposed Action*

#### 3.13.2.1. Direct and Indirect Impacts

There would be moderate short- and long-term effects to wildlife expected as a result of the proposed project.

There are no published studies of effects of oil and gas development on deer or elk in the San Juan Basin. Recent research in other areas may or may not be applicable. Sawyer, et al. (2006) examined mule deer winter habitat selection before and during development of a natural gas field in the sagebrush and sagebrush-grassland communities of the Pinedale Anticline Action area of Wyoming. This study showed mule deer avoiding otherwise suitable habitat within 2.3 miles of natural gas wells, suggesting substantial indirect habitat loss from energy development. Observed shifts in deer distribution as the study progressed were toward less-preferred and presumably less-suitable habitats. This study was conducted in an area of extensive rolling sagebrush with little topographic relief, high deer populations,

and little oil and gas development (Sawyer, et al 2006). The high level of existing development in the BLM-FFO, as well as the more diverse habitat types and broken topography available in the BLM-FFO, make assumptions of similar impacts in this area difficult. The BLM-FFO management area contains approximately 633,000 acres of piñon-juniper habitat, which may offer greater cover and seclusion for wintering wildlife than in the aforementioned study (BLM 2003a).

It is difficult to predict the effects of the proposed project on migratory birds. The increased activity, noise, and disturbed vegetation associated with the proposed project could result in the increased usage of the immediate area by some migratory bird species, while decreasing usage by other species. Studies have shown mixed impacts of oil and gas development on nesting migratory birds. According to a study by Ortega and Francis (2007), the presence of oil and gas compressors affected bird species differently; however, there was no difference in overall nest density on plots with and without compressors. A study by Holmes and King (2006) found that the sage sparrow had lower nest survival in an area with ongoing gas development; however, the Brewer's sparrow had higher nest survival rates in a developed gas field when compared with populations in an undeveloped control area.

During construction, small mammals, reptiles, and insects could be killed as vegetation is crushed and mulched/mowed and as burrows are destroyed.

Temporarily, audial and visual disturbances associated with the proposed project (including construction, drilling, and reclamation) may deter additional wildlife and/or their prey from utilizing the proposed project area and the immediate vicinity. If these activities were to occur during migratory bird breeding season, it is possible that noise and activity could result in nests adjacent to the proposed project area being abandoned.

For the long term, disturbances associated with the proposed project would include occasional human and vehicle presence. In addition, well equipment could cause increased noise levels in the vicinity. These disturbances could deter wildlife from using the immediate area. An increase in vehicle traffic to the location would increase the likelihood of wildlife being hit and killed.

The proposed project would result in the conversion of 6.69 acres of habitat to a reseed community (3.46 acres) and barren surface (3.23 acres). Additionally, the proposed 3984-foot-long access road would create habitat fragmentation. This habitat conversion could result in the removal of habitat for some wildlife and the creation of habitat for other wildlife.

#### 3.13.2.2. Cumulative Impacts

Within the San Juan Basin, cumulative impacts to wildlife result from vegetation disturbance and from activities that produce visual and audial disturbances. Such disturbance results from oil and gas development, OHV traffic, road traffic, grazing, and other development activities.

The spatial boundary analyzed for cumulative water resources impacts is the Chaco Watershed. There were 30 existing wells and 28,999 acres of existing well pad and road disturbance within the Chaco Watershed, as of the publication date of the PRMP/FEIS. The road density was approximately 1.7 miles per square mile. Under the RFDS for the BLM-FFO planning area, approximately 71 additional oil or gas wells and an associated 264 acres of additional, initial surface disturbance are projected in the watershed by 2023. The road density is expected to increase by less than 1 percent. Although many permitted disturbances, such as oil and gas development, include re-seeding activities associated within interim or final reclamation, it is not expected that native vegetation would recover in reclaimed areas within a 20-year period; therefore, re-seeded areas are included in calculations of long-term vegetative disturbance (BLM 2003a). This development and associated activities create audial and visual disturbances, long-term habitat loss, and habitat fragmentation for wildlife. The proposed project would comprise approximately 1 percent of the projected surface disturbance acreage estimated in the RFDS and would increase the road density within a one-mile radius by less than 1 percent.

Habitat loss and fragmentation likely reduce the carrying capacity for wildlife, although the exact level of reduction cannot be quantified. Roads, and the human activities associated with them, can disrupt wildlife, including amphibians, reptiles, small and large mammals, birds, and ungulates (BLM 2003a).

# 4. SUPPORTING INFORMATION

## 4.1. Tribes, Individuals, Organizations, or Agencies Consulted

The following tribes, individuals, organizations, and/or agencies were consulted during the development of this EA:

- Larry Higgins, Permit Supervisor, WPX
- Ben Mitchell, Regulatory Specialist, WPX
- Steve Fuller, LAC

## 4.2. List of Preparers

This EA was prepared by Nelson Consulting, Inc. (NCI) in conformance with the standards of and under the direction of the BLM-FFO. The following individuals assisted in the preparation of this EA:

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- David Johnson, Senior Environmental Scientist, NCI
- Amanda Nisula, Planning and Environmental Coordinator, BLM-FFO
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- James Copeland, Archaeologist, BLM-FFO
- Michael Dussinger, Archaeologist, BLM-FFO
- John Kendall, Wildlife Management Biologist, BLM-FFO
- John Hansen, Wildlife Biologist, BLM-FFO
- Sheila Williams, District Botanist BLM-FDO
- Sherrie Landon, Paleontologist, BLM-FFO
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- Jeff Tafoya, Rangeland Management Specialist, BLM-FFO
- Stanley Dykes, Natural Resource Specialist, BLM-FFO
- Roger Herrera, Environmental Protection Specialist, BLM-FFO

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## 4.4. Appendices

## Appendix A - Maps

**Figure 1: Vicinity Map**

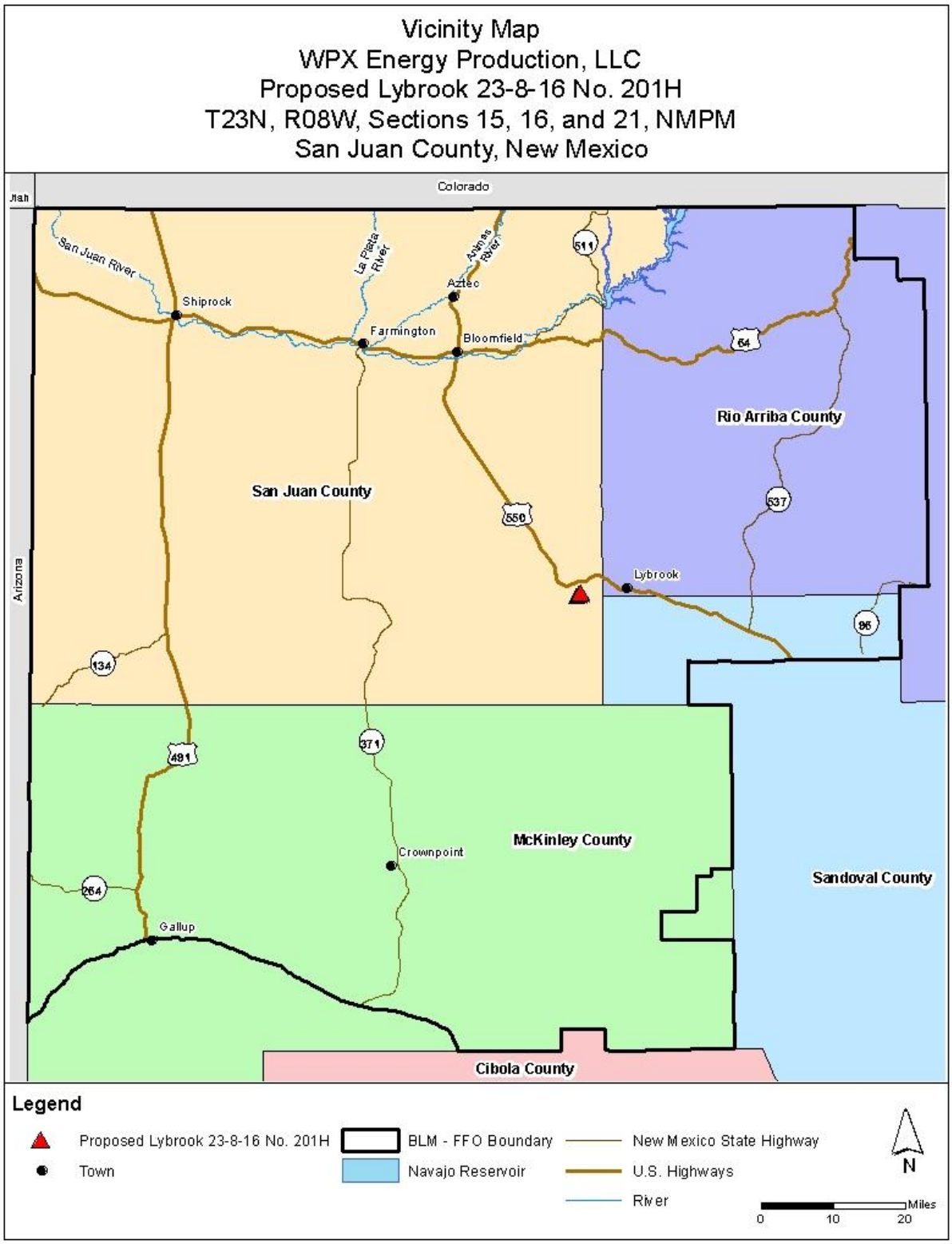


**Figure 2: Topographic Map**

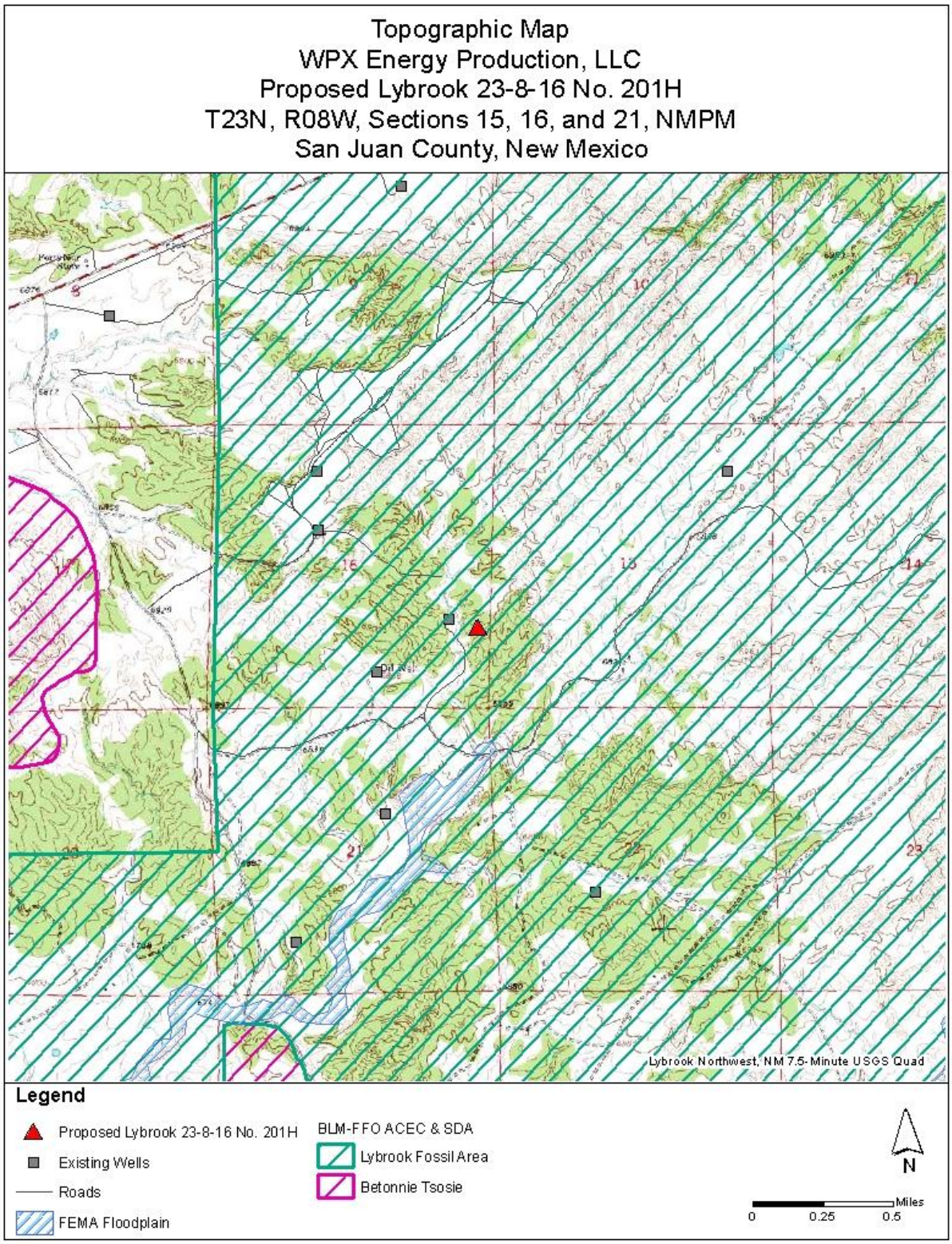


**Figure 3: Land Ownership Map**

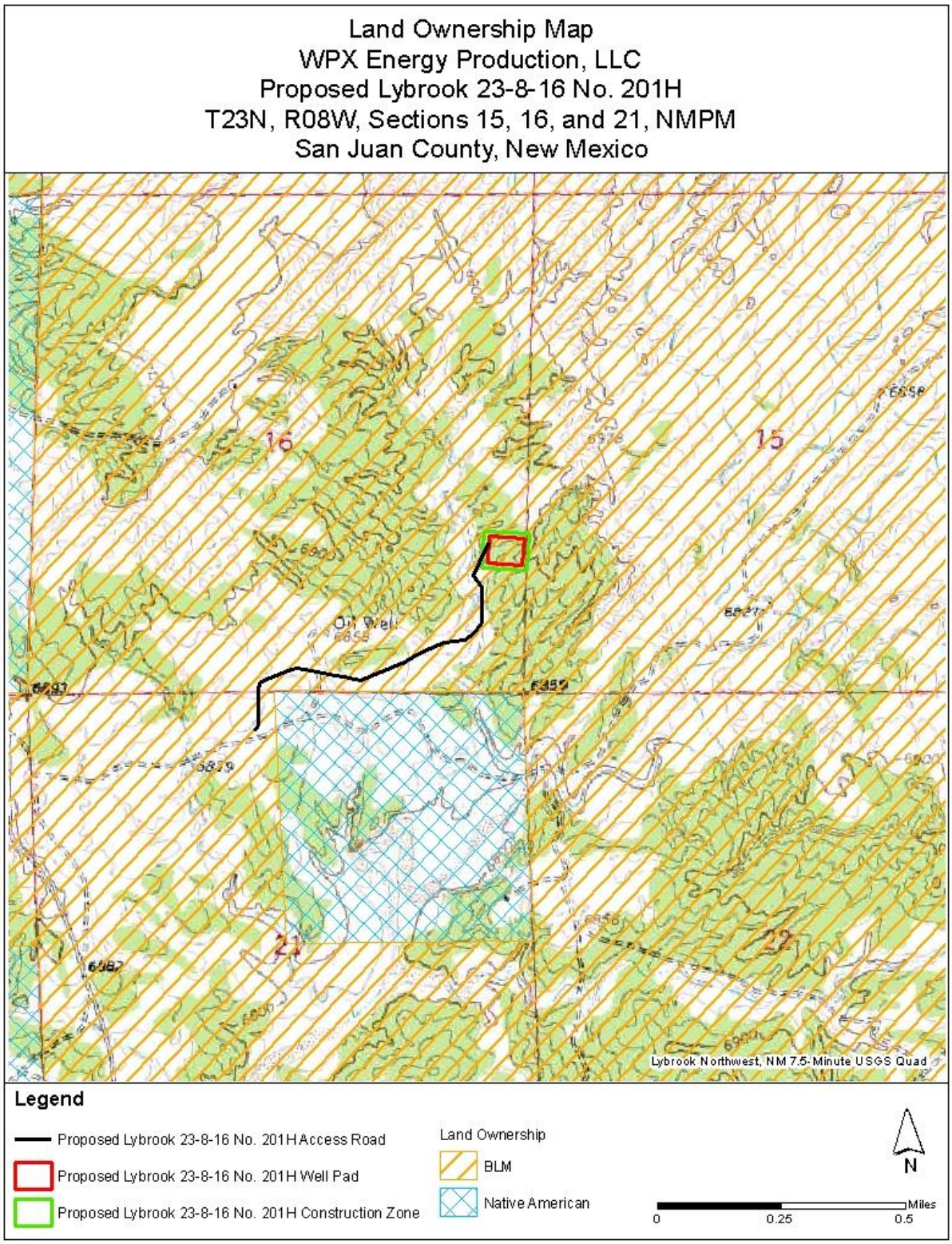


**Figure 4: Aerial Map**

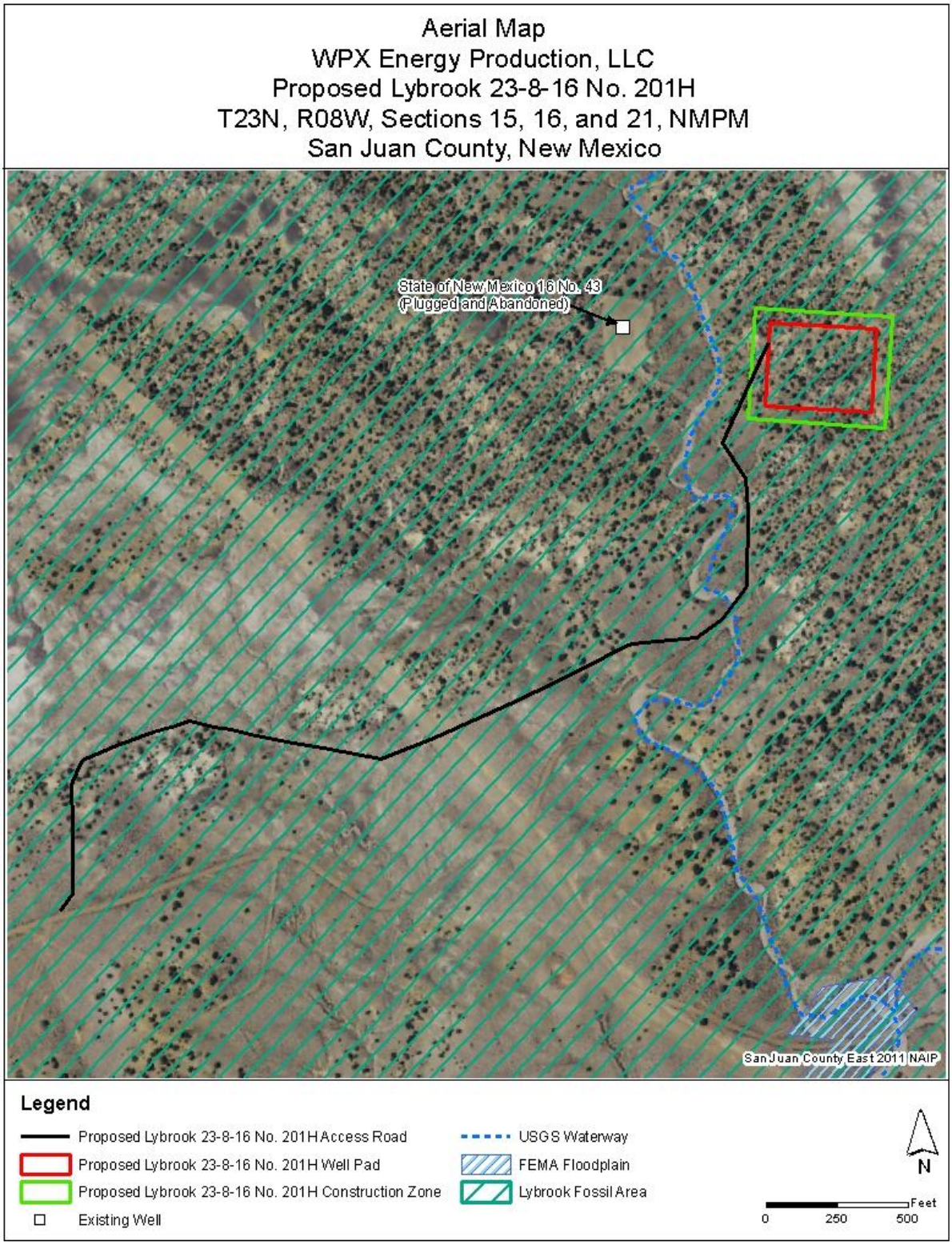
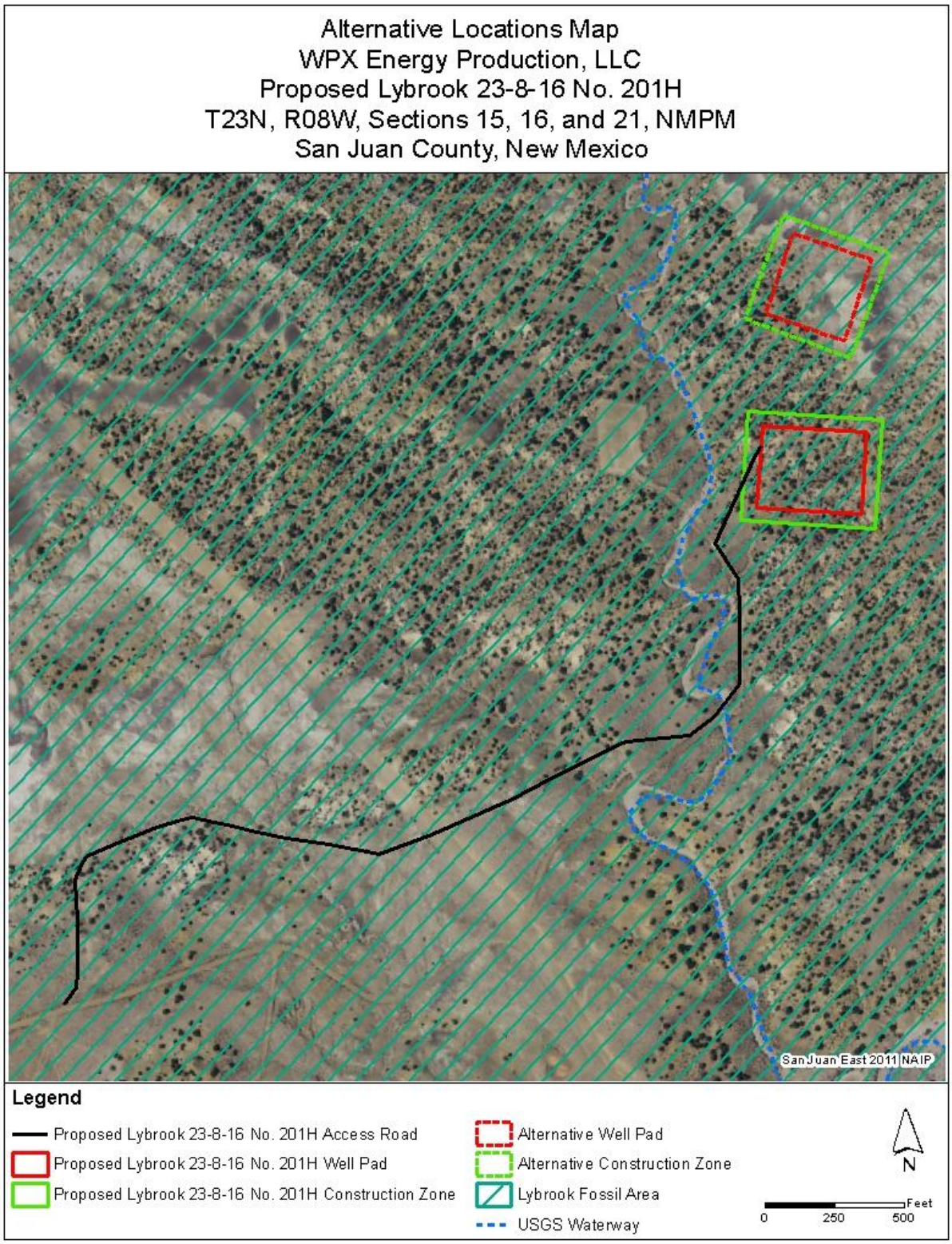


**Figure 5: Alternative Map**



## Appendix B – Plats

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

*State of New Mexico*
***Energy, Minerals & Natural Resources Department***

*OIL CONSERVATION DIVISION*
*1220 South St. Francis Drive*
*Santa Fe, NM 87505*

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| | 42289 | LYBROOK GALLUP |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| | LYBROOK 23-8-16 | 201H |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 120782 | WPX ENERGY PRODUCTION, LLC | 6858' |

[10] Surface Location

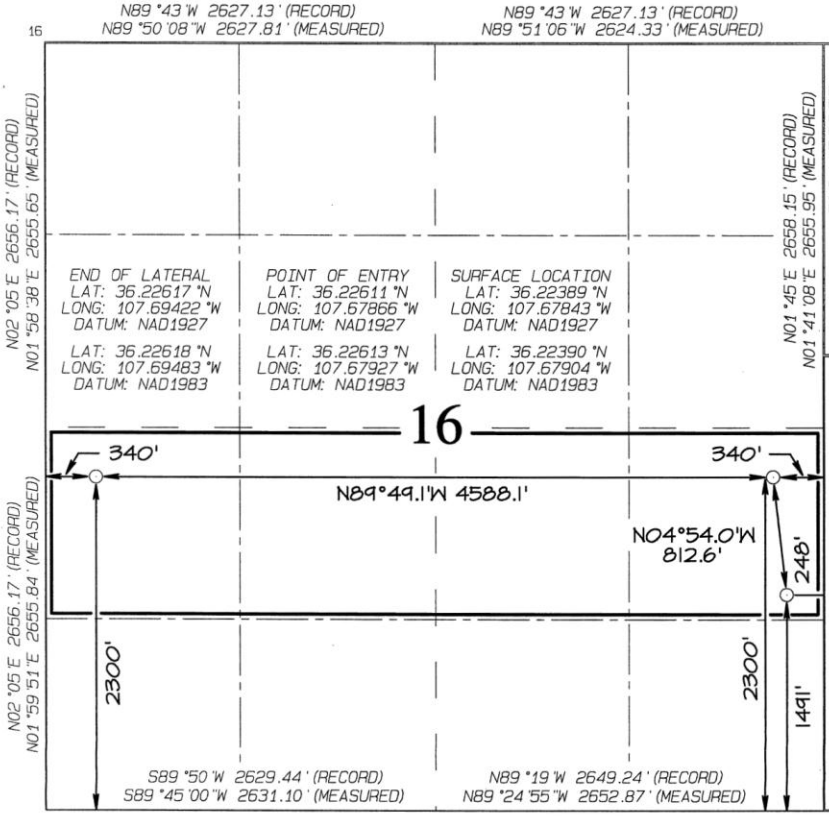
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| I | 16 | 23N | 8W | | 1491 | SOUTH | 248 | EAST | SAN JUAN |

[11] Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| L | 16 | 23N | 8W | | 2300 | SOUTH | 340 | WEST | SAN JUAN |

| [12] Dedicated Acres | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|
| 160.0 Acres - (N/2 S/2) | | | |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION




[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

E-mail Address

[18] SURVEYOR CERTIFICATION

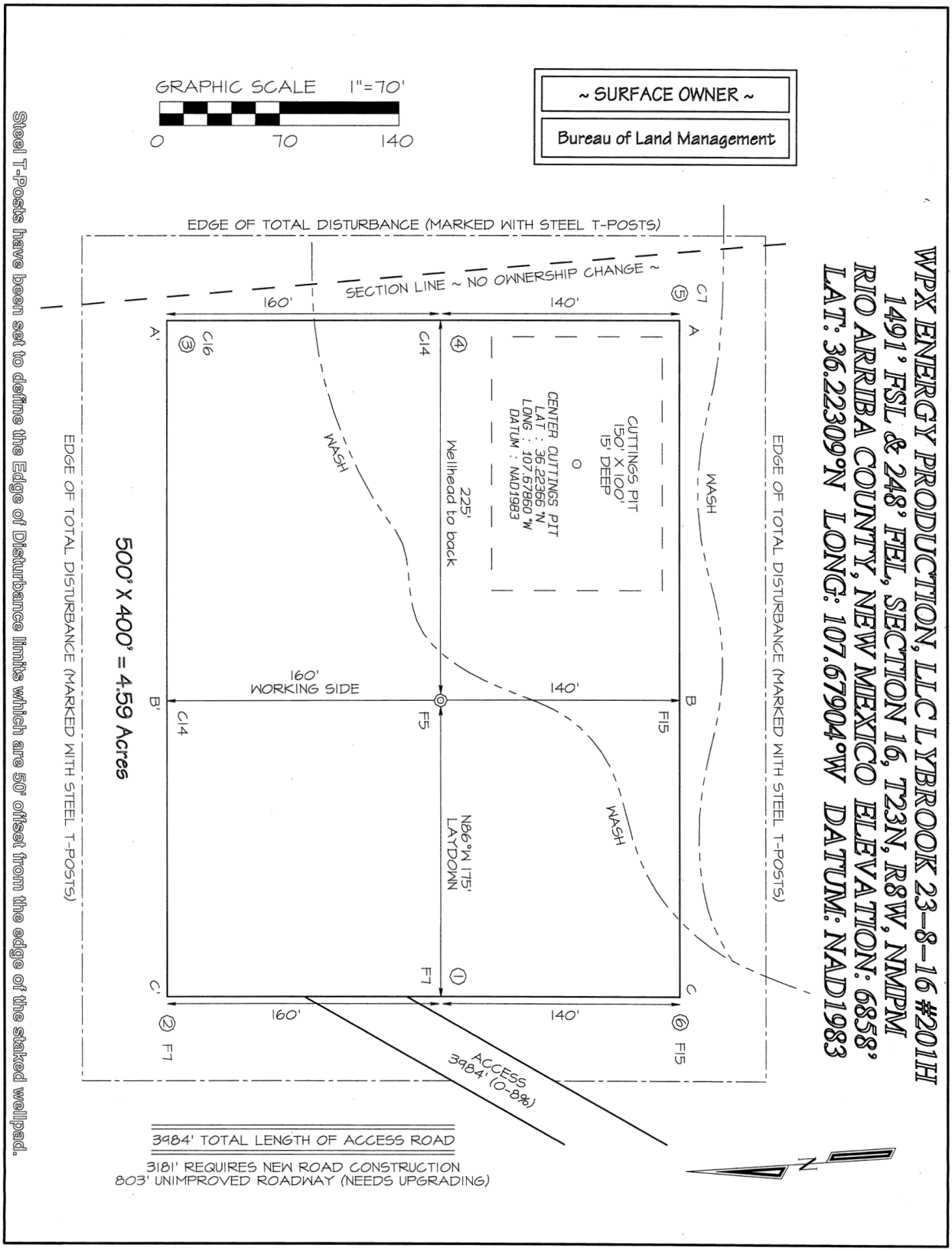
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Survey Date: NOVEMBER 2, 2012

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

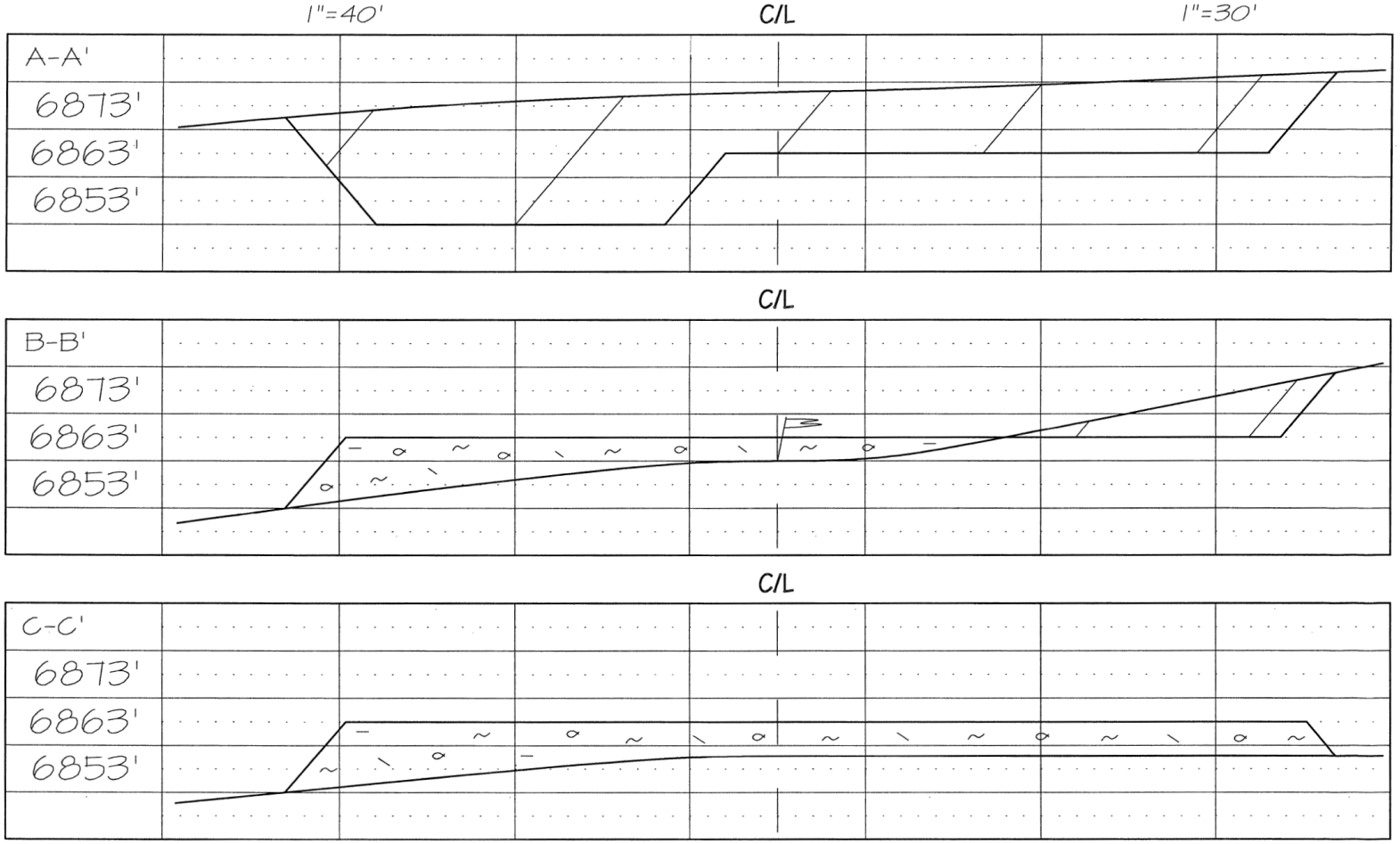
JASON C. EDWARDS
Certificate Number 15269


WPX ENERGY PRODUCTION, LLC LYBROOK 23-8-16 #201H
1491' FSL & 248' FEL, SECTION 16, T23N, R8W, NMPM
RIO ARRIBA COUNTY, NEW MEXICO ELEVATION: 6858'
LAT: 36.22309°N LONG: 107.67904°W DATUM: NAD1983
~ SURFACE OWNER ~
Bureau of Land Management
GRAPHIC SCALE 1"=70'
0 70 140
EDGE OF TOTAL DISTURBANCE (MARKED WITH STEEL T-POSTS)
SECTION LINE ~ NO OWNERSHIP CHANGE ~
160'
140'
C7
A
WASH
CUTTINGS PIT
150' X 100'
15' DEEP
CENTER CUTTINGS PIT
LAT : 36.22366 °N
LONG : 107.67860 °W
DATUM : NAD1983
225'
Wellhead to back
C14
C16
A'
B
B'
C
C'
F15
F5
F7
160'
WORKING SIDE
140'
N86°W 175'
LAYDOWN
500' X 400' = 4.59 Acres
ACCESS
3984' (0-8%)
3984' TOTAL LENGTH OF ACCESS ROAD
3181' REQUIRES NEW ROAD CONSTRUCTION
803' UNIMPROVED ROADWAY (NEEDS UPGRADING)
N
Steel T-Posts have been set to define the Edge of Disturbance limits which are 50' offset from the edge of the staked wellpad.

# WPX ENERGY PRODUCTION, LLC LYBROOK 23–8–16 #201H
## 1491' FSL & 248' FEL, SECTION 16, T23N, R8W, NMPM
## SAN JUAN COUNTY, NEW MEXICO ELEVATION: 6858'

HORIZONTAL SCALE
1"=40'

VERTICAL SCALE
1"=30'

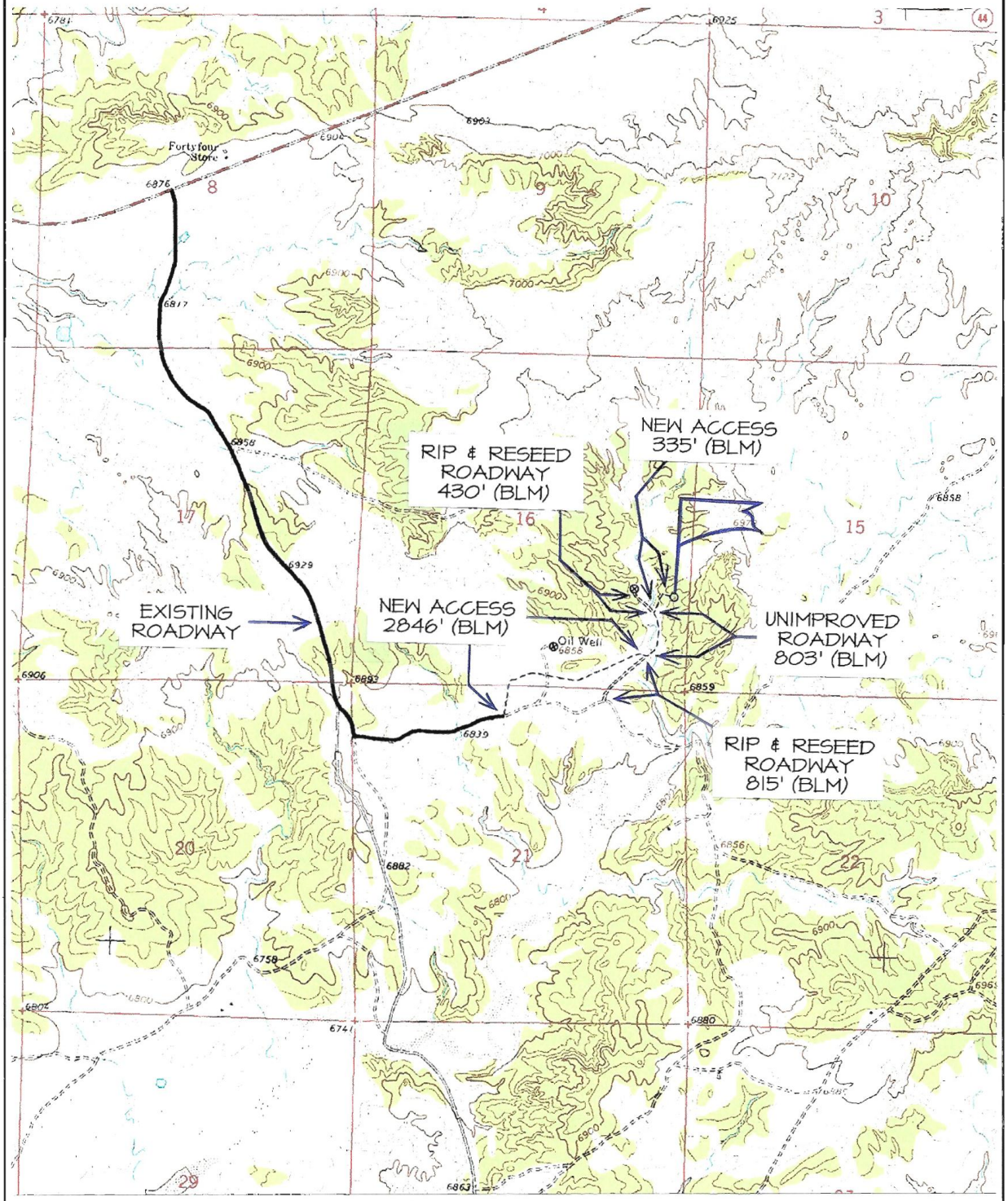



NCE SURVEYS IS NOT LIABLE FOR LOCATION OF UNDERGROUND UTILITIES OR PIPELINES.

CONTRACTOR SHOULD CONTACT ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED UNDERGROUND UTILITIES OR PIPELINES ON WELLPAD AND/OR ACCESS ROAD AT LEAST TWO WORKING DAYS PRIOR TO CONSTRUCTION.

WPX ENERGY PRODUCTION, LLC LYBROOK 23-8-16 #201H

1491' FSL & 248' FEL, SECTION 16, T23N, R8W, N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO




NAME OF TOPO : LYBROOK NW ⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

## Appendix C - Photographs

Photograph 1: Start of proposed access road (western terminus of access road).
View to the north-northeast.

Photograph 2: View of proposed well head to the north.

Photograph 3: View of proposed well head to the west.

Photograph 4: View of proposed well head to the south.

Photograph 5: View of proposed well head to the east.

Photograph 6: View looking south of the ephemeral, USGS watercourse at the proposed road crossing.