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San Juan 28-7 Unit 216N

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1.0 Introduction

1.1 Background

A representative of ConocoPhillips Company (Conoco) filed an Application for a Permit to Drill (APD) with the Bureau of Land Management (BLM), Farmington Field Office (FFO) for the San Juan 28-7 Unit 216N oil and gas well. Conoco is proposing to directionally drill and develop federal minerals in the Blanco Mesaverde/Basin Dakota/Basin Mancos pools. The proposed project is located in the NESE1/4 of Section 8, Township 27N, Range 7W, in Rio Arriba County, New Mexico.

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan Final Environmental Impact Statement (PRMP/FEIS). This project Environmental Assessment (EA) addresses site-specific resources and/or impacts that are not specifically covered within the PRMP/FEIS, as required by the National Environmental Policy Act of 1969 (NEPA), as amended (Public Law 91-90, 42 U.S.C. 4321 et seq.).

1.2 Purpose and Need

The purpose for the proposal is to provide Conoco with reasonable access to their mineral lease. The need for the action is established by the BLM's responsibility under the Mineral Leasing Act to respond to the Application for Permit to Drill (APD). The Mineral Leasing Act of 1920 (MLA), as amended [30 USC 181 et seq.], authorizes the BLM to issue oil and gas leases for the exploration of oil and gas and permit the development of those leases.

1.3 Conformance with Applicable Land Use Plan and Other Environmental Assessments

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this site-specific environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan/Final Environmental Impact Statement [(PRMP/FEIS) BLM 2003a]. This action is in conformance with the September 2003 Farmington Resource Management Plan with Record of Decision, as updated in December 2003 (RMP; BLM 2003b). The PRMP/FEIS and RMP are available for review at the BLM Farmington Field Office, 6251 College Blvd., Farmington, NM, or electronically at:

http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office.html.

This EA addresses the resources and impacts on a site-specific basis as required by NEPA. The proposed project would not be in conflict with any local, county, or state plans.

1.4 Federal, State or Local Permits, Licenses or Other Consultation Requirements

1.4.1 Clean Water Act of 1977

Recognizing the potential for the continued or accelerated degradation of the nation's waters, the U.S. Congress enacted the Clean Water Act, formerly known as the Federal Water Pollution Control Act (33 U.S.C. 1344). The objective of the Act is to maintain and restore the chemical, physical, and biological integrity of the waters of the United States.

Under Section 402 of the Act (as amended), the U.S. Environmental Protection Agency (EPA), was directed to develop a phased approach to regulate storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. Industrial activities disturbing land may require permit coverage through a NPDES storm water discharge. Depending on the acreage disturbed, either a Phase I industrial activity (five or more acres disturbance) or a Phase II small construction activities (between one

and five acres disturbance) permit may be required. However, gas and oil activities have been exempt from NPDES permitting regulations in New Mexico.

Section 404 of the Act authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into the waters of the United States, including wetlands. It would be the proponent's responsibility to obtain all necessary permits prior to project implementation.

1.4.2 Endangered Species Act of 1973

The Endangered Species Act (ESA) of 1973 requires all federal departments and agencies to conserve threatened, endangered, and critical and sensitive species and the habitats on which they depend, and to consult with the U.S. Fish and Wildlife Service (USFWS) on all actions authorized, funded, or carried out by the agency to ensure that the action will not likely jeopardize the continued existence of any threatened and endangered species or adversely modify critical habitat. Consultation with the USFWS, as required by Section 7 of the ESA, was conducted as part of the Farmington PRMP/FEIS (Consultation No. 2-22-01-I-389) to address cumulative effects of RMP implementation. The consultation is summarized in Appendix M of the PRMP/FEIS. Farmington Field Office staff reviewed the action alternatives and determined they would be in compliance with threatened and endangered species management guidelines outlined in the September 2002 Biological Assessment (Consultation No. 2-22-01-I-389). No further consultation with the U.S. Fish and Wildlife Service is required.

1.4.3 National Historic Preservation Act of 1966

Compliance with Section 106 responsibilities of the National Historic Preservation Act are adhered to by following the BLM – New Mexico SHPO protocol agreement, which is authorized by the *National Programmatic Agreement between the BLM*, the *Advisory Council on Historic Preservation*, and the *National Conference of State Historic Preservation Officers*, and other applicable BLM handbooks.

1.4.4 Paleontological Resources

Fossils found on BLM-managed lands are considered part of our national heritage and afforded protection. The BLM manages fossil resources for their scientific, educational, and recreational values. On public lands paleontological resources are managed under authorities and policy's that govern the management and preservation of the resource. Paleontological resources are managed under numerous authorities including the 2003 RMP (2003b:2-39 Paleontological Resources Preservation Act of 2009 (Sections 6301-6312 of the Omnibus Public Lands Act of 2009, 16 USC 470aaa), Federal Land Policy and Management Act of 1976 (P.L. 94-579), National Environmental Policy Act of 1969 (P.O. 91-190), Potential Fossil Yield Classification System for Paleontological Resources on Public Lands (IM 2008-009), and the Assessment and Mitigation of Potential Impacts to Paleontological Resources (IM 2009-011). The authorities provide for civil and criminal penalties and also require that public lands be managed to preserve and protect the quality of scientific values of paleontological resources.

The BLM's Potential Fossil Yield Classification (PFYC, BLM IM 2008-009) system is a predictive modeling tool that was developed to provide baseline guidance for assessing and mitigating paleontological resources. It is intended to be used at an intermediate point in analyses and should be used to assist in determining the need for further mitigation assessment or actions. 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 assessment or actions (IM 2008-011). The PFYC is based on the fact that occurrences of paleontological resources are often closely tied to the geologic units that contain them. This classification does not reflect rare or isolated occurrences of significant fossils or individual localities, only the relative occurrence on a formation- or member-wide basis. Although, it is recognized that local differences have to be taken into account. Using the PFYC system, geologic units are classified based on the relative abundance of

vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts.

The FFO recognized eight Paleontological Special Designated Areas (SDA) in the 2003 RMP (more than 135,000 acres) in order to preserve important paleontological resources for scientific study, protection, and other public benefits (BLM 2003b:2-39). The BLM has determined that these areas require special management attention in order to protect, and prevent irreparable damage to important paleontological resources.

1.5 Scoping, Public Involvement, and Issues

Prior to the development of this document, onsite inspections of the proposed project area were conducted by representatives of the FFO, Encana, Adkins Consulting, NCE Surveys, Adobe Contractors, and La Plata Archaeological Consultants. Issues that were raised during onsite inspections and surveys include the following:

- If used, all pits would meet State of New Mexico, Oil Conservation Division (NMOCD) pit guidelines and requirements, NMAC 19.15.17.
- Excavated materials from the cuts would be used on the fill portions of the locations.
- Reclaimed slopes would be re-contoured to pre-construction topographical contours.
- All disturbed areas not needed for production would be seeded with a seed mixture chosen by the operator based on the dominant vegetation community. The dominant vegetation community in the area is piñon-juniper woodland.
- Above ground structures would be painted to blend with the natural color of the landscape. Paint color would be Juniper Green.
- All cultural resource stipulations would be followed.
- The operator shall ensure that dust abatement measures be taken on all applicable roadway surfaces.
- Water acquired to construct, produce and maintain actions authorized by a permit to drill must be acquired from permitted water sources, or water authorized for use by the New Mexico Oil Conservation Division (OCD). Upon request, the Authorizing Officer (AO) shall be provided with documentation of water sources.
- Grazing permittees must be notified when construction is scheduled to begin.
- A noxious weed inventory of the proposed project area would be completed prior to construction.
- All construction and/or maintenance resulting in surface disturbance would be done in accordance to the BLM Surface Operating Standards and Guidelines for Oil and Gas Development, Fourth Edition-Revised 2007 (The Gold Book).

The Farmington Field Office (FFO) publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions in the field office. The log is located on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html). No public comments were received for this proposed action.

The project was circulated among FFO resource specialists. During this review, the following issues were raised: air resources; cultural resources; invasive/non-native species; wastes, hazardous or solid; water quality-surface and ground; paleontology; soils; watershed-hydrology; vegetation; livestock grazing; wildlife; migratory birds; BLM sensitive species impacts; visual resources; and public health and safety.

2.0 Alternatives Including the Proposed Action

2.1 Alternative A - No Action

The BLM NEPA Handbook (H-1790-1) states that for EAs on externally initiated proposed actions, the No Action Alternative generally means that the proposed activity will not take place. This option is provided in 43 CFR 3162.3-1 (h) (2). This alternative would deny the approval of the proposed application, and the current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

2.2 Alternative B – Proposed Action

Conoco proposes to construct one well pad and an associated well-tie pipeline in order to directionally drill and develop federal minerals in the Blanco Mesaverde/Basin Dakota/Basin Mancos pools. Access to the proposed action area would be gained by traveling east on US Highway 64 from Bloomfield, New Mexico for 10.6 miles to CR 4450 (Largo Canyon Road). Turn right and travel southeasterly on CR 4450 to the Cutter Dam turn off just before Five Mile Bridge. Keep left and continue easterly to the Nine Mile Bridge crossing. Keep right, crossing Carrizo Canyon wash, and continue easterly towards Stove Canyon. Travel up Stove Canyon towards Gould Pass. Once at the top of Gould Pass, continue easterly onto Ensenada Mesa to the San Juan 28-7 Unit 216M well location on the left. The proposed San Juan 28-7 Unit 216N is staked on this well pad (see Figure 2.2). The surface and minerals for the proposed project are managed by BLM. New surface disturbance for the proposed project would be approximately 0.70 acres on BLM-managed surface.

The proposed well pad would be 230-feet by 300-feet with an additional 50-foot construction buffer zone on all four sides of the well pad. The well pad would require between 1 and 18 feet of fill on the north side of the location, and between 1 and 4 feet of cut on the south side of the location. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Production pits, if used, would be lined and would meet State of New Mexico, Oil Conservation Division (NMOCD) pit guidelines and requirements, NMAC 19.15.17. Cut and fill slopes would be returned to the original contour upon reclamation. New surface disturbance from the proposed well pad location would be approximately 0.70 acres within a total permitted area of 3.03 acres.

Drainages and diversions would be re-established upon reclamation and as needed once the final well pad layout and construction phases have been completed.

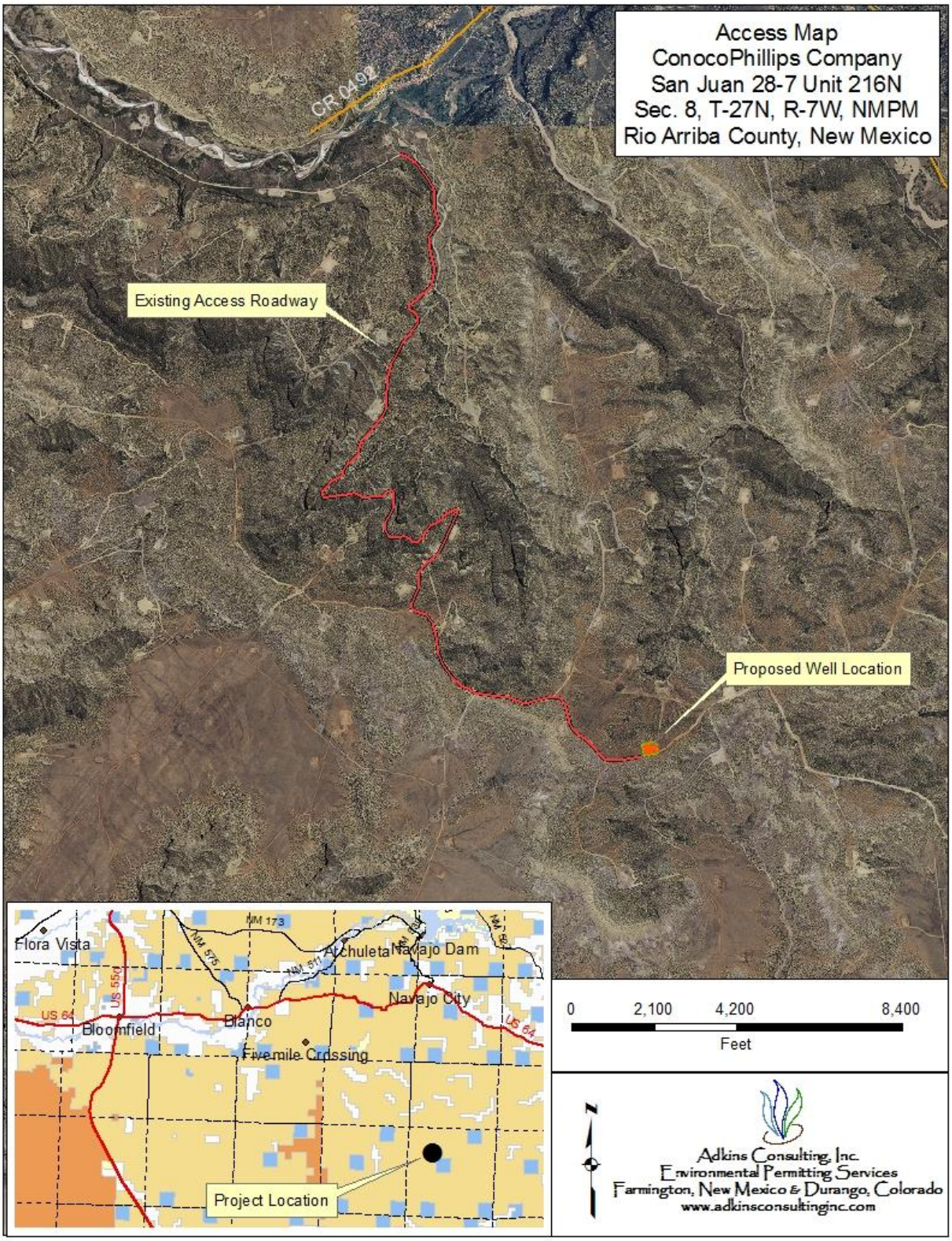
No new access road would be needed. The surfacing and repair of deteriorated sections of the existing access roads may be required. Dust abatement measures would be implemented on existing roadway.

Once the proposed well is completed, an associated 121-foot well-tie pipeline would be constructed within a 40-foot wide right-of-way (ROW) on existing surface disturbances. The proposed well-tie pipeline would travel northeast from the meter-in and tie to the San Juan 28-7 Unit 216M pipeline infrastructure. No new surface disturbance is anticipated as a result of well-tie pipeline construction.

Construction of the well-tie pipeline would consist of digging a trench with excavation equipment such as a wheel-ditcher or backhoe, laying pipe, and back filling the trench. The pipeline would be buried at least five feet deep. A 4.5-inch carbon steel pipeline manufactured to American Petroleum Institute 5L specifications would be used. The wall thickness of the pipe would be 0.156 inches. The pipe wall strength would be 42,000 pounds per square inch (PSI).

Production equipment used during the life of the well may include a 3-phase separator - dehydrator, a meter run, 400-barrel tanks and/or smaller fiberglass or galvanized tanks for water disposal, and 400-barrel tanks for storage of produced oil. It is also likely that a compressor would be placed on location during the life of the well. The use of compressors provides an increase in the economic life of the well, increases the ultimate recovery of gas from low-pressure reservoirs, and prevents waste of the resource.

Figure 2.2 Access Map



FFO-established environmental Best Management Practices (BMPs) will be followed during construction and reclamation of the well site pad, pipeline tie, facility placement, or any other surface disturbing activity associated with this project. BLM- wide standard BMPs are found in the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Fourth Edition-Revised 2007 (The Gold Book). Farmington Field Office BMPs are integrated into the general and site-specific stipulations.

For a detailed description of design features and construction practices associated with the proposed action, refer to the APD (attached as Appendix 7.1). Also see the subject APD for additional maps showing the proposed well location and associated facilities described above. Implementation of committed mitigation measures contained in the Conditions of Approval (COAs) are also listed in Appendix 7.1 and incorporated and analyzed in this alternative.

Table 2.2 – Proposed Well Information

Well Name	Well Number	Township	Range	Section	Footages	Lease #	Lease Date
San Juan 28-7	216N	27N	7W	8	Surface: 1646' FSL 1175' FEL	USA SF-078570	4/1/1948
					BHL: 2000' FSL 1930' FWL		

County: Rio Arriba

Applicant: ConocoPhillips Company

Surface Owner: Bureau of Land Management

2.3 Alternatives Considered But Not Analyzed
No alternatives were considered and the proposed location was selected for the best drainage of subsurface resources while protecting surface resources to the maximum extent possible.

3.0 Description of Affected Environment

This section describes the environment that would be affected by implementation of the alternatives described in Section 2. Aspects of the affected environment described in this section focus on the relevant major resources or issues. Certain critical environmental components require analysis under BLM policy. These items are included above in Section 1.5.

3.1 Air Resources

The proposed action is located in Rio Arriba County, New Mexico. Additional general information on air quality in the area is contained in Chapter 3 of the Farmington RMP/Environmental Impact Statement. In addition to the air quality information in the RMP cited above, new information about greenhouse gases (GHGs), and their effects on national and global climate conditions has emerged since this RMP was prepared. On-going scientific research has identified the potential impacts of GHG emissions such as carbon dioxide (CO_2) methane (CH_4), nitrous oxide (N_2O), 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, typically referred to as global warming.

The 2003 RMP discussed ozone in the Baseline Air Quality and Impact Assessment sections. The National Ambient Air Quality Standard (NAAQS) at the time was 0.084 ppm. In March of 2008, the Environmental Protection Agency (EPA) announced a new primary 8-hour standard of 0.075 ppm.

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

In addition, the Environmental Protection Agency (EPA), on October 17, 2006, issued a final ruling on the lowering of the National Ambient Air Quality Standard (NAAQS) for particulate matter ranging from 2.5 micron or smaller particle size. This ruling became effective on December 18, 2006, stating that the 24-hour standard for $PM_{2.5}$, was lowered to 35 ug/m³ from the previous standard of 65 ug/m³. This revised $PM_{2.5}$ daily NAAQS was promulgated to better protect the public from short-term particle exposure.

This EA incorporates an analysis of the contributions of the action alternatives 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 seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states of which New Mexico is one. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and 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. Greenhouse gases 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 Air Quality

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

Air quality in the area near the proposed action is generally good and is not located in any of the areas designated by the Environmental Protection Agency as “non-attainment areas” for any listed pollutants regulated by the Clean Air Act. During the summers of 2000 through 2002, ozone levels in San Juan County approached non-attainment. Additional modeling and monitoring were conducted by Alpine Geophysics, LLC and Environ International Corporations, Inc., in 2003 and 2004. Results of the modeling suggest the episodes recorded in 2000 through 2002 were attributable to regional transport and high natural biogenic source emissions. The model also predicted that the region will not violate the ozone NAAQS through 2007 and that the trends in the 8-hr ozone values in the region will be declining in the future. At the present time, the San Juan County is classified as in attainment with the revised federal ozone standard of 0.075 ppm. Rio Arriba County is unclassified because there are no ozone monitors sited in the county.

3.1.2 Climate

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring 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.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) 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 (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures.

A 2007 US Government Accountability Office (GAO) Report on Climate Change found that, "federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses." 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 the mean annual temperatures have exceeded the global averages by nearly 50 percent since the 1970’s (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.

Greenhouse gases, including carbon dioxide (CO_2) and methane (CH_4), and the potential effects of GHG emissions on climate, are not regulated by the EPA under the Clean Air Act. However, climate has the potential to influence renewable and non-renewable resource management. The EPA’s Inventory of US Greenhouse Gas Emissions and Sinks found that in 2007, total U.S. GHG emissions were over 7 billion metric tons and that total U.S. GHG emissions have increased by 17% from 1990 to 2007. Emissions

increased from 2006 to 2007 by 1.4 percent (99.0 Tg CO_2 Eq.). The following factors were primary contributors to this increase: (1) cooler winter and warmer summer conditions in 2007 than in 2006 increased the demand for heating fuels and contributed to the increase in the demand for electricity, (2) increased consumption of fossil fuels to generate electricity and (3) a significant decrease (14.2 percent) in hydropower generation used to meet this demand (EPA 2009).

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 GHG's result in behavioral and industrial adaptations.

3.2 Cultural Resources

The proposed action 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).

Cultural sites vary considerably, and can include but are not limited to simple artifact scatters, domiciles of various types with a myriad of associated features, rock art and inscriptions, ceremonial/religious features, and roads and trails.

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The entire area of potential affect for the action alternatives was surveyed by La Plata Archaeological Consultants (LAC) at a BLM Class III level (100%) and inventory reports were prepared (LAC Report No. 2011-10a; BLM 2012(IV)028F) and submitted to the BLM in accordance with the *Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2005).

No cultural resources were documented within the proposed project area as a result of the survey.

3.3 American Indian Religious Concerns

Traditional Cultural Properties (TCPs) is a term that has emerged in historic preservation management and the consideration of Native American religious concerns. TCPs are places that have cultural values that transcend, for instance, the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites. The National Park Service (Parker and King 1998:1) has defined TCPs as follows:

> A traditional cultural property can be defined generally as one (a property) that is eligible for the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. (National Register Bulletin 38)

For the proposed action, identification of TCPs were limited to reviewing existing published and unpublished literature (e.g. Valkenburgh 1941, 1974; Brugge 1993; Kelly et al. 2006), and the site-specific cultural resources survey report conducted. In addition, the BLM's cultural resources program was contacted for information regarding the presence of TCPs identified through ongoing BLM tribal consultation efforts. A review of existing information compiled during previous land use planning efforts,

existing studies, or via direct consultation indicates the proposed action is not within a known Traditional Cultural Property.

3.4 Invasive, Non-Native Species
The objective of the FFO weed management program is to detect invasive plant species populations, prevent the spread of new invasive populations, manage existing populations using the tools of integrated weed management and eradicate invasive populations, using the safest environmental methods available. For all actions on public lands that involve surface disturbance or rehabilitation, reasonable steps would be required to prevent the introduction or spread of noxious weeds, including requirements for using weed seed–free hay, mulch and straw.

No invasive or noxious weeds were encountered during the onsite inspection of the proposed action area. BLM GIS data of known invasive or noxious weed populations indicate no known weed populations to be in or nearby the project area.

3.5 Wastes, Hazardous or Solid
The Resource Conservation and Recovery Act (RCRA) passed in 1976, establishes a comprehensive program for managing hazardous wastes from the time they are produced until their disposal. The EPA regulations define solid wastes as any “discarded materials” subject to a number of exclusions. A “hazardous waste” is a solid waste that is (1) is listed by the EPA as a hazardous waste, (2) exhibits any of the characteristics of hazardous wastes (ignitability, corrosivity, reactivity, or toxicity) or (3) is a mixture of solid and hazardous waste.

A 1980, amendment to RCRA conditionally exempted from regulation as hazardous wastes, “drilling fluids, production waters, and other wastes associated with the exploration, development, or production of crude oil or natural gas. On July 6, 1988, EPA determined that oil and gas exploration, development and production (ED&P) wastes would not be regulated as hazardous wastes under RCRA. A simple rule of thumb was developed for determining if an ED&P waste is likely to be considered exempt or non-exempt from RCRA regulations: If (1) the waste came from down-hole, or (2) the waste was generated by contact with the oil and gas production stream during removal of produced water or other contaminants, the waste is most likely to be considered exempt by EPA.

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), passed in 1980, deals with the release (spillage, leaking, dumping, accumulation, etc.) or threat of a release of hazardous substances into the environment. Despite many oil and gas constituent wastes being exempt from hazardous waste regulations, certain RCRA exempt contaminants could be subject to regulations as hazardous substances under CERCLA. The New Mexico the Oil Conservation Division (OCD) administers hazardous waste regulations for oil and gas activities in New Mexico.

No hazardous or solid waste materials are present at the proposed action site. The notification of releases such as natural gas, natural gas liquids, and petroleum, outside a facility site is required under CERCLA and under BLM NTL-3A.

3.6 Water Quality – Surface/Ground
There are no perennial water resources within the immediate vicinity of the proposed action area. The proposed well is located on the western fringe of Ensenada Mesa approximately 1,000 feet above the Carrizo Canyon and Cañon Largo drainages.

The operator proposes to set surface casing to a depth of 250 feet, or as specified by the BLM, to protect any shallow aquifers. An operation plan with the proposed casing program to protect the aquifers would be submitted with the APD.

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers has jurisdiction over “waters of the U.S.” These jurisdictional waters include those that have a “significant nexus” to traditional navigable waters. Determining jurisdiction and/or significant nexus can be a time consuming process, therefore the FFO assumes the U.S. Army Corps of Engineers (USACE) has jurisdiction over any USGS

watercourse (i.e., “blue line” on USGS 1:24,000 topographic maps). The proposed project area does not contain any USGS watercourses, as noted on the Gould Pass, NM USGS 7.5 minute quadrangle.

3.7 Paleontology

The proposed action is located within the paleontological rich area of the San Juan Basin of northwestern New Mexico. The BLM uses the Potential Fossil Yield Classification (PFYC) system to identify areas with a high potential to produce significant fossil resources (IM 2008-009). This system has ranked all lands within the FFO management acres as a Class 5 designation. Class 5 designations are described as being Very High Potential paleontological resource areas, thus requiring an assessment at the project level (IM 2008-011).

The proposed action is located within the San Jose Formation, a geologic unit ranked as PFYC Class 5 for very high paleontological sensitivity (BLM 2008b), which could entail project-specific assessments. The proposed action is not located in a Paleontological SDA.

The San Jose Formation of the San Juan Basin is the most extensively preserved and exposed Eocene rock-stratigraphic unit in New Mexico. The formation has yielded one of the largest and most diverse vertebrate faunas of early Eocene fossils collected in North America. Fossil plants (leafs, stems) from lacustrine strata of the Regina Member of the San Jose Formation at Santos Peak indicate a humid, forested environment in the depositional basin.

3.8 Soils

The San Juan Basin is bordered by the Defiance Uplift and Chuska Mountains to the west, San Juan Dome to the north, Chaco Slope and Zuni Uplift to the south and the Nacimiento Uplift to the east. In total, the San Juan Basin covers a surface of approximately 4,600 square miles. The 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. The material has been mixed and sorted in transport and has a wide range of mineralogy and particle size. Sedimentary parent material consists mainly of sandstone and shale bedrock. These shale and resistant sandstone beds form prominent structural benches, buttes, and mesas bounded by cliffs.

Soils in the immediate area of the proposed action are comprised of the Vessilla-Menefee-Orlie complex, 1 to 30 percent slopes.

The Vessilla-Menefee-Orlie complex, 1 to 30 percent slopes, is composed of 45 percent Vessilla and similar soils, 25 percent Menefee and similar soils, and 20 percent Orlie and similar soils. The Vessilla series consists of shallow and very shallow, well drained, moderately rapid permeable soils that formed in eolian and alluvial material weathered from sandstone. Vessilla soils are on narrow ridges, hills, breaks and mesas of bedrock controlled landscapes. The Menefee series consists very shallow and shallow, well drained soils that formed in colluvium and residuum from shale. Menefee soils are on hillslopes mesas, breaks and mountainsides. The Orlie series consists of very deep, well drained, moderately slowly permeable soils that formed in alluvium and eolian materials derived from shale and sandstone on summits of mesas, dipslopes of cuestas, hills, summits of plateaus and fan remnants on valley sides.

The different characteristics of these soil types are listed in the Table below.

Table 3.8.1

Characteristic	Vessilla	Menefee	Orlie
Surface Layer	Light yellowish brown gravelly fine sandy loam	Brown clay loam	Pale brown loam
Slope	1-65%	2-80%	0-8%

Depth	4-20”	8-20”	More than 80”
Surface Runoff	Medium to rapid	Rapid	Medium
Typical Use	Wood products, livestock grazing, recreation, and wildlife habitat	Rangeland, woodland, recreation, and wildlife habitat	Livestock grazing
Moisture Regime	Aridic ustic	-	Aridic ustic
Drainage Class	Well drained	Well drained	Well drained
Available Water Cap.	Very low	Very low	High
Permeability	Moderately rapid	Slow	Moderately slow
Parent Material	Slope alluvium over residuum weathered from sandstone	Colluvium over residuum weathered from shale	Slope alluvium from sandstone and shale

3.9 Watershed – Hydrology

The San Juan Basin consists of broad mesas interspersed with many deep canyons with steep canyon walls, dry washes, entrenched narrow valleys, and alluvial fans and floodplains. Elevations range from approximately 4,800 feet, where the San Juan River flows into Utah, to approximately 8,800 feet near the Jicarilla Apache land, and near 7,300 feet near Lindrith, New Mexico. The planning area is divided into watersheds based on the Hydrologic Units (4th level) delineated by the USGS. Principally, the administrative area under the jurisdiction of the Farmington Field Office consists of five of these 4th level hydrologic watershed units. These watershed units are: (1) Middle San Juan, (2) Animas, (3) Upper San Juan, (4) Blanco Canyon, and (5) Chaco.

The proposed action is within the 1,690-square mile Blanco Canyon USGS 4th Level watershed. The proposed well site is located on the western fringe of Ensenada Mesa approximately 1,000 feet above the major drainages below. Ensenada Mesa is a major landform that dominates the geography of the area, extending from the Carrizo Canyon-Cañon Largo confluence in the northwest to Albert Mesa and Carter Mesa in the southeast, and dividing the Cañon Largo and Carrizo Canyon drainage systems.

3.10 Vegetation

The proposed action is located within Great Basin Desert scrub habitat interspersed with piñon-juniper woodland outcrops. Dominant vegetation in the vicinity of the project area consisted of scattered piñon pine (*Pinus edulis*) and juniper (*Sabina* [*Juniperus*] *osteosperma*) trees with an understory of sagebrush (*Artemisia tridentata*). A minor groundcover of New Mexican prickly pear cactus (*Opuntia phaeacantha*), Indian ricegrass (*Achnatherum hymenoides*), broom snakeweed (*Gutierrezia sarothrae*), and various forbs is also found throughout the area. Antelope bitterbrush (*Purshia tridentata*), Gambel’s oak (*Quercus gambelii*), and rabbitbrush (*Chrysothamnus nauseosus*) is scattered throughout the more wooded areas.

3.11 Livestock Grazing

The proposed project area is located within the FFO-managed Kaime Trust grazing allotment No. 5113. The grazing allotment is operated from March 1 to February 28 annually with a maximum of 360 head of cattle.

3.12 Wildlife

Mule deer are common in the analysis area as are other mammalian species such as coyote, deer mouse, cottontail rabbit, and black-tailed jackrabbit. Rocky Mountain elk are less common and tend to avoid areas of consistent human presence. Game birds found in the area may include mourning dove. a. The most notable reptiles are the fence lizard, Western whiptail, and short-horned lizard.

The proposed action is not located within a Wildlife SDA.

3.13 Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §§ 701-715s, as amended), established protections for migratory birds and their parts (i.e. eggs, nests, and feathers) from taking, hunting, capture, transport, sale, or purchase. Migratory birds that may be present can include the Western bluebird, Western scrub-jay, juniper titmouse, and common raven. Principal raptors that may be seen are the golden eagle, red-tailed hawk, and American kestrel. Nesting neo-tropical migratory birds could include the Western bluebird, gray vireo, violet-green swallow, and ash-throated flycatcher. No evidence of nesting birds was observed in the proposed action area at the time of field inspections.

Potentially affected migratory bird species listed by New Mexico Partners in Flight as priority for management include gray vireo, black-throated gray warbler, gray flycatcher, ash-throated flycatcher, juniper titmouse, piñon jay, Western bluebird, mountain bluebird, Cassin's kingbird, and Say's phoebe for piñon-juniper habitat; and Bendire's thrasher, sage thrasher, loggerhead shrike, sage sparrow, and Brewer's sparrow for sagebrush scrub habitat. Migratory bird species may lose nesting/den/burrow habitat and foraging habitat as a result of proposed project implementation.

Information from the New Mexico Avian Conservation Partners website (http://nmpartnersinflight.org), the New Mexico Partners In Flight highest priority list of species of concern by vegetation type, and the 2002 Birds of Conservation Concern Report for the Southern Rockies/Colorado Plateau Bird Conservation Region (BCR) No. 16 have been used to develop a list of migratory bird species with potential to occur in the action area in the following tables.

Table 3.13.1 Species with potential to occur in Great Basin Desert Shrub community

Common Name (Scientific name)	Habitat Associations
Ferruginous hawk (*Buteo regalis*)	Inhabits dry, open country. Often hovers when foraging or soars in a dihedral. Perches in trees, on poles, on the ground.
Swainson's hawk (*Buteo swainsoni*)	Soars over open plains and prairie with uptilted wings in teetering, vulture-like flight. Gregarious, usually migrates in large flocks.
Loggerhead shrike (*Lanius ludovicianus*)	Relatively xeric habitats dominated by shrubs and grasses.
Sage thrasher (*Oreoscoptes montanus*)	Sagebrush plains.
Sage sparrow (*Amphispiza belli*)	Sagebrush-grassland habitat.
Black-throated sparrow (*Amphispiza bilineata*)	Xeric habitats dominated by open shrubs with areas of bare ground.
Gray vireo (*Vireo vicinior*)	In northwest New Mexico, found in broad-bottomed, flat or gently sloped canyons, in areas with rock outcroppings on near ridgetops.
Bendire's thrasher (*Toxostoma bendirei*)	Brushy desert, especially areas of tall vegetation, cholla cactus, creosote bush and yucca.
Mountain bluebird (*Sialia currucoides*)	Inhabits open rangelands, meadows, generally above 5,000 ft; in winter primarily found in open lowlands, desert. Nests in tree cavities and

	buildings.
Green-tailed towhee (*Pipilo chlorurus*)	Prefer high diversity of shrub species, including sagebrush, greasewood or piñon-juniper. Breeds in Great Basin shrub in the northwest quadrant of the state.
Scaled quail (*Callipepla squamata*)	Barren mesas and plateaus, semidesert scrublands, and grasslands with mixed scrub.
Vesper sparrow (*Pooecetes gramineus*)	Uncommon to fairly common in dry grasslands, farmlands, forest clearings, and sagebrush.

Table 3.13.2 Species with potential to occur in Piñon-Juniper Woodland community

Common Name (Scientific name)	Habitat Associations
Ferruginous hawk *(Buteo regalis)*	Prefers forest edge or mature, isolated, flat-topped junipers, with thick support branches for nests; in NW New Mexico, often nests on rock spires.
Montezuma quail (*Cyrtonyx montezumae*)	Uncommon, secretive and local in grassy understory of open juniper-oak or pine-oak woodlands on semi-arid mountain slopes.
Bridled titmouse (*Baeolophus wollweberi*)	Common resident of woodland stands of oak, juniper, and sycamore in mountains of New Mexico.
Juniper titmouse (*Baeolophus griseus*)	Uncommon to fairly common in juniper or piñon-juniper woodland.
Western bluebird (*Sialia mexicana*)	Nests in holes in trees, posts: common in woodlands, farmlands, orchards; in desert areas during winter, fond in mesquite-mistletoe groves.
Mountain bluebird (*Sialia currucoides*)	Inhabits open rangelands, meadows, generally above 5,000 ft; in winter primarily found in open lowlands, desert. Nests in tree cavities and buildings.
Broad-tailed hummingbird (*Selasphorus platycercus)*	Casual fall and winter to Gulf Coast.
Cassin's kingbird (*Tyrannus vociferans*)	Fairly common in varied habitats; usually prefers denser foliage and hillier country than does Western kingbird.
Gray vireo *(Vireo vicinior)*	In northwest New Mexico, found in broad-bottomed, flat or gently sloped canyons, in areas with rock outcroppings on near ridgetops.
Plumbeous vireo (*Vireo plumbeus*)	Fairly common in varied woodland habitats.
Western scrub-jay (*Aphelocoma californica*)	Interior *woodhouseii* race shy, inhabits lower mountain woodland; all subspecies hold individual territories.
Piñon jay (*Gymnorhinus cyanocephalus*)	Generally seen in large flocks, often numbering in hundreds; nests in loose colonies. Common in piñon-juniper woodlands of interior mountains and high plateaus; also yellow pine (ponderosa) woodlands.

Bendire's Thrasher *(Toxostoma bendirei)*	Brushy desert, especially areas of tall vegetation, cholla cactus, creosote bush and yucca.
Crissal thrasher (*Toxostoma crissale*)	Very secretive, hiding in underbrush. Found mainly in dense mesquite and willows along streams and washes; sometimes on lower mountain slopes.
Virginia's warbler (*Vermivora virginiae*)	Common in mountain brushlands. Rare to coastal California. Casual in the east.
Black-throated gray warbler *(Dendroica nigrescens)*	Prefers large stands of piñon-dominated woodland, often found in dense forests with a canopy.
Loggerhead shrike *(Lanius ludovicianus)*	Relatively xeric habitats dominated by shrubs and grasses.
Vesper sparrow (*Pooecetes gramineus*)	Uncommon to fairly common in dry grasslands, farmlands, forest clearings, and sagebrush.
Black-chinned sparrow (*Spizella atrogularis*)	Inhabits brushy arid slopes in foothills and mountains. Rarely seen in migration.

Sources: New Mexico Avian Conservation Partners, New Mexico Partners In Flight, 2011. National Geographic Society, *Field Guide to the Birds of North America*. 1999.

3.14 Special Management Species

In accordance with BLM Manual 6840, BLM manages certain sensitive species not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. Included in this category are state listed endangered species and federal candidate species which receive no special protections under the Endangered Species Act. Special Management Species with potential to occur in the analysis area are listed in Table 3.14.

Table 3.14– FFO Special Management Species and their potential to occur in the proposed action area.

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Common Name *(Scientific name)*	Status*	Habitat Associations	Presence**
BIRDS			
American peregrine falcon *(Falco peregrinus anatum)*	SMS NM-T	Nest in ledges or potholes on cliffs in wooded/forested habitats; Forage over riparian woodlands, coniferous & deciduous forests, shrublands, prairies.	NS
Ferruginous hawk *(Buteo regalis)*	SMS	Breed in open country, usually prairies, plains and badlands; semidesert grass-shrub, sagebrush-grass & piñon-juniper plant associations.	NS
Golden eagle *(Aquila chrysaetos)*	SMS	In the west, mostly open habitats in mountainous, canyon terrain. Nests primarily on cliffs and trees.	NS
Bald eagle *(Haliaeetus leucocephalus)*	SMS NM-T	Nests in forested areas adjacent to large bodies of water.	NP
Burrowing Owl	SMS	Open grasslands or desert scrub. Presence of	NP

(Athene cunicularia)		suitable nest burrow is critical prerequisite (often prairie dog burrows).	
Prairie falcon *(Falco mexicanus)*	SMS	Open: grassland, desert scrub, rangeland, agricultural; nest in cavities, ledges, on cliffs, trees, power structures.	NS
Mountain plover *(Charadrius montanus)*	SMS	Lowland grasslands, sites with grassland characteristics (alkali flats, agricultural lands).	NP
Yellow-billed cuckoo *(Coccyzus americanus)*	SMS C	Breeds in riparian woodlands with dense, understory vegetation.	NP
PLANTS			
Brack's hardwall cactus *(Sclerocactus cloveriae* ssp *brackii)*	SMS NM-E	Sandy clay of the Nacimiento Formation in sparse shadscale scrub (5,000-6,000 ft.)	NP
Aztec gilia *(Aliciella formosa)*	SMS NM-E	Salt desert scrub communities in soils of the Nacimiento Formation (5,000-6,000 ft).	NP
Sources: BLM 2005, New Mexico Natural Heritage Program 2005, NM Rare Plant 1999, USFWS 2007			
Status* SMS = BLM Special Management Species C = Federal Candidate NM-E = State of NM Endangered NM-T = State of NM Threatened		**Presence**** K = Known, documented observation within project area. S = Habitat suitable and species suspected to occur within the project area. NS = Habitat suitable but species is not suspected to occur within the project area. NP = Habitat not present and species unlikely to occur within the project area.	

The analysis area provides potential foraging habitat for the American peregrine falcon, prairie falcon, golden eagle, and ferruginous hawk. The analysis area does not provide nesting habitat for the four raptors and is not within a 1/3 mile buffer to any historically documented raptor nests. No birds of prey or signs of their presence were observed during onsite inspections.

3.15 Visual Resources

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 to 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 (RMP 2003).

The general area has been moderately industrialized with natural resource extraction, as 22 wells have been drilled within a one mile radius to the proposed well location. Natural gas and oil production facilities are common in the immediate area, but are not likely noticeable to the casual observer due to mitigation measures such as area appropriate paint color, low profile equipment, and standard reclamation practices, stipulations that are established by the BLM. Most of the existing roadway in the area is used primarily by the oil and gas industry to service wells. Pipeline and powerline ROWs are common throughout the area.

3.16 Public Health and Safety

All worker safety is governed by Occupational Safety and Health Administration (OSHA) safety laws and regulations. Worker safety incidents must also be reported to the BLM under the procedures of Notice to

Lessee (NTL)-3A. Pipeline safety regulations are administered by OSHA as well as Department of Transportation (DOT) regulations. Pipeline safety regulations (49 CFR Parts 190 and 192) govern design, construction and operation of gas transmission lines. Any incidents involving DOT-regulated pipelines must be reported under these regulations (District 2003a).

Most substances and wastes generated at oil and gas facilities are exempt from regulation under the Resource Conservation and Recovery Act (1976). The EPA and DOT regulate materials associated with well construction and production activities that are classified as hazardous. When significant amounts of chemicals are stored on-site, governmental agencies will be notified as required under the Emergency Planning and Community Right to Know Act (1986). The notification of releases such as natural gas, natural gas liquids, and petroleum, outside the facility site is required under CERCLA and under BLM NTL-3A. The well location must have an informational sign, as directed under 43 CFR 3160.

Additional hazards to the general public in the proposed action area include safety hazards associated with increased traffic during the construction of the proposed well and well-tie pipeline. General hazards around producing oil and gas fields such as accidental pipeline failures and moving equipment like pump jacks are potential/present in the action area. Hydrogen sulfide gas is not known to be or expected to be a problem within the action area.

4.0 Environmental Consequences and Proposed Mitigation Measures

No Action

Under the No Action Alternative, the proposed well would not be drilled. There would be no new impacts from oil and gas production to the resources. The No Action Alternative would result in the continuation of the current land and resource uses in the project area and is used as the baseline for comparison of alternatives.

Proposed Action

A summary of potential surface disturbance is presented in Table 4.0.1. Descriptions of potential effects on individual resources for the Proposed Action are presented in the following text. Also described are potential mitigation measures that could be incorporated by the BLM where appropriate as Conditions of Approval attached to the permit.

Table 4.0.1 – Summary of Disturbance

Facility			Proposed Actions		Duration
			Feet	Acres	
San Juan 28-7 Unit 216N	Well Pad	New Disturbance	230 x 300	1.58	Short Term
			-	0.75*	Long Term
		Existing Disturbance	-	1.28	Short Term
	Construction Zone	New Disturbance	1,260 x 50	1.45	Short Term
		Existing Disturbance	-	1.05	Short Term
	Well-tie Pipeline	New Disturbance	121 x 40	0.11	Short Term
		Existing Disturbance	121 x 40	0.11	Short Term
Total New Disturbance				**0.70**	**Short Term**
				0.75	**Long Term**

* All well pads will have interim reclamation, average long-term disturbance has been determined by the BLM to be approximately 0.75 acres.

Short-term impacts are those which can be stabilized or mitigated rapidly (within 5 years). Long-term impacts are those that would substantially remain for more than 5 years.

4.1 Air Resources

4.1.1 Direct and Indirect Effects

4.1.1.1 Air Quality

Air quality would temporary be directly impacted with pollution from exhaust emissions, chemical odors, and dust that would be caused by the motorized equipment used to construct the well pad and well-tie pipeline, and by the drilling rig that will be used to drill the well. Dust dissemination would discontinue upon completion of the construction phase of the project. Air pollution from the motorized equipment would discontinue at the completion of the drilling phase of the operation. The winds that frequent the northwestern part of New Mexico generally disperse the odors and emissions. The impacts to air quality would be greatly reduced as the construction and drilling phases are completed. Other factors that currently affect air quality in the area include dust from livestock herding activities, dust from recreational use, and dust from use of roads for vehicular traffic.

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

Potential impacts of development could include increased air borne soil particles blown from new well pads or roads, exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities, as well as potential releases of GHG, NOx and VOCs 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 and foreseeable development scenario developed for the Farmington RMP demonstrated 522 wells would be drilled annually for federal minerals. Current APD permitting trends within the field office confirm that these assumptions are still accurate. This level of exploration and production would contribute a small incremental increase in overall hydrocarbon emissions, including GHGs, NOx, and VOCs 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 is not possible to determine the effects on climate change on a regional, national, or global scale.

Consumption of oil and gas developed from the proposed well is expected to produce GHGs, NOx and VOCs. 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. Regional and global transportation, metropolitan traffic, fires (including wildfires, controlled burns and use of domestic fire places), and power plant emissions from the west are all parts of the equation. Regional air quality modeling conducted for the Northern San Juan Basin Coal Bed Methane FEIS Project in August 2006, determined that potential cumulative visibility impacts to Federal PSD 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.

4.1.1.2 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 action 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.

4.1.2 Potential Mitigation

The FFO has been a participant of the Four Corners Air Quality Task Force (FCAQTF) since its inception back in 2002 when it was known as the Four Corners Ozone Task Force. Because of the unanswered questions raised by these modeling efforts, the FCAQTF has continued to look at air quality issues in the Four Corners region. The FCAQTF is comprised of a broad base of representatives including federal, state, tribal, and local governments, as well as industry, interest groups, and concerned community members. The FCAQTF has several working groups, which worked on the development of a mitigation options report (completed December 2007), to serve as a resource and guide to the regulatory agencies. The responsible agencies may use the report as the basis for developing air quality management plans for the region. This may include developing new and revising existing regulations, supporting new legislation, developing new outreach and information programs, and developing and/or expanding voluntary programs for emission reductions.

Additional air quality modeling conducted since completion of the 2003 FEIS/RMP and provisions in the ROD for the FEIS/RMP provide for applications of additional emission controls if requested by the NMAQB. Based on this modeling, the NMAQB issued an interim directive that all newly issued APDs limit compressor emissions to no more than 2 grams per horsepower hour of N_2O for engines of 300 horsepower or less. The FFO has complied with this directive through a condition of approval (COA) which has been in effect since August 1, 2005. To date, NMAQB has made no other such requests.

Currently, development on Federal minerals in New Mexico's San Juan Basin is at a lower level than forecast in the Reasonable Foreseeable Development (RFD) Scenario prepared in 2001 for the FFO EIS/RMP. The impacts forecast by the RFD are still valid. At the time the 2003 EIS/RMP was written, ozone readings did not represent a violation of the NAAQS for this pollutant. The New Mexico Environment Department Air Quality Bureau has determined that the 2007 – 2009 ozone design value for San Juan County is 0.070 ppm. The design value for the county must be greater than the revised 8-hour ozone standard of 0.075 ppm for a nonattainment designation.

The EPA's inventory data describes "Natural Gas Systems" and "Petroleum Systems" as the two major categories of total US sources of GHG gas emissions. The inventory identifies the contributions of natural gas and petroleum systems to total CO_2 and CH_4 emissions (natural gas and petroleum systems do not produce noteworthy amounts of any of the other greenhouse gases). Within the larger category of "Natural Gas Systems", the EPA identifies emissions occurring during distinct stages of operation, including field production, processing, transmission and storage, and distribution. "Petroleum Systems" sub-activities include production field operations, crude oil transportation and crude oil refining. Within the two categories, the BLM has authority to regulate only those field production operations that are related to oil and gas measurement, and prevention of waste (via leaks, spills and unauthorized flaring and venting).

The BLM's regulatory jurisdiction over field production operations has resulted in the development of "Best Management Practices" (BMPs) designed to reduce impacts to air quality by reducing all emissions from field production and operations. Typical measures may include: flare hydrocarbon and gases at high temperatures in order to reduce emissions of incomplete combustion; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; placement of compressors engines 300 horsepower or less must have NOx emissions limited to 2 grams per horsepower hour; re-

vegetate areas of the pad not required for production facilities to reduce the amount of dust from the pads; and water dirt roads during periods of high use in order to reduce fugitive dust emission. The significant threshold for particulate matter of 35 ug/m³ daily PM2.5 NAAQS is not expected to be exceeded under the proposed action.

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

4.2 Cultural Resources

4.2.1 Direct and Indirect Effects

There are no cultural sites within the APE.

4.3 American Indian Religious Concerns

4.3.1 Direct and Indirect Effects

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

4.4 Invasive, Non-native Species

4.4.1 Direct and Indirect Effects

Weeds (i.e., invasive/nonnative vegetation) can be introduced in many ways, including wind, vehicles, heavy equipment, livestock, and wildlife. The potential for weeds to invade or spread within an area is increased when native vegetation is removed and physical disturbance to the soil occurs. Establishment of weeds usually occurs in disturbed sites such as oil/gas pads, pipelines, stock water ponds, and edges of roads.

The FFO and the operator would follow BLM policy to control and manage invasive nonnative vegetation species. There were no invasive weeds encountered during the onsite inspection of the proposed action area.

4.4.2 Potential Mitigation

It would be the responsibility of the operator to control and eradicate all noxious/invasive weeds within the project area during the life of the project. A noxious weed inventory of the proposed project area would be completed prior to any surface disturbance activity.

4.5 Wastes, Hazardous or Solid

4.5.1 Direct and Indirect Effects

Typical wastes associated with the proposed action would include trash, sewage, produced water, and produced hydrocarbons. During drilling and completion, a trash receptacle and a chemically treated

portable toilet would be on location for trash and sewer disposal. All produced hydrocarbons would be put in tanks on location during completion work. Produced water would be put in onsite tanks or within lined reserve pits during completion work. All wastes would be disposed of in a proper manner as required by federal and state law, and as described in the COAs.

4.5.2 Potential Mitigation

When significant amounts of chemicals are stored on-site, governmental agencies would be notified as required under the Emergency Planning and Community Right to Know Act (1986). The notification of releases such as natural gas, natural gas liquids, and petroleum, outside the facility site is required under the Comprehensive Environmental Response Compensation and Liability Act, 1980 (CERCLA) and under BLM NTL-3A. The well location must have an informational sign, as directed under 43 CFR 3160.

4.6 Water Quality: Surface and Groundwater

4.6.1 Direct and Indirect Effects

There are no perennial water sources within the action area. Effects to ground water resources would be low due to design features such as casing. Any pits would be lined to meet NMOCD requirements. Below casing depth, losses of produced water or mud may occur to differing degrees in various formations, but the losses are considered to be low and contained to within a few feet of the well bore. These losses are not considered to be substantial because of the very small amount of groundwater that could be affected (BLM 2003a, p. 4-14).

Water acquired to construct, produce and maintain actions authorized by a permit to drill must be acquired from permitted water sources, or water authorized for use by the New Mexico Oil Conservation Division (OCD). Upon request, the Authorized Officer (AO) shall be provided with documentation of water sources.

4.6.2 Potential Mitigation

Culverts, diversions, and silt traps, where indicated in the attached COAs, would be used to stabilize and reduce sediment flow. The Operator would be responsible to ensure an adequate casing program is designed to protect ground water from contamination.

4.7 Paleontology

4.7.1 Direct and Indirect Effects

Direct effects of the proposed action to fossil localities could result from the ground disturbing activities or the disturbance of the stratigraphic context in which they are located. Alterations to the physical integrity of bedrock or potentially fossil-yielding alluvium may occur and would have a direct effect on unidentifiable or irretrievable fossil resources. This project could also create indirect impacts to areas by changing erosion patterns. Additionally an increase in human activity in the area could increase the possibility of increased accessibility leading to looting or vandalism activities to paleontological resources in the area.

4.7.2 Potential Mitigation

All FFO paleontological resources stipulations will be followed as indicated in the COAs, attached to the APD. These stipulations may include, but are not limited to altering the location or scope of the project or permanent fencing or other physical, temporary barriers, monitoring of earth disturbing construction, project area reduction and/or specific construction avoidance zones, and fossil recovery. If the assessment of the proposed action indicates a reasonable expectation of adverse impacts to significant

paleontological resources, a field survey will be necessary to properly document and recover any fossil material and associated data. Upon review, a determination for final project clearance and stipulations shall be issued by the FFO.

The need for additional mitigation to protect paleontological resources will be determined on a case-by-case basis. The Paleontology Resource Staff, in collaboration with the Authorized Officer, will analyze the Survey Report for survey findings and determine any mitigation recommendations. If no further mitigation is needed, the Authorized Officer should promptly notify the project proponent that there will be no additional paleontological surveys or mitigation required, and the project may proceed, pending any other approvals.

4.8 Soils

4.8.1 Direct and Indirect Effects

Due to the nature of drilling for oil and gas, there would be soil disturbance within the action area. All areas to be disturbed would be bladed as needed to create flat surfaces for operating equipment and vehicles. Depth of soil disturbance would increase with rougher topography. The proposed well location would require a maximum cut of approximately 4 feet and a maximum fill of 18 feet to create a flat working location. Available topsoil would be stockpiled for reclamation. The cut and fill slopes on the proposed well pad would be especially susceptible to wind and water erosion until vegetation has been re-established (one to two growing seasons). The potential impacts would be dependent, in part, on seasonal variation in rainfall and snowmelt run-off, terrain, soil type, prevailing winds, and vegetative cover. The heaviest amounts of erosion will be short-term (one to two growing seasons) until the vegetation has established. Effects to soils would likely be low to moderate for the proposed project.

4.8.2 Potential Mitigation

Other mitigation could include culverts, diversion ditches, berms, and other such soil erosion control structures (see attached COAs). Existing dirt roadways may be re-ditched and re-crowned or surfaced at the direction of the BLM, to minimize sedimentation. Dust abatement measures would be taken on all applicable roadways.

4.9 Watershed – Hydrology

4.9.1 Direct and Indirect Effects

The proposed action would comply with water quality, quantity, and ground water protection standards under the Clean Water Act of 1977 and the Safe Drinking Water Act of 1974, as amended. The proposed action would disturb fewer than 5 acres; currently, a Storm Water Pollution Prevention Plan for the EPA under the Clean Water Act would not be required.

The Operator would be required to comply with any future changes to the NPDES permitting process for storm water discharge from construction activities enacted by the EPA prior to the completion of well and well-tie pipeline construction and site stabilization.

A U.S. Army Corps of Engineers Section 404 permit for the discharge of dredged and fill material into jurisdictional waters of the U.S. and other special aquatic sites is not anticipated. Operators are required to obtain all necessary permits and approvals prior to any disturbance activities.

4.10 Vegetation

4.10.1 Direct and Indirect Effects

Under the proposed action, project implementation would result in approximately 0.70 acres of new surface disturbance. The proposed well pad would be constructed mostly on existing well pad disturbance, and would require the removal of several piñon pine and Utah juniper trees and associated understory vegetation on the west side of the location. The proposed well-tie pipeline would be constructed entirely on existing surface disturbance. Indirect impacts would be the remaining long-term (20 to 30 years) disturbance of the well location used for production equipment and vehicle driving surfaces. The removal of vegetation is projected to have low effects on the general vegetation as the species of plants to be removed are widespread and abundant in the action area and throughout the San Juan Basin.

4.10.2 Potential Mitigation

Under the proposed action, upon the completion of the construction and drilling phases, and the well being placed into service, the rehabilitation and reseeding of the unused portion of the well pad and well-tie pipeline would occur. Those surfaces used for production equipment and vehicle travel would be reclaimed as directed by the COAs after final abandonment of the well. The BLM/FFO has developed a seed mix menu based on the predominant vegetation communities present within the proposed project area. The operator would be responsible to choose a seed mix based on the following menus:

Menu based seed mix for use in reclamation for sagebrush/grass community (minimum requirement).

Common Name	Scientific Name	Variety	Season	Form	PLS lbs/acre*
Plant two of the following:					
Fourwing Saltbush	*Atriplex canescens*	VNS	Cool	Shrub	2.0
Antelope bitterbrush	*Purshia Tridentata*	Local collection – if possible	Cool	Shrub	1.0
Winterfat	*Krascheninikova lanata*	Native	Cool	Shrub	2.0
And two of the following:					
Indian Ricegrass	*Achnatherum hymenoides*	Paloma or Rimrock	Cool	Bunch	4.0
Blue Grama	*Chondrosum* [*Bouteloua*] *gracile*	Alma	Warm	Sod-forming	2.0
Sand Dropseed	*Sporobolus cryptandrus*	VNS	Warm	Bunch	2.0
Western Wheatgrass	*Pascopyrum smithii*	Arriba	Cool	Sod-forming	4.0
And two of the following:					
Pubescent Wheatgrass	*Thinopyrum intermium*	Luna	Cool	Sod	3.0
Galleta	*Pleuraphis jamesii*	Viva florets	Warm	Bunch/Sod-forming	3.0
Crested Wheatgrass	*Agropyron cristatum*	Hy-Crest	Cool	Bunch	3.0
And two of the following					
Small Burnet	*Sanguisorba minor*	Delar	Cool	na	2.0

Rocky Mtn. Bee Plant	*Peritoma* [*Cleome*] *serrulata*	Local collection	Cool	na	1.0
Blue Flax	*Linum lewisii*	Appar	Cool	na	1.0

***Based on 60 pure live seeds (PLS) per square foot, drill seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.**

Menu based seed mix by habitat type for reclamation for piñon-juniper community (minimum requirement).

Common Name	Scientific Names	Variety	Season	Form	PLS lbs/acre*
Plant one of the following:					
Mountain mahogany	*Cercocarpus montanus*	VNS	Warm	Shrub	1.0
Bitterbrush	*Purshia tridentata*	VNS	Cool	Shrub	1.0
And two of the following:					
Western Wheatgrass	*Pascopyrum smithii*	Arriba	Cool	Sod	2.0
Bottlebrush Squirreltail	*Elymus elymoides*	Tusas Germplasm	Cool	Bunch	3.0
Needle-and-thread	*Hesperostipa comata*	VNS	Cool	Bunch	3.0
And two of the following:					
Indian Ricegrass	*Achnatherum hymenoides*	Paloma	Warm	Bunch	3.5
Crested wheatgrass	*Agropyron cristatum*	Hycrest	Cool	Bunch	3.0
Blue grama	*Bouteloua gracilis*	Alma	Warm	Bunch	2.0
And one of the following:					
Prairie Junegrass	*Koeleria macrantha*	VNS	Cool	Bunch	2.0
Muttongrass	*Poa fendleriana*	VNS	Cool	Bunch	2.0
And one of the following:					
Scarlet globemallow	*Sphaeralcea coccinea*	VNS	Warm	Forb	2.0
Wyoming Paintbrush	*Castilleja linearifolia*	VNS	Warm	Forb	2.0
Utah Sweetvetch	*Hedysarum boreale*	VNS	Warm	forb	2.0

***Based on 60 pure live seeds (PLS) per square foot, drill seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.**

4.11 Livestock Grazing

4.11.1 Direct and Indirect Effects

The proposed action new surface disturbance would result in a negligible loss of federal animal unit months (AUMs) at an estimated 20 acres per AUM during construction and drilling. The operator would be responsible to ensure the grazing permittees are contacted prior to any construction operations. All construction activities would be confined to the permitted areas only. If the project area is successfully and immediately re-vegetated, the proposed action may benefit livestock grazing by providing additional forage, above the existing indigenous rate of production. Effects to range and grazing livestock are anticipated to be low in both the short and long term.All hazards to livestock and wildlife would be fenced or contained. All project activities would be confined to permitted areas only. All areas not needed for production equipment or vehicle travel surfaces would be seeded upon reclamation. No livestock improvements will be affected.

4.12 Wildlife

4.12.1 Direct and Indirect Effects

Some temporary displacement of wildlife could occur during the construction, drilling, and completion phases of the proposed project. Potentially affected species include the cottontail rabbit, black-tailed jackrabbit, mule deer, coyote, and other species that typically utilize such habitat.

The proposed action would impact approximately 3.03 acres of potential habitat for such species, of which approximately 0.70 acres is undisturbed habitat area. The proposed project would utilize existing roadway and well pad disturbances to the maximum extent possible, minimizing excessive disturbance and additional habitat fragmentation. There are approximately 435,500 acres of sagebrush or desert scrub habitat and 633,400 acres of piñon-juniper woodland in the FFO (BLM 2003a, pg 3-31). Habitat in the action area is not unique to the planning area and is common throughout the northern half of the planning area. Effects to wildlife would be low for oil and gas development that adheres to proper COAs.

4.12.2 Potential Mitigation

Standard mitigation measures to protect or restore wildlife habitat can be found in the RMP (BLM 2003b) pages 2-25 and 2-26. All construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover reestablishment would minimize impacts to wildlife. All hazards associated with construction and operation of the proposed project would be fenced or contained in storage tanks.

4.13 Migratory Birds

4.13.1 Direct and Indirect Effects

Adult migratory birds would not be directly harmed by the actions at the proposed well site because of their mobility and ability to avoid areas of human activity. Any nests within the action area may be directly impacted, along with eggs and juveniles. The increased human presence during construction, drilling, and reclamation activities may indirectly disturb or displace adults from nests and foraging habitats for a short period of time, three months or less. Long-term production operations would result in only a slight increase in human activity in the immediate proposed action area. Effects to the population status of migratory birds are not anticipated due to the mobility of individuals and the abundance of adjacent habitat for these species. In consideration of these factors, there would be low short-term effects to migratory birds, and minimal long-term effects as a result of the proposed project.

4.13.2 Potential Mitigation

Project mitigation measures are designed to minimize effects on migratory birds and other wildlife. These measures include netting of any permanently open pits and vent caps on all open pipes to prevent bird entry and nesting. All construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover reestablishment would minimize impacts to migratory birds. All hazards associated with construction and operation of the proposed action would be fenced or contained in storage tanks.

Best Management Practices (BMPs) would be used to avoid or minimize the possibility of the unintentional take of migratory birds, as instructed in the MBTA Washington Office Interim Management Guidance and FFO Interim Management Policy (MOU No. NM-F00-2010-001).

4.14 Special Management Species

4.14.1 Direct and Indirect Effects

The proposed project area provides potential foraging habitat for the American peregrine falcon, prairie falcon, golden eagle, and ferruginous hawk. There would be a temporary loss of potential foraging habitat for the four raptor species prior to rehabilitation and reseeding. The proposed project area does not provide suitable nesting habitat for the four raptor species, and is not within a 1/3 mile buffer zone to any historically documented raptor nest sites. Increases in noise and activity would be minimal and consistent with current activities in the area.

4.14.2 Potential Mitigation

Standard conditions of approval designed to protect plants, wildlife, and migratory birds would serve to protect Special Management Species (see Appendix 7.1). All construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover re-establishment would minimize impacts to wildlife. All hazards associated with construction and operation of the proposed project would be fenced or contained in storage tanks.

4.15 Visual Resources

4.15.1 Direct and Indirect Effects

Visual resource impacts would be low in the short-term during construction and drilling as the proposed well site would not be visible from any major highway, residence, or recreation area. Operation of the proposed action would result in low long-term visual impacts which are minimized by interim reclamation of areas on the pad that are not used, and the entire well-tie pipeline. Long-term effects would be low as the proposed action is consistent with the existing development in the area. The immediate area is moderately developed with additional oil and gas facilities, and pipeline and powerline ROWs.

4.15.2 Potential Mitigation

During the construction phases of the proposed action, activities would be confined to the allowed disturbance area and not migrate outside of the construction zone. Vehicles and equipment would utilize existing access roads and developed areas to the maximum extent possible. A rapid construction schedule would minimize impacts to visual resources that result from construction activities and would reduce the period of greatest visual impact. In addition, above ground equipment would be painted an area appropriate color (Juniper Green) and be low profile, further reducing visibility. Mitigations that can potentially minimize the visual impact of the project include revegetation (see Section 4.10.2 above), keeping tree screens in place, and other visual resource management stipulations that are established by the BLM.

4.16 Public Health and Safety

4.16.1 Direct and Indirect Effects

The proposed action is located in a somewhat remote area. Water hauling trucks and well service vehicles are common in the area. Noise in the area would increase during construction and drilling. Effects to public safety would be moderate for the short term and low for the long term, and would include increased traffic risks, chemical spills, pipeline failures, and equipment accidents.

4.16.2 Potential Mitigation

The Operator is responsible for the proper training and the health of its employees. Occupational Safety and Health Administration (OSHA) safety laws and regulations, BLM Notice to Lessee (NTL)-3A, pipeline safety regulations 49 CFR Parts 190 and 192, the Emergency Planning and Community Right to Know Act (1986), and CERCLA 1980, amongst other legislation, have been enacted to ensure the health and safety of workers and the public at large. A well location must have an informational sign, as directed under 43 CFR 3160. Grazing permittees would be notified by the operator prior to any construction activity taking place. All construction activities would be confined to permitted areas only. All hazards associated with construction and operation of the proposed project would be fenced or contained in storage tanks.

5.0 Cumulative Impacts

The leased area of the proposed action has been moderately industrialized with oil and gas well development. The surface disturbance for each project that has been permitted has created a spreading out of land use fragmentation. The cumulative impacts fluctuate with the gradual reclamation of well abandonments and the creation of new additional surface disturbances in the construction of new access roads and well pads. The on-going process of restoration of abandonments and creating new disturbances for drilling new wells gradually accumulates as the minerals are extracted from the land. Preserving as much land as possible and applying appropriate mitigation measures will alleviate the cumulative impacts.

Due to the absence of regulatory requirements to measure GHG emissions and the variability of oil and gas activities on federal minerals, it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of approving this application for permit to drill. A general assumption, however, can be made: drilling this well may contribute to GHG emissions.

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 due to climate change are likely to be varied, including those in the southwestern United States. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened/endangered plants may be accelerated.

Due to loss of habitat or competition from other species whose ranges may shift northward, the population of some animal species may be reduced or increased. Less snow at lower elevations would likely impact the timing and quantity of snowmelt, which, in turn, could impact water resources and species dependent on historic water conditions. Forests at higher elevations in New Mexico, for example, have been exposed to warmer and drier conditions over a ten year period. Should the trend continue, the habitats and identified drought sensitive species in these forested areas and higher elevations may also be more affected by climate change.

6.0 Consultation/Coordination

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

Table 6.0 – Summary of Public Contacts Made During Preparation of Document and Interdisciplinary Team

Public Contact	Title	Organization	Present at Onsite?
ID Team Member	**Title**	**Organization**	**Present at Onsite?**
Mike Flaniken	Environmental Protection Specialist	BLM	YES
Steven Merrell	Construction Supervisor	ConocoPhillips	YES
Fred Harden	Archaeologist	La Plata Archaeological Consultants	NO
Matthew Zabka	Third Party Contractor	Adkins Consulting	YES
Consultation	**Title**	**Organization**	**Present at Onsite?**
Janelle Alleman	Outdoor Recreation	BLM	NO
Jim Copeland	Archaeologist	BLM	NO
Lindsey Eoff	Project Manager	BLM	NO
Scott Hall	Realty Specialist	BLM	NO
John Hanson	Wildlife Biologist	BLM	NO
John Kendall	Wildlife Management Biologist	BLM	NO
Amanda Nisula	Planning and Environmental Coordinator	BLM	NO
Sarah Scott	Natural Resource Specialist	BLM	NO
Barney Wegener	Natural Resource Specialist	BLM	NO

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7.0 Appendices

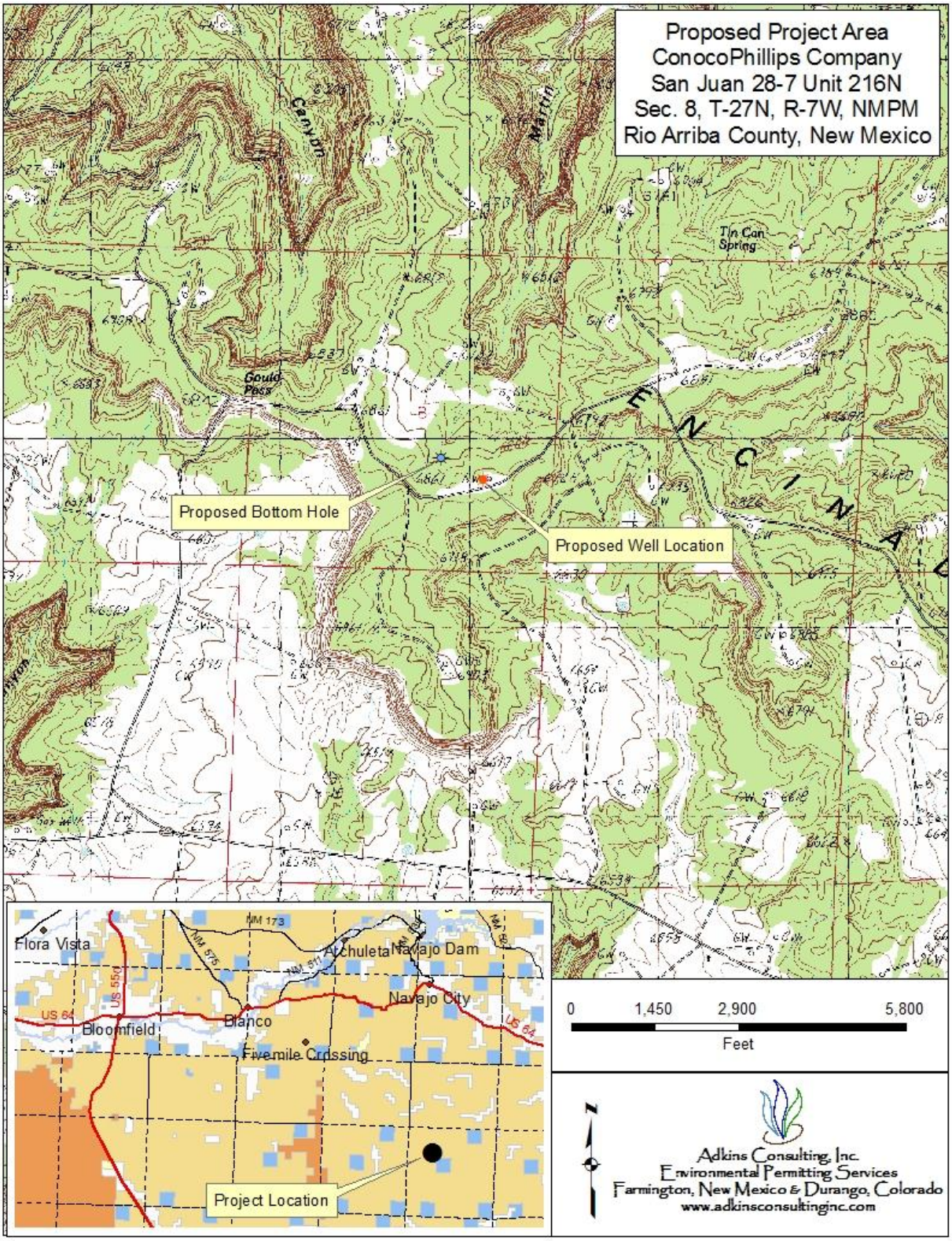
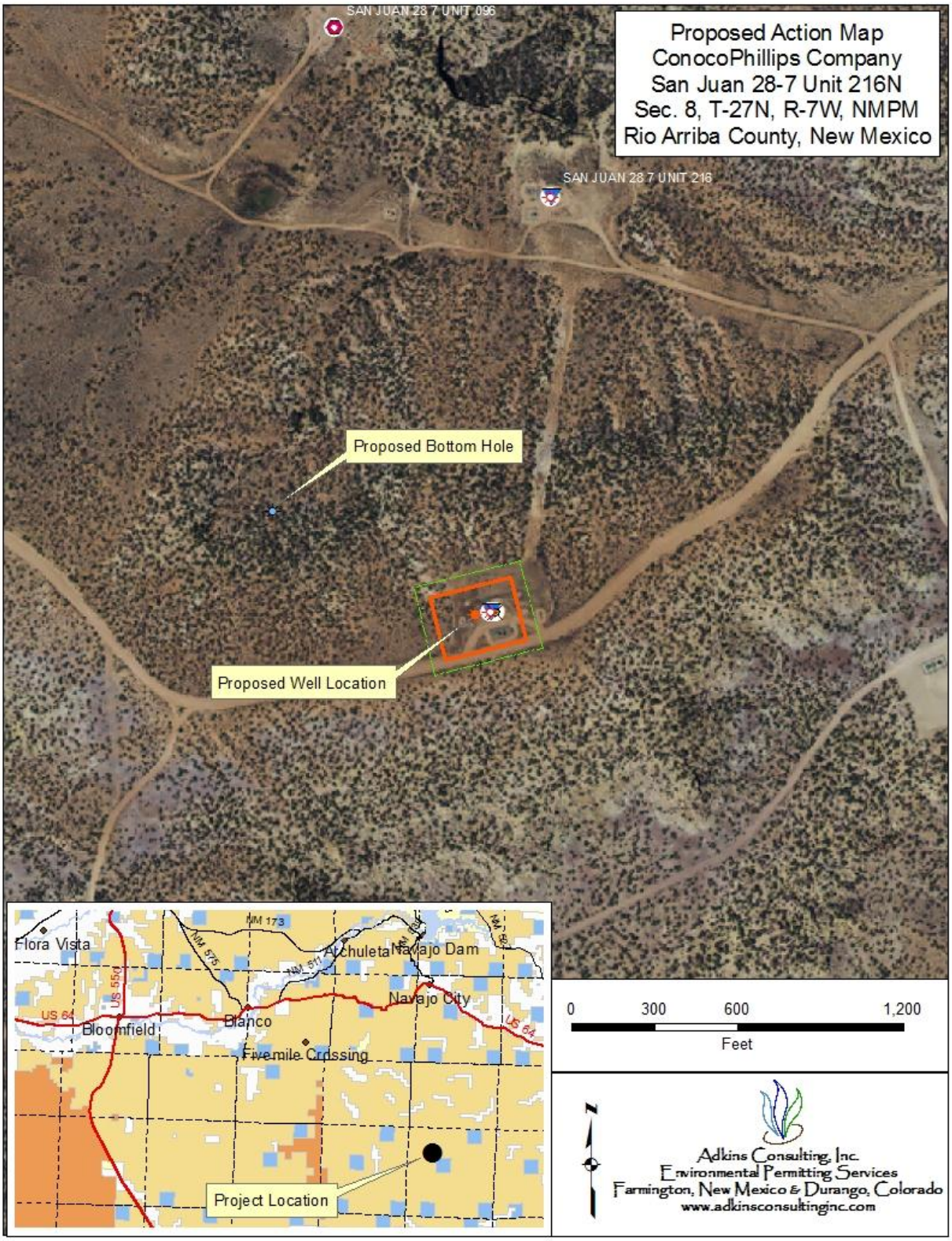
7.1 APD/COA

See attachment. The APD and COAs contain additional information about the proposed action including maps of all facilities, roads, pipelines, power lines, etc.

7.2 Authorities

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

7.3 Proposed Project Area



7.4 Proposed Action Map