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WPX Energy Production, LLC's Chaco 2408-26E No. 126H Oil and Natural Gas Well Project

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1. PURPOSE AND NEED FOR ACTION

1.1. Background

WPX Energy Production, LLC (WPX) has submitted one Application for Permit to Drill (APD) and one Right-of-Way (ROW) Grant to the Bureau of Land Management – Farmington Field Office (BLM-FFO) for the Chaco 2408-26E No. 126H (126H) project. The proposed action is the approval of the APD and ROW Grant by the BLM-FFO, located in Farmington, New Mexico.

The proposed project area is located on surface managed by the BLM-FFO. The proposed project would include the construction of a new well pad and access road; the horizontal drilling and possible production of one Lybrook Gallup natural gas and oil well on the well pad; the usage of facilities throughout the life of the well; and the final abandonment of facilities. The proposed 126H well would access non-federal minerals.

The well would be authorized by an approved APD. The 126H well pad would be located entirely off-lease and would be authorized via a ROW Grant. No additional permitting would be required for the access road, because it would be located entirely within the well pad construction zone.

New surface disturbance associated with the proposed project area would be 5.1 acres. This would include less than 0.1 acre of new access road disturbance and 5.1 acres of new well pad disturbance, including the construction zone. Of the 5.1 acres, 0.8 acres would be reseeded (but not recontoured) and 2.9 acres would be fully reclaimed during interim reclamation The remainder (1.4 acres) would remain disturbed throughout the life of the project.

There would be one staging area associated with the proposed project; this staging area would be located within Bannon Energy Inc.'s (Bannon's) inactive South Blanco Federal 26 No. 2 well pad (1.3 acres), which is currently serving as a tank battery site. The staging area would be permitted via an existing agreement that WPX has in place with Bannon.

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 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 2010). 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 is 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.

Taxes and royalties on oil, natural gas, and carbon dioxide production contribute approximately 25 percent of New Mexico's general fund, and 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). Additionally, 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 under the jurisdiction of the BLM-FFO and located within the San Juan Basin in San Juan County, New Mexico. It is approximately 34 miles south-southeast of the town of Bloomfield, New Mexico; 2 miles north of U.S. Highway 550; and approximately 0.6 mile north of Blanco Wash (See Figure A.1, Appendix A).

1.2. Purpose and Need for Action

The purpose of the proposed action is to allow WPX reasonable access to BLM-managed lands to develop their mineral leases.

The need for the proposed action is established by the BLM's responsibility under the Mineral Leasing Act of 1920, as amended (MLA; 30 U.S. Code [USC] 181 et seq.), which authorizes the BLM to lease public lands for the development of mineral deposits (including oil, gas, and other hydrocarbons) and permit the development of those leases. Per 43 Code of Federal Regulations (CFR) 3160 (Onshore Oil and Gas Operations), the BLM is required to respond to a request for an APD. Additionally, it is the BLM's responsibility under 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. It is the policy of the BLM, as derived from several laws, including the MLA and FLPMA, to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs.

1.3. Decision to be Made

The BLM-FFO will decide whether or not to issue the APD and the ROW Grant associated with the 126H project, and if so, under what terms and conditions. Under the National Environmental Policy Act (NEPA; Public Law 91-90, 42 USC 4321 et seq.), the BLM-FFO must determine if there are any significant environmental impacts associated with the proposed action warranting further analysis in an Environmental Impact Statement (EIS). The BLM-FFO Field Manager is the responsible officer who will decide one of the following:

- To approve the APD and the ROW Grant with design features as submitted
- To approve the APD and the ROW Grant with additional mitigation added
- To analyze the effects of the proposed action in an EIS
- To deny the APD and the ROW Grant

1.4. Conformance with Applicable Land Use Plan

The proposed action is in conformance with the 2003 BLM-FFO Resource Management Plan (RMP). Pursuant to 40 CFR 1508.28 and 1502.21, this site-specific 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 RMP was approved by the September 29, 2003 Record of Decision (ROD; BLM 2003b), and updated in December 2003.

Specifically, the proposed action 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, 2-2 – 2-3)

Development of energy-related ROWs, such as off-lease well pads and access roads, 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, 2-11).

As required by NEPA, this EA addresses site-specific resources and effects of the proposed action that were not specifically covered within the PRMP/FEIS.

1.5. Relationship to Statutes, Regulations or Other Plans

WPX would comply with applicable federal, state, and local laws and regulations. Necessary permits and approvals for the 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.

1.5.1. Clean Water Act

The proposed action is in conformance with the Clean Water Act, as amended (CWA; 33 USC 1251 et seq.).

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 402 of the CWA, the U.S. Environmental Protection Agency (EPA) regulates storm water discharges from industrial and construction activities under the National Pollution Discharge Elimination System program. 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 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. Waters of the U.S. are considered jurisdictional because they have a “significant nexus” to traditional navigable waters. The BLM-FFO and USACE - Durango Regulatory Office have determined that jurisdictional waters (i.e., waters of the U.S.) may include U.S. Geological Survey (USGS) watercourses (i.e., “blue lines” on USGS 1:24,000 topographic maps) and potentially tributaries to these USGS watercourses.

1.5.2. 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).

1.5.3. 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.

1.5.4. New Mexico State Regulations

The New Mexico Oil Conservation Division (NMOCD), which is in the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), regulates oil and gas operations in New Mexico. The NMOCD

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 NMOCD are contained in NMAC 19.15. These regulations include the following, with which WPX 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.

1.6. Scoping, Public Involvement, and Issues

1.6.1. Scoping and Public Involvement

The BLM-FFO publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions within the BLM-FFO. The log is located on the BLM’s New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html).

An on-site meeting, attended by WPX, BLM-FFO representatives, and an environmental consultant (Nelson Consulting, Inc. [NCI]), was held at the proposed 126H project area on September 19, 2013. The local Nageezi Chapter of the Navajo Nation was invited to the on-site meeting by the BLM-FFO; no members of the Navajo Nation attended the meeting. A public invitation to the on-site meeting was posted online (http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office/ffo_oil_and_gas/ffo_onsites.html); no private citizens or groups attended the meeting. A BLM-FFO Interdisciplinary Team meeting was held on September 30, 2013, to discuss the proposed action. At the aforementioned meetings, potential issues of concern were identified by the BLM-FFO and NCI.

Based on the size and scale, routine nature, and potential impacts associated with the proposed action, no additional external scoping was conducted. No public comments were received for the proposed action.

1.6.2. Issues

Issues Analyzed

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

- How would dust and equipment emissions associated with the proposed project impact air resources?
- How would vegetation-clearing, proposed project activities, and final reclamation impact soils?
- Would drilling the proposed well impact groundwater?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact upland vegetation?
- How would vegetation-clearing, proposed project activities, and final reclamation impact wildlife, including migratory birds?
- How would vegetation-clearing, proposed project activities, and final reclamation impact the following BLM Special Status Species (SSS): Aztec gilia (*Aliciella Formosa*), Brack’s fishhook

cactus (*Sclerocactus cloveriae* var. *brackii*), (*Toxostoma bendirei*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus*), pinyon jay (*Gymnorhinus cyanocephalus*), and spotted bat (*Euderma maculatum*)?

- How would surface-disturbing activities associated with construction of the proposed project impact cultural resources?

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 analyzed in this EA.

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 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; BLM 2003a). Based on a review of species currently listed by the USFWS as occurring in San Juan County (USFWS 2013), as well as the location of the proposed project area and habitat within the proposed project area, the potential does not exist for USFWS-listed species to occur within the proposed project area (See Biological Survey Report [BSR], Appendix B). Water for drilling would be obtained from the permitted Turtle Mountain (SJ-960-S-3) and Blanco Trading Post (WR711) water wells; no unaccounted-for water depletions within USFWS-listed fish habitat would occur. Therefore, there is no need for additional Section 7 consultation.

Native American Religious Concerns

For the proposed action, identification efforts for Native American Religious Concerns were limited to a review of existing published and unpublished literature (e.g., Van Valkenburgh 1941, 1974; Brugge 1993; Kelly, et al. 2006), development of the site-specific Class III survey report prepared for the proposed action (La Plata Archaeological Consultants [LAC] Report No. 2013-5mm [LAC 2013, BLM Report No. 2014 (I) 022F) and a review by the BLM's cultural resources program regarding the presence of Traditional Cultural Properties (TCPs) identified through ongoing BLM tribal consultation efforts. 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. The proposed action would not impact any known TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (AIRFA; 42 USC 1996) or Executive Order (EO) 13007.

2. PROPOSED ACTION AND ALTERNATIVE(S)

2.1. Proposed Action

The proposed action is the BLM-FFO approval of one APD and one ROW Grant associated with WPX's 126H project. The proposed project would include the drilling, production, and final abandonment of one oil and natural gas well; the construction, use, and reclamation of a single well pad (with construction zone) and an associated access road; and the use and reclamation of one staging area.

The primary objective of the well would be to produce oil; however, it is likely that natural gas would be a byproduct.

Commencement of the proposed 126H project is proposed for 2014.

Construction plats associated with the proposed project are provided in Appendix C. Photographs of the proposed project area are provided in Appendix D.

2.1.1. Location of Proposed Project Area

Maps of the proposed project area and staging area are provided in Appendix A. The proposed project area is plotted on the Crow Mesa West, New Mexico, 7.5-minute USGS quadrangle map (Figure A.2, Appendix A) and the 2011 San Juan County National Agriculture Imagery Program aerial photograph (Figure A.3, Appendix A).

The proposed project area is under the jurisdiction of the BLM-FFO and is located within the San Juan Basin in San Juan County, New Mexico. It is approximately 34 miles south-southeast of the town of Bloomfield, New Mexico; 2 miles northeast of U.S. Highway 550; 0.4 mile northeast of San Juan County Road 7997; and approximately 0.6 mile north of Blanco Wash.

One proposed staging area would be utilized during the construction phase of the proposed 126H project: Bannon's inactive South Blanco Federal 26 No. 2 well pad, which is currently serving as a tank battery site. This well pad is located 0.3 mile east of the proposed well pad.

The general region surrounding the proposed project area is characterized by badlands, sandstone mesas, very low hills, sagebrush flats, and sandy washes. The proposed project area is located on sagebrush flats with a gentle slope to the southwest. There is a shallow, ephemeral drainage running through the center of the proposed project area. The elevation of the proposed project area ranges from approximately 6,810 to 6,820 feet above mean sea level (AMSL).

Existing and proposed oil and gas lease roads, well pads, and pipeline corridors are in the general vicinity of the proposed project area. Approximately 500 feet of the proposed 126H construction zone would overlap an existing roadway and pipeline ROW.

The legal location of the proposed 126H project area and staging area are provided in Table 1 below.

Table 1. Legal Land Description for 126H Project Features

Facility	Legal Location (New Mexico Principal Meridian)		
	Quarter-Quarter	Section	Township & Range
Well Pad & Access Road	SW ¼ NW ¼	26	Township 24 North, Range 8 West
Staging Area	SE ¼ NW ¼		

2.1.2. Description of Proposed Project

For a detailed description of design features and construction practices associated with the proposed project, refer to the APD and ROW Grant Applications on file at the BLM-FFO. The plats (Appendix C) 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 U.S. Forest Service [USFS] 2007).

Design Features and Best Management Practices

WPX would adhere to the Conditions of Approval (COAs) attached to the approved APD and stipulations attached to the ROW Grant. The following general design features and best management practices (BMPs) would occur.

Control of Waste

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.

WPX would follow NMOCD “Pit Rule” guidelines and Onshore Order No. 1 (issued under Onshore Oil and Gas Operations [43 CFR 3160]) regarding closed-loop systems. No blow pits or cuttings pit would be used for the proposed 126H project.

Protection of Paleontological Resources

If a paleontological site is discovered, the BLM would be notified and the site would 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.

Protection of Cultural Resources

All cultural resource stipulations would be followed as indicated in the Cultural Resource Records of Review, attached to the COAs in the approved APD and stipulations attached to the ROW Grant. These stipulations could include, but would not be limited to, temporary or permanent fencing or other physical barriers, monitoring of earth-disturbing construction, reduction of the proposed project area and/or establishment of specific construction avoidance zones, and employee education.

Employees, contractors, and sub-contractors associated with the proposed project would be informed by WPX that cultural sites are to be avoided by personnel, personal vehicles, and company equipment. These individuals would be informed that it is illegal to collect, damage, or disturb cultural resources, and that such activities are punishable by criminal and/or administrative penalties under the provisions of ARPA.

In the event of a cultural discovery during construction, WPX would immediately stop all construction activities in the immediate vicinity of the discovery and immediately notify the archaeological monitor, if present, or the BLM. The BLM would then evaluate or cause the site to be evaluated. Should a discovery be evaluated as significant (e.g., eligible for the National Register of Historic Places [NRHP] or protected under NAGPRA or ARPA), it would be protected in place until mitigating measures could be developed and implemented according to guidelines set by the BLM.

Protection of Flora and Fauna, including SSS and Livestock

Because the proposed project would disturb more than 4.0 acres of vegetation, if construction activities for either of the proposed project would occur during the migratory bird breeding season (May 15 through July 31), a migratory bird nest survey of that proposed project area would take place one to two days prior to construction. This survey would be conducted by a BLM-FFO-approved biologist following BLM-FFO

protocol. If, during the nest survey or during construction, active nests are located within or adjacent to 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.

The proposed project area is within the BLM-FFO-designated "potential habitat zone" for two BLM-FFO SSS: Aztec gilia and Brack's fishhook cacti. Appropriate habitat for these species is present within portions of the proposed project area. During the biological survey of the proposed project area, NCI determined that the snow cover was too great to adequately conduct a transect survey for these species. Therefore, the BLM-FFO agreed that a transect survey of the proposed project area could be conducted after the snow melts but before the proposed project commences (BLM 2013d). Results of the survey would be provided to the BLM-FFO. Any Brack's fishhook cacti identified during this survey would be protected in place or transplanted according to the BLM-FFO Brack's Cactus Transplant Procedure (BLM 2013c). If any Aztec gilia are identified within the proposed project area, the BLM-FFO would determine appropriate mitigation. Details regarding these species are provided in the BSR (Appendix B).

Should any active raptor nests be observed within one-third mile of the proposed project area or should any SSS be observed within the proposed project area prior to or during construction, construction would cease and the BLM-FFO would be immediately contacted. The BLM-FFO would then ensure evaluation of the resource. Should a discovery be evaluated as significant (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.

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

The well associated with the connected action would have a closed-loop system. As stated above (Design Features and Best Management Practices - Control of Waste), WPX would follow NMOCD "Pit Rule" guidelines and Onshore Order No. 1 (issued under Onshore Oil and Gas Operations [43 CFR 3160]) regarding the placement and operation of closed-loop systems.

Livestock grazing operators in the vicinity of the proposed project area would be contacted by WPX at least 10 days prior to construction. No holes would be left open overnight. Open holes would be barricaded to ensure the safety of livestock and wildlife. If present, any range improvements (such as fences, gates, cattleguards, or waterlines) disturbed by construction activities would be repaired to the condition they were in prior to disturbance. Repairs, if needed, would take place immediately following construction.

Protection of Water Resources

The well associated with the connected action would have a closed-loop system. As stated above (Design Features and Best Management Practices - Control of Waste), WPX would follow NMOCD "Pit Rule" guidelines and Onshore Order No. 1 (issued under Onshore Oil and Gas Operations [43 CFR 3160]) regarding the placement and operation of closed-loop systems.

There are no USGS watercourses located within the proposed project area.

Protection of Topsoil

Topsoil, which would be stripped from the surface of the proposed project area during the construction phase of the proposed project, would be stored and protected until it is redistributed during reclamation. Topsoil would be stored within the construction zone separately from subsoil material. The topsoil would be free of brush, tree limbs, trunks, and roots. Vehicle/equipment traffic would not be allowed to cross topsoil stockpiles. The topsoil would be protected using wattles or other BMPs so that erosion is minimized. If topsoil is stored for a length of time such that nutrients are depleted from the topsoil, amendments would be added to the topsoil as advised by the WPX environmental scientist or appropriate agent/contractor.

Protection of the Public

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.

Prevention and Control of Weeds

It would be WPX's responsibility to monitor, control, and eradicate all invasive, non-native plant species within the proposed project area throughout the life of the project. WPX's weed-control contractor would contact the BLM-FFO regarding acceptable weed-control methods. If the 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.

Protection of Air Resources

The BLM's regulatory jurisdiction over field production operations has resulted in the development of BMPs 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 also be applied to roads or other surfaces to reduce fugitive dust. Neither petroleum-based products nor produced water would be used.

Noise

Production would comply with noise standards outlined in NTL 04-2 FFO (BLM 2004). WPX would adhere to the noise stipulations, if any, included in the COAs attached to the approved APD and/or stipulations attached to the ROW Grant.

Additional Design Features and BMPs

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

No construction or routine maintenance activities would be performed during periods when the soil is too wet to adequately support construction equipment. If equipment would create ruts deeper than 6 inches, the soil would be deemed too wet for construction or maintenance.

Worker safety incidents would be reported to the BLM-FFO as required under Notice to Lessees (NTL) - 3A (USGS 1979). WPX would adhere to company safety policies, Occupational Safety and Health Administration regulations, and Department of Transportation regulations.

WPX would comply with Onshore Oil and Gas Order No. 2, issued under Onshore Oil and Gas Operations (43 CFR 3160).

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

Proposed Project Phases

Under the proposed action, the following phases would occur.

Upgrade of Existing Road

WPX would upgrade the existing road(s) leading to the proposed 126H project area. Upgrades would be implemented as needed to comply with *Gold Book* (BLM and USFS 2007) standards and BLM Manual 9113; specifically, low-water crossings would be improved.

Construction of Access Road and Well Pad

The BLM-FFO would be notified at least 48 hours prior to the start of construction. The construction phase for the well pad and the access road associated with the proposed project is expected to be approximately one week.

The proposed well pad and access road would be cleared of vegetation. The vegetation (including trees less than 3 inches in diameter [at ground level] and slash/brush) would be chipped or mulched and incorporated into the topsoil as additional organic matter. The subsurface portion of trees (tree stumps) would be placed in adjacent areas needing soil stabilization, or would be hauled to an approved facility.

The top 6 inches of topsoil, or as much as possible, would be stripped and stockpiled within the construction zone. The protection of topsoil is discussed in "Design Features and Best Management Practices – Protection of Topsoil," above.

The proposed access road and well pad 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. Construction would utilize native soil and materials available onsite. If sandstone is needed for surfacing the proposed well pad, the sandstone would be retrieved from a permitted location.

The proposed 15-foot-long access road (a resource road) would be designed and maintained in accordance with the *Gold Book* (BLM and USFS 2007) standards and BLM Manual 9113, Sections 1 and 2 (BLM 2011d and BLM 2011e). The 30-foot-wide road corridor would accommodate clearing, cut-and-fill slopes, and drainage ditches. Within the corridor, there would be a 14-foot-wide running surface and adequate crowning and drainage on both sides. The proposed access road would be built up 18 to 24 inches following *Gold Book* (BLM and USFS 2007) standards. The maximum road grade would be 2 percent. Within the proposed access road corridor, no turnouts would be necessary due to the minimal length of the proposed road. The road would be constructed to meet the standards for anticipated traffic flow and all-weather requirements. Surfacing material would be used, if economically viable.

The proposed well pad would measure 300 feet by 500 feet. The associated 50-foot-wide well pad construction zone would surround the pad. The size of the proposed well pad is slightly larger than typical well pads in the BLM-FFO area because the equipment (such as tanks) associated with the new hydraulic fracturing design requires a larger area.

The proposed staging area would be used during this phase of the proposed project.

Water diversions and silt traps (if needed) would be installed during interim reclamation; please see the "Interim Reclamation" section, below.

Drilling and Completion

Once construction is complete within the proposed project area, a drilling rig would be transported to the 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. The proposed staging area would be used during this phase of the proposed project.

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
- Various service company equipment (cement trucks, fracturing 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).

It is estimated that 23,000 barrels of useable water would be required to drill the well. Of the 23,000 barrels, approximately 10,000 to 11,000 barrels would be recovered for reuse. Water for drilling would be obtained from the San Juan Basin Water Haulers Association, who would obtain and truck their water from permitted water wells (the Turtle Mountain [SJ-960-S-3] and Blanco Trading Post [WR711] wells). WPX would ensure that water would be obtained legally and that all required permits would be obtained prior to obtaining water.

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.

As stated in “Design Features and Best Management Practices – Control of Waste,” above, WPX would follow NMOCD “Pit Rule” guidelines and Onshore Order No. 1 (issued under Onshore Oil and Gas Operations [43 CFR 3160]) regarding the placement and operation of closed-loop systems. No blow pits or cuttings pit would be used for the proposed 126H. Any other fluids or hazards on the location would be contained or fenced and properly maintained to ensure the safety of livestock and wildlife.

Interim Reclamation

If the well proves to be productive, some portions of the proposed project area would be fully reclaimed and some portions would only be reseeded. Remaining portions would remain disturbed throughout the life of the associated well. Areas that would be fully reclaimed, reseeded only, or left unreclaimed during this phase are described in Section 2.1.3 (Surface Disturbance). During interim reclamation, WPX would repair any damage to the staging area; re-establish and reseed water diversions; and re-establish, reseed the center, and divert water away from the teardrop. Details of the interim reclamation process (including species included in the seed mixture) are provided in the Surface Reclamation Plan (Appendix E).

Interim reclamation would be initiated within 120 days of construction. The BLM-FFO would be notified at least 48 hours prior to the start of interim reclamation activities. Interim reclamation could occur simultaneously with production.

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.

In areas that would be fully reclaimed, slopes would be re-contoured to pre-construction topographical contours, if possible. WPX would diminish the evidence of cuts, fills, and flat well pad surfaces.

In areas that are to be fully reclaimed or just reseeded, stockpiled topsoil (if available) would be redistributed and the surface would be ripped and seeded. Sediment- and erosion-control features (including water diversions, silt traps, and culverts) would be installed, as necessary. The BLM-FFO Sagebrush-Grass Community Seed Mixture would be used for the project.

Under the BLM-FFO Bare Soil Reclamation Procedures (BLM 2013b), monitoring reclaimed surfaces is required to document successful reclamation; monitoring and reporting are discussed in the Surface Reclamation Plan (Appendix E).

Production

The production phase of wells varies; the lifetime is anticipated to be 30 to 50 years. Production equipment that would remain on the proposed well pad could include the following:

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

Production facilities would be located within a 300-by-100-foot facility area on the eastern end of the well pad. The tear drop for the well pad would consist of a looped, 35-foot-wide driving surface; the tear drop would be used to access the wellhead and other facilities.

Site security guidelines would be followed, as identified in 43 CFR 3162.7-5 and Onshore Oil and Gas Order No. 3. With the exception of equipment subject to safety requirements, equipment would be painted Juniper Green to blend with the surrounding environment. Production facilities would be placed, to the extent practical, to minimize visual impacts.

During production, normal upkeep would be required to monitor production and resolve any problems. It is anticipated that one pick-up truck would visit the proposed well pad daily during the normal work week.

Occasionally, workover or recompletion of the proposed well would be necessary to ensure that efficient production is maintained. Workovers and recompletions would be scheduled as needed to improve and maintain production of the well. Workover activities could include repairs to the wellbore equipment (e.g., casing, tubing, rods, and pump), wellheads, or production facilities. A 210-foot-by-180 foot workover area would surround the proposed wellhead. This workover area could be used for future activities within the well pad but would not be used for daily activities.

Final Reclamation and Abandonment

If the well proves to be unproductive, or when the well is no longer commercially viable, the well would be plugged and abandoned. Downhole well abandonment would be carried out under current BLM-FFO and state regulations. The bore hole would be plugged with cement and the production facilities would be removed. An aboveground marker would be placed over the plugged hole. The marker would contain individual well identification information.

Final reclamation of the proposed well pad and access road would take place, unless the BLM-FFO considers the retention of these facilities necessary for the management of multiple uses of natural resources. Details of the final reclamation process (including species included in the seed mixture) are provided in the Surface Reclamation Plan (Appendix E).

The final reclamation phase is anticipated to take less than one week for the proposed project location. WPX would provide the BLM-FFO with technical and environmental aspects of the final plugging, abandonment, and reclamation procedures.

During this phase, a bulldozer and a tractor with seeding capabilities would be used. Approximately four personnel would be required.

The goal of final reclamation would be to return disturbed areas associated with the proposed project to pre-construction conditions, if possible, by diminishing the evidence of cuts, fills, and flat surfaces. Portions of the proposed project area that were not fully reclaimed during interim reclamation would be cleared (if vegetated), re-contoured to pre-construction topographical contours, covered with salvaged topsoil, and seeded. Sediment- and erosion-control measures would be implemented, as necessary. Water bars would be installed across the roads, and dead-end ditches and earthen barricades would be constructed at the entrance to reclaimed areas. Measures would be taken to control sedimentation and erosion, as necessary.

Under the BLM-FFO Bare Soil Reclamation Procedures (BLM 2013b), monitoring reclaimed surfaces is required to document successful reclamation; monitoring and reporting are discussed in the Surface Reclamation Plan (Appendix E).

2.1.3. Proposed Surface Disturbance

Total surface disturbance associated with the proposed 126H access road, well pad, and well pad construction zone would encompass 5.5 acres. Of this, approximately 5.1 acres would be new surface disturbance. Of the 5.1 acres, 0.8 acres would be reseeded (but not recontoured) during interim reclamation, 2.9 acres would be fully reclaimed during interim reclamation, and 1.4 acres would remain disturbed throughout the life of the project. One previously disturbed staging area would be used for the proposed project. The following table summarizes the disturbance and reclamation acreage associated with the proposed project.

Table 2. Acreage Associated with Proposed Project

Feature	Acreage		Description of Acreage Following Interim Reclamation		
	Total	New Disturbance	Fully Reclaimed (Reseeded and Recontoured)	Reseed Only	Unreclaimed
Surface Disturbance					
Well Pad	3.4	3.4	1.2	0.8(1)	1.4(1)
Construction Zone	2.1	1.7	1.7	-	-
Access Road Corridor	<0.1	<0.1	<0.1	<0.1(1)	<0.1(1)
Total	**5.5**	**5.1**	**2.9**	**0.8 (1)**	**1.4(1)**
Staging Area (Previously Disturbed Surface)					
South Blanco Federal 26 No. 2 Well Pad	1.3	-	-	1.3(2)	-

(1)These areas would be fully reclaimed during final reclamation
(2) Portions of staging area would be reseeded, as described in text below.

The proposed 126H project features are described further below.

Access Road Corridor

The access road corridor would be 30 feet wide and 15 feet long, totaling less than 0.1 acre.

The 14-foot-wide running surface of the proposed access road and the bottoms of the bar ditches alongside the proposed access road (less than 0.1 acre, total) would remain disturbed for the lifetime of the proposed project. The remainder of the access road corridor (less than 0.1 acre) would be reseeded during interim reclamation.

Well Pad

The well pad would measure approximately 300 by 500 feet (3.4 acres). The well pad would not overlap any existing disturbance.

Of the 3.4 acres of new disturbance, approximately 1.3 acres, known as the "non-reseed working area," would remain disturbed for the lifetime of the proposed project. The non-reseed working area would consist of the following:

- A 300-by-100-foot (0.7-acre) facility area would be located on the eastern side of the proposed well pad.
- A teardrop with a 35-foot-wide (0.7-acre) driving surface would be located within the center of the proposed well pad.

Approximately 0.8 acres, known as the "reseed working area," would be reseeded (but not recontoured) during interim reclamation. The reseed working area would consist of the center of the tear drop and an approximately 210-by180-foot workover area around the wellhead. The remainder of the well pad (1.2 acres) would be fully reclaimed during interim reclamation.

Construction Zone

A 50-foot-wide (2.1-acre) construction zone would surround the well pad. Less than 0.1 acre of the construction zone would overlap the proposed access road. A portion of the south end of the construction zone would overlap an existing roadway and pipeline (0.4 acre). Therefore, the construction zone would add 1.7 acres of new disturbance to the proposed project area. The 1.7 acres of new disturbance associated with the construction zone would be fully reclaimed during interim reclamation.

Staging Area

There would be one staging area associated with the proposed project; this staging area would be located within Bannon's inactive South Blanco Federal 26 No. 2 well pad, which is currently serving as a tank battery site. The location measures 1.3 acres (based on aerial photographs). During staging, WPX would stay within the boundaries of the existing disturbance area. During interim reclamation, WPX would repair any damage to the staging area and reseed water diversions and the teardrop center.

2.2. No Action

Under the No Action Alternative, the 126H APD and ROW Grant would not be approved. The proposed well would not be drilled and the proposed well pad and access road would not be constructed. Current land and resource uses would continue to occur in the proposed project area.

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 common. 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 drilling applications. In addition, operating factors such as production efficiency; rod, pump, and tubing wear; and workover frequency is also a consideration. Generally, directional 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 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.

The original preferred alternative location for the 126H well pad would be located to the north of the current proposed project area. However, the location would have disturbed suitable Aztec gilia and Brack's fishhook cactus habitat. Also, the topography of the alternative location is quite steep and includes several deep washes, which would make the alternative location difficult for construction of a well pad.

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 would serve as the baseline for comparing the environmental impacts of the analyzed alternatives, and would not be further evaluated in this EA (BLM 2008b).

3.1. Air Resources

3.1.1. Affected Environment

The proposed project area is located in San Juan County, New Mexico. General information on air quality in the area is contained in Chapter 3 of the PRMP/FEIS (BLM 2003a, 3-48 – 3-53). New information about greenhouse gases (GHGs) and their effects on national and global climate conditions have emerged since this document 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.”

Much of the information referenced in this section is incorporated from the Air Resources Technical Report for BLM Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as the Air Resource Technical Report; BLM 2013a). This document summarizes the technical information related to air resources and climate change associated with oil and gas development and the methodology and assumptions used for analysis.

The EPA has the primary responsibility for regulating air quality, including the regulation of six nationally regulated ambient air pollutants (criteria pollutants). These criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} & $PM_{2.5}$), sulfur dioxide (SO_2) and lead (Pb). The EPA has established NAAQS for criteria air pollutants. The NAAQS are protective of human health and the environment. The EPA has approved New Mexico’s State Implementation Plan, and the state enforces state and federal air quality regulations on all public and private lands within the state, with the exception of tribal lands and Bernalillo County.

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. The EPA has proposed or completed actions recently to implement CAA requirements for GHG emissions. Climate has the potential to influence renewable and non-renewable resource management.

Air Quality

Criteria Air Pollutants

The Air Resource Technical Report describes the types of data used in the description of the existing conditions of criteria pollutants, describes how the criteria pollutants are related to the activities involved in oil and gas development, and provides a table of current national and state standards (BLM 2013a). The EPA Green Book web page reports that all counties in the BLM-FFO analysis area, including San Juan, McKinley, Rio Arriba, and Sandoval Counties in New Mexico and La Plata County in Colorado, are in attainment of all NAAQS as defined by the CAA (EPA 2012). In addition, the area does not violate any New Mexico Ambient Air Quality Standards (NMAAQS). The current criteria pollutant “design

concentrations" in the analysis area are described below. Design Concentrations are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. Table shows monitored design values for O_3 in recent years for each of the three San Juan County O_3-monitoring stations.

Table 3. Reported Ozone Values for San Juan County Ozone Monitoring Stations

State Air Monitoring Station	8-hour Ozone Design Value (ppm*)				NAAQS
	2007-2009	2008-2010	2009-2011	2010-2012	2008
Substation	0.067	0.063	0.063	0.067	0.075
Bloomfield	0.061	0.060	0.061	0.067	0.075
Navajo Lake	0.069	0.066	0.068	0.071	0.075

Source: NMED 2012
* parts per million

Table 4 summarizes monitored design values for other criteria pollutants in San Juan County.

Table 4. Criteria Pollutant Design Value Concentrations monitored in San Juan County

Pollutant	Design Value	Averaging Time	NAAQS	NMAAQS
NO_2	13 ppb	Annual	53 ppb	50 ppb
NO_2	39 ppb	1-hour	100 ppb(1)	0.10 ppm (24-hour)
PM_{10}	Data incomplete	24-hour	150 µg/m (3,4)	150 µg/m(3,4)
$PM_{2.5}$	4.5µg/m(3)	Annual	12 µg/m(3,5)	60 µg/m(3,4)
$PM_{2.5}$	14µg/m(3)	24-hour	35 µg/m(1,3)	--
SO_2	0.001ppm(7)	Annual	None	0.02 ppm
SO_2	20 ppb(8)	1-hour	75 ppb(6)	None
SO_2	0.008 ppm	24-hour	None	0.10 ppm

Source: EPA 2012
(1) 98th percentile, averaged over 3 years
(2) Not to be exceeded more than once per year
(3) Not to be exceeded more than once per year on average over 3 years
(4) The NMAAQS is a standard for total suspended particulate matter
(5) Annual mean, averaged over 3 years
(6) 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
(7) ppm: parts per million
(8) ppb: parts per billion

In 2005, the EPA estimated that there was less than 0.01 ton per square mile of Pb emitted in the analysis area, which is less than 2 tons total (BLM 2013a). No monitoring is conducted for Pb and CO in northwestern New Mexico; however, concentrations of these pollutants are expected to be low in rural areas, and are therefore not monitored.

Hazardous Air Pollutants

The Air Resources Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities (BLM 2013a). The EPA has identified 187 toxic air pollutants as HAPs. In March 2011, the EPA published the fourth in a series of National Scale Air Toxics Assessments (NATA) that quantifies HAP emissions for 2005 by U.S. County. The purpose of the NATA is to identify areas where HAP emissions result in high health risk. Computer models are used to develop estimates of risk of cancer or other health impacts. NATA presents risk hazard indexes for cancer, neurological problems, and respiratory problems for each county and census tract. Because techniques have changed over the years, each NATA is not comparable to those previously issued. The EPA also cautions that because data availability varies from state to state, the results are not necessarily comparable from one geographic area to another. The 2005 NATA analysis estimated tract level total cancer risk for the analysis area as 25 to 50 per one million; the estimated tract level total respiratory hazard index was zero to 1. The EPA estimates the average national cancer risk for 2005 was 50 per one million, meaning 1 person out of every 20,000 had an increased likelihood of contracting cancer from breathing air toxics from outdoor sources if exposed to 2005

emission levels over their lifetime. A respiratory hazard index below 1 indicates that exposures in the area do not exceed reference levels that would have adverse effects for human health.

Climate

The analysis area is located in a semiarid climate regime typified by dry, windy conditions and limited rainfall. Summer maximum temperatures are generally in the range of 80 or 90 degrees Fahrenheit (°F), and winter minimum temperatures are generally in the teens to 20s. Temperatures occasionally reach above 100°F in June and July and have dipped below zero in December and January. Precipitation is divided between summer thunderstorms associated with the southwest monsoon and winter snowfall as Pacific weather systems drop south into New Mexico. Table 5 shows climate normals for the 30-year period from 1981 to 2010 for the Farmington, New Mexico, area.

Table 5. Climate Normals for the Farmington Area, 1981-2010

Month	Average Temperature*	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	Average Precipitation (inches)
January	30.5	40.8	20.3	0.53
February	35.8	46.8	24.8	0.59
March	43.2	56.1	30.3	0.78
April	50.4	64.7	36.2	0.65
May	60.4	74.8	46.1	0.54
June	69.8	85.1	54.5	0.21
July	75.4	89.6	61.2	0.90
August	73.2	86.5	59.8	1.26
September	65.4	79.1	51.7	1.04
October	53.3	66.4	40.1	0.91
November	40.5	52.2	28.8	0.68
December	31.0	41.2	20.7	0.50

Source: BLM 2013a; data collected at New Mexico State Agricultural Science Center - Farmington
* degrees Fahrenheit

3.1.2. Impacts from the Proposed Action

Methodology and assumptions for calculating air pollutant and GHG emissions are described in the Air Resources Technical Report. This document incorporates the sections discussing the modification of calculators developed by the BLM to address emissions for one horizontal oil well. The calculators give an approximation of criteria pollutant, HAP, and GHG emissions to be compared to regional and national emissions levels. Also incorporated into this document are sections describing the assumptions used in developing the inputs for the calculator (BLM 2013a).

Direct and Indirect Impacts

Table 6 shows estimated emissions from one proposed horizontal oil well for criteria pollutants, volatile organic compounds (VOCs) and GHGs. For comparison, Table 7 shows total human-caused emissions for each of the counties in the BLM-FFO management area and La Plata County, Colorado, based on the EPA's 2008 emissions inventory (EPA 2011).

Table 6. Criteria Pollutant and VOC Emissions Estimated for Construction of One Horizontal Oil Well; Average 25 Days to Drill and Complete

Activity	NOx*	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CH_4	CO_2
One time operations (tons)*								
Construction	5.5	1.5	0.5	2.5	0.25	0.1	0.007	598.85
Completion	0.5	0.1	0.03	0.025	0.025	-	-	55.00
Interim Reclamation	0.006	0.006	0.006	0.001	-	0.003	-	1.24
Final Reclamation	0.006	0.006	0.006	0.001	-	0.004	-	1.66
Ancillary Operations (tons)								
Workover	0.129	0.04	0.01	0.01	0.01	-	-	10.59
Road Maintenance	-	-	-	-	-	-	-	0.26
Road Traffic	-	-	-	-	-	-	-	0.06
Annual operations (tons/yr)								
Oil Haul Truck and small truck (100 bbl/day)	0.009	0.006	0.0012	0.0009	0.0008	-	0.0001	3.88
Total	**6.13**	**1.64**	**0.55**	**2.54**	**0.29**	**0.11**	**0.01**	**671.54**

* nitrogen oxide

Table 7. Analysis Area Emissions in Tons per Year, 2008

County	NO_X	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2
McKinley	12,595.0	31,885.2	37,509.0	66,590.7	6,977.5	1,659.8
Rio Arriba	4,276.6	27,352.9	45,841.5	46,321.6	4,746.2	89.1
San Juan	35,651.7	54,549.5	46,994.9	69,655.7	8,108.3	11,471.0
Sandoval	4,780.1	33,290.5	31,733.6	36,232.3	4,056.3	123.4
Total	**57,303.4**	**147,078.1**	**160,079**	**218,800.3**	**23,897.3**	**13,343.3**

Source: EPA 2008

Oil storage tanks on the well locations may result in venting of VOCs. Oil well production is generally presented as barrels per day produced. The emissions calculator estimated that for every barrel per day produced there could be 0.12 tons of VOC vented per year. The average horizontal oil well in the BLM-FFO management area produces approximately 100 barrels per day. One hundred barrels per day is estimated to result in 12 tons of VOC emissions per year. Oil storage tanks would be subject to current EPA regulations regarding the capture or flaring of VOC emissions.

Table displays the percent increase in total emissions expected in the analysis area as a result of constructing and operating one horizontal oil well.

Table 8. Percent Increase in Analysis Area Emissions from the Proposed Action

	NO_X	CO	VOC	PM_{10}*	$PM_{2.5}$ *	SO_2*
Total Emissions	57,303.4	147,078.1	160,079.0	218,800.3	23,897.3	13,343.3
Horizontal Oil Well Emissions	6.13	1.64	12.55(8)	2.54	0.29	0.11
Percent Increase	**0.01**	**0.001**	**0.009**	**0.001**	**0.001**	**0.0008**

*Values derived from average emissions for any well drilling in the analysis area. Calculated results available upon request.

Hazardous Air Pollutants

The formulas used for calculating HAPs in the calculators are very imprecise. For many processes it is assumed that emission of HAPs will be equivalent to 10 percent of VOC emissions. Therefore, the

estimated HAP emissions of 1.25 tons per year should be considered a very gross estimate. Most of the VOC emissions estimated for one horizontal oil well result from venting from oil storage tanks. Current EPA regulations require operators to reduce VOC emissions by 95 percent if their oil storage tanks emit over 6 tons of VOC emissions per year. A reduction of 95 percent of oil storage tank VOC emissions would reduce the estimated HAP emissions to 0.12 tons per year.

Total Greenhouse Gases

The available statewide GHG summary combines GHG emissions from CO_2 and CH_4 (NMED 2010). To compare the GHG emissions from the proposed action (estimated by the calculator) with statewide GHG emissions, equivalent CO_{2e} emissions for both CH_4 and CO_2 were summed. The total statewide GHG emission estimate for 2007 was 76,200,000 metric tons of CO_{2e} (76.2 million metric tons; NMED 2010). The estimated CO_{2e} metric tons emissions from one horizontal oil well (609.2 metric tons) would represent a 0.0008-percent increase in New Mexico CO_2 emissions.

Cumulative Impacts

The BLM-FFO manages federal hydrocarbon resources in San Juan, Sandoval, Rio Arriba, and McKinley counties. There are approximately 23,522 wells in the San Juan Basin. About 16,435 of the wells in these counties are federal wells. Analysis of cumulative impacts for reasonable development scenarios and reasonably foreseeable development scenarios for oil and gas wells on public lands in the BLM-FFO was presented in the RMP. This included modeling of impacts on air quality (BLM 2003b). A more detailed discussion of cumulative effects can be found in the Air Resources Technical Report (BLM 2013a).

The primary sources/activities that contribute to levels of air pollutants and GHG emissions in the Four Corners area are electricity-generation stations, fossil fuel industries, and vehicle travel. The Air Resources Technical Report includes a description of the varied sources of national and regional emissions that are incorporated here to represent the past, present, and reasonably foreseeable impacts to air resources (BLM 2013a). It includes a summary of emissions on the national and regional scale by industry source. Sources/activities that are considered to have notable contributions to air quality impacts and GHG emissions include electrical-generating units, fossil fuel production (nationally and regionally), and transportation.

The emissions calculator estimated that there could be very small direct and indirect increases in several criteria pollutants, HAPs, and GHGs as a result of implementing the proposed alternative. The very small increase in emissions that could result would not be expected to result in exceeding the NAAQS for any criteria pollutants in the analysis area.

The very small increase in GHG emissions that could result from implementing the proposed action would not produce climate change impacts that differ from the No Action Alternative. This is because climate change is a global process that is impacted by the sum total of GHGs in the Earth's atmosphere. The incremental contribution to global GHGs from the action alternatives cannot be translated into effects on climate change globally or in the area of this site-specific action. It is currently not feasible to predict with certainty the net impacts from the action alternatives on global or regional climate.

The Air Resources Technical Report discusses the relationship of past, present, and future predicted emissions to climate change and the limitations in predicting local and regional impacts related to emissions (BLM 2013a). It is currently not feasible to know with certainty the net impacts from particular emissions associated with activities on public lands.

3.2. Soil Resources

3.2.1. 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 Natural Resources Conservation Service (NRCS) has mapped the soils in the proposed project area and staging 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 and staging area, one soil map unit is present: Blancot-Notal association (gently sloping; NRCS 2009). This unit is described further in the BSR (Appendix B).

3.2.2. Impacts from the Proposed Action

Direct and Indirect Impacts

Within the proposed well pad/construction zone and access road corridor (5.1 acres, total), vegetation would be cleared, topsoil would be stripped, and the location would be leveled. Approximately 1.4 acres would remain as bare, compacted surface for the life of the proposed project. Approximately 0.8 acre would be reseeded (but not recontoured) during interim reclamation. The remainder (1.2 acres) would be fully reclaimed (reseeded and recontoured) during interim reclamation.

The proposed staging area measures 1.3 acres (based on aerial photographs). This location is primarily devoid of vegetation due to previous disturbance resulting from the construction of Bannon's South Blanco Federal 26 No. 2 well pad. Although the South Blanco Federal 26 No. 2 well is inactive, the well pad is currently serving as a tank battery site. WPX would stay within the boundaries of the existing disturbance area.

Soils in the proposed project area and staging area are classified as having a moderate to high water erosion potential and a low to moderate wind erosion potential (NRCS 2009). The clearing of vegetation within the proposed project area and staging area would result in the exposure of soils to water, wind, and direct human disturbances; erosion in these areas would potentially increase. Construction activities within the proposed well pad/construction zone and access road corridor would result in the mixing, displacement, and compaction of soils. The degree of erosion would be dependent upon precipitation and wind. Following construction, the compaction of soils, reclamation of portions of the proposed project area, and implementation of erosion-control measures would limit soil impacts due to erosion.

Cumulative Impacts

The spatial analysis area for cumulative soil impacts is the proposed project area and staging area, immediately surrounding lands, and points immediately downstream. Within the spatial analysis area, there is existing disturbance and/or erosion, as described below:

- The staging area has already been disturbed. It is primarily unvegetated and level.
- Approximately 0.4 acre of an existing access road overlaps the southern portion of the proposed well pad construction zone.
- An erosional drainage, associated with uplands to the immediate north of the proposed well pad, runs through the center of the proposed well pad.

The proposed project would contribute to ongoing soil erosion (associated with the aforementioned features) within and immediately downstream of the spatial analysis area.

3.3. Groundwater Resources

3.3.1. Affected Environment

There are no recorded water wells within an approximately 1-mile radius of the well pad (New Mexico Office of the State Engineer 2011). Therefore, the depth to groundwater in the vicinity of the proposed project area is unknown.

3.3.2. Impacts from the Proposed Action

Direct and Indirect Impacts

Stimulation (i.e., hydraulic fracturing or "fracking") is a process used to maximize the extraction of underground resources by allowing oil or natural gas to move more freely from the rock pores to production wells that bring the oil or gas to the surface. Fluids, commonly made up of water (99 percent) and chemical additives (1 percent), are pumped into a geologic formation at high pressure during fracking (EPA 2004). Chemicals added to stimulation fluids may include friction reducers, surfactants, gelling agents, scale inhibitors, acids, corrosion inhibitors, antibacterial agents, and clay stabilizers. When the fracking pressure exceeds the rock strength, the fluids open or enlarge fractures that typically extend several hundred feet away from the well bore, and may occasionally extend up to 1,000 feet from the well bore. After the fractures are created, a propping agent (usually sand) is pumped into the fractures to keep them from closing when the pumping pressure is released. After fracking is completed, a portion of the injected fracking fluids returns to the wellbore and is recovered for future fracking operations (EPA 2004) or disposal. Stimulation techniques have been used in the U.S. since 1949 and in the San Juan Basin since the 1950s. Over the last 10 years, advances in multi-stage and multi-zone fracking have allowed for the development of gas fields that previously were uneconomic, including the San Juan Basin.

Fracking is a common process in the San Juan Basin and applied to nearly all wells drilled. The producing zone targeted by the proposed project is well below any underground sources of drinking water. The Mancos Shale formation is also overlain by a continuous confining layer. The geological confining layer is the Lewis Shale formation, which is located above both the Mancos Shale and Mesaverde formations. The Lewis Shale formation provides an impermeable layer that isolates the Mancos Shale and Mesaverde formations from both identified sources of drinking water and surface water. On average, the total depth of the proposed well bores would be about 5,000 feet below the ground surface. Fracking in the Basin Mancos formation is not expected to occur above depths of 4,000 feet below the ground surface. Fracking could possibly extend into the Mesaverde formation overlying the Basin Mancos; however, the formation has not been identified as an underground source of drinking water based on its depth and relatively high levels of total dissolved solids. No impacts to surface water or freshwater-bearing groundwater aquifers are expected to occur from fracking of the proposed well.

Cumulative Impacts

As no direct or indirect impacts to groundwater are anticipated as a result of the proposed project, there would be no cumulative impacts.

3.4. Upland Vegetation

3.4.1. Affected Environment

The proposed project area is located within the Arizona/New Mexico Plateau ecological region. This ecological region occurs primarily in Arizona, Colorado, and New Mexico; a small portion is located within Nevada. This ecological region encompasses approximately 45,870,500 acres (185,632 square kilometers), and the elevation ranges from 2,165 to 11,949 feet AMSL. The ecological region's landscapes include low mountains, hills, mesas, foothills, irregular plains, alkaline basins, some sand dunes, and wetlands. This ecological region is a large transitional region between the semiarid grasslands to the east; the drier shrublands and woodlands to the north; and the lower, hotter, less-vegetated areas to the west and south. Vegetation communities include shrublands with big sagebrush

(*Artemisia tridentata*), rabbitbrush (*Ericameria nauseosa*), winterfat (*Krascheninnikovia lanata*), shadscale saltbush (*Atriplex confertifolia*), and greasewood (*Sarcobatus vermiculatu*); and grasslands of blue grama (*Bouteloua gracilis*), western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), and needleandthread grass (*Hesperostipa comata*). Higher elevations may support piñon pine (*Pinus edulis*) and juniper (*Juniperus* spp.) woodlands. This ecological region includes the urban areas of Santa Fe and Albuquerque, New Mexico. Important land uses within this ecological region include irrigated farming, recreation, rangeland, wildlife habitat, and some natural gas production (Griffith, et al. 2006).

The general region surrounding the proposed project area is characterized by sagebrush shrublands on low hills and flat terrain, and piñon-juniper woodlands on mesas and hillslopes. Minimally vegetated badlands are also scattered throughout the region.

The proposed project area is characterized by sagebrush shrublands with scattered oneseed juniper (*Juniperus monosperma*) trees. The dominant species in the area include rubber rabbitbrush and big sagebrush. The vegetative cover is approximately 50 to 70 percent. There are approximately 12 trees within the proposed project area. Ninety percent of these trees are mature and 10 percent are juvenile. Further details on the vegetation within the proposed project area are provided in the BSR (Appendix B).

The staging area has been cleared of vegetation and is largely barren, with the exception of the center of the teardrop, which is vegetated with Russian thistle (*Salsola tragus*).

3.4.2. Impacts from the Proposed Action

Direct and Indirect Impacts

The proposed project would result in the removal of approximately 5.1 acres of sagebrush shrubland vegetation within the proposed well pad/construction zone and access road corridor. Within the staging area (approximately 1.3 acres, total), any vegetation removed would mainly consist of Russian thistle.

During the construction phase of the proposed project, all vegetation within the proposed project area and the staging area would be cleared.

During interim reclamation, approximately 1.2 acres of the proposed project area would be fully reclaimed (recontoured and reseeded). Approximately 0.8 acre within the proposed project area and a portion of the 1.3-acrestaging area would only be reseeded. The remaining 1.4 acres of the proposed project area would remain as compacted, barren surface for the life of the proposed well.

During final reclamation, WPX would fully reclaim all portions of the proposed project area that were not fully reclaimed (recontoured and reseeded) during interim reclamation. This would include clearing the vegetation from within the 0.8-acre portion of the well pad and access road that were only reseeded (not recontoured) during interim reclamation.

During interim and final reclamation, the BLM Sagebrush-Grass Community Seed Mixture would be utilized; the species included in this mixture are listed in the Surface Reclamation Plans (Appendix E). Re-established vegetation would consist of native grass, forb, and shrub species included in the seed mixture, as well as native species that are not deliberately planted. It is also possible that invasive, non-native species could become established within the proposed project area, as such species could be transported by project equipment and tend to thrive in disturbed areas. Following the reclamation process, the resulting vegetation communities could differ from the native plant communities surrounding the proposed project area. Within reclaimed areas, it is not expected that the vegetation communities would return to native conditions within 20 years (BLM 2003a, 4-18).

The deposition of fugitive dust generated during vegetation-clearing activities, during the use of the well pad/construction zone, and during wind events could reduce photosynthesis and productivity of the surrounding vegetation (Thompson, et al. 1984; Hirano, et al. 1995), increase water loss in plants near the proposed project area (Eveling and Bataille 1984), and result in injury to leaves of surrounding vegetation.

Cumulative Impacts

The spatial analysis area is the proposed project area, staging area, and immediately adjacent lands.

Within the spatial analysis area, the following vegetative disturbances have occurred or are anticipated to occur in the reasonably foreseeable future:

- Approximately 500 feet of the proposed 126H construction zone overlaps an existing roadway and pipeline ROW.
- The southern terminus of the proposed 126H access road is at an existing roadway and pipeline ROW.
- Active wildlife and livestock grazing occurs in the area. The proposed project area is within a BLM-FFO grazing allotment (Largo Community, Allotment No. 5083) that is permitted for grazing by 145 head of cattle and 596 sheep.
- The staging area has already been disturbed.

Indirectly, fugitive dust or deposition associated with existing roads and well pads in the immediate area could impact the vegetation within the analysis area, and could continue to do so throughout the life of the project. Aside from those discussed, no additional impacts to vegetation are expected within the analysis area for the reasonably foreseeable future.

The proposed project would contribute to direct vegetation disturbance and fugitive dust and/or deposition within the spatial analysis area.

3.5. Wildlife

3.5.1. Affected Environment

Migratory Birds

EO 13186, dated January 17, 2001, calls for increased efforts to more fully implement the Migratory Bird Treaty Act of 1918. In keeping with this mandate, the BLM-FFO has issued an interim policy to minimize unintentional take, as defined by the EO, and to better optimize migratory bird efforts related to BLM-FFO activities. In keeping with this policy, a list of priority birds of conservation concern which occur ecological regions similar to the proposed project area was compiled through a review of existing bird conservation plans, including the following:

- USFWS Birds of Conservation Concern
- New Mexico Partners in Flight New Mexico Bird Conservation Plan
- Comprehensive Wildlife Conservation Strategy for New Mexico
- Gray Vireo Recovery Plan
- The North American Waterbird Conservation Plan
- Recovery plans and conservation plans/strategies prepared for federally-listed candidate species

The list of priority species with potential to occur within the proposed project area is provided in the BSR (Appendix B). Based on habitat and range, the potential exists for numerous migratory birds to occur within the proposed project area. Bird species identified during the site surveys of the proposed project area are also found in the BSR (Appendix B)

General Wildlife

The vegetation communities found within the proposed project area provide habitat for a variety of vertebrate and invertebrate species. 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 2003b, 2-24). The proposed project area is dominated by big sagebrush with scattered oneseed juniper. It receives year-long use by mule deer (*Odocoileus hemionus*) and lesser small mammals. Its significance to the overall Lybrook/Upper Largo ecosystem is that it represents a metapopulation with respect to mule deer.

The vegetation community found within the proposed project area provides habitat for a variety of vertebrate and invertebrate species. 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, 2-24). A discussion of wildlife identified within the proposed project area is provided in the BSR (Appendix B).

3.5.2. Impacts from the Proposed Action

Direct and Indirect Impacts

During the construction phase of the proposed project, all vegetation within the proposed project area, including approximately 12 trees, would be cleared. The proposed project would result in the removal of approximately 5.1 acres of sagebrush shrublands. The proposed project area would be converted to a reseed community following interim reclamation and final reclamation. The impacts to the vegetation communities are described in detail in Section 3.4 (Upland Vegetation).

There is available, similar habitat in the surrounding area that wildlife could utilize. However, the clearing of vegetation would remove potential habitat. The transformation of the proposed project area to a reseed community could remove potential habitat for numerous wildlife species. Displacing these animals would add competition for food, water, and space in other areas that are already occupied.

Approximately 15 feet of new access road would be constructed for the proposed project. Therefore, the proposed project would result in a small amount of direct habitat fragmentation. This fragmentation would be immediately adjacent to an existing access road, which travels through the proposed construction zone.

For the long term, occasional human and vehicle presence within the vicinity of the proposed project area and staging area would increase above present levels. Additional well equipment could also cause increased noise levels in the vicinity. Audial and visual disturbances associated with the project could cause indirect habitat loss and fragmentation by deterring wildlife from using available habitat adjacent to the proposed project area and staging area.

If interim and final reclamation are successful, the sagebrush shrubland community would become re-established within the proposed project area. However, as discussed in Section 3.4 (Upland Vegetation), the re-establishment of a mature, native plant community could require decades, and it is possible that the plant community could never fully recover from disturbance (BLM 2003a, 4-18).

Migratory Birds

Due to the mobility of adult birds, they would be unlikely to be directly harmed by the proposed project. As discussed in Section 2.1.2 (Description of Proposed Project - Protection of Flora and Fauna, Including SSS and Livestock), if the vegetation-clearing phase of construction is scheduled to occur during migratory bird breeding season, a pre-construction migratory bird nest survey would be conducted within the proposed project area. Therefore, it is unlikely that nests, eggs, or young birds within the proposed project area would be directly harmed. If project activities occur during migratory bird breeding season, birds nesting outside of but near the proposed project area could abandon existing nests as a result of visual and audial disturbances.

It is difficult to predict the effects of the 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.

General Wildlife

It is possible that burrowing animals could be killed or injured during the construction phase of the proposed project, as equipment digs into the earth and rolls over the surface of the ground. The disruption to the project area could stress wildlife and result in the loss of valuable energy resources. As discussed in Section 2.1.2 (Description of Proposed Project – Protection of Flora and Fauna, Including SSS and Livestock), design features and BMPs would be implemented during the construction phase of the proposed pipeline ties to assist in the prevention of injury, stress, or death of wildlife.

Cumulative Impacts

The spatial analysis area includes the proposed project area, staging area, and an approximately 2-mile radius around the proposed well pad. Within this spatial analysis area, disturbance exists, and the region has been fragmented. Existing and reasonably foreseeable future disturbances within the spatial analysis area includes the following:

- 29 active oil or gas wells
- 40 plugged oil and gas wells
- 1 proposed well and associated well pad, road, and utility corridor
- Approximately 13 miles of BLM Roads
- Approximately 4 miles of County Roads 7997 and 7998
- Several utility corridors
- Livestock and wildlife grazing
- Residential development

Habitat disturbance and fragmentation in the spatial analysis area is primarily the result of oil and gas development (including well pads, access roads, and pipeline corridors). The direct and indirect habitat disturbance, fragmentation, and human activities associated with these disturbances could deter wildlife from utilizing portions of the analysis area. The proposed action would contribute to direct and indirect habitat disturbance and fragmentation in the analysis area.

3.6. Special Status Species

3.6.1. Affected Environment

The BLM manages certain species which are 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. BLM SSS include BLM Sensitive Species and BLM-FFO Special Management Species (SMS).

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 2012). In accordance with BLM Manual 6840, the BLM-FFO has prepared a list of BLM-FFO SMS to focus species management efforts toward maintaining habitats under a multiple-use mandate (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). The authority for this policy and guidance is established by the ESA; Title II of the Sikes Act, as amended (16 USC 670a-670o, 74 Stat. 1052); FLPMA; and Department of Interior Manual 235.1.1A.

Based on known range and habitat, several BLM SSS have the potential to occur within the proposed project area. These species and their habitat requirements are discussed in detail in the BSR (Appendix B). The SSS with the potential to occur within the proposed project area are as follows:

- Aztec gilia (BLM Sensitive and SMS): within BLM-FFO-designated potential habitat "zone" (BLM 2013b), potential habitat present
- Brack's fishhook cactus (BLM Sensitive and SMS): within BLM-FFO-designated potential habitat "zone" (BLM 2013b), potential habitat present; individuals identified within proposed project area
- Bendire's thrasher (BLM Sensitive): potential foraging and nesting habitat available
- Ferruginous hawk (BLM Sensitive and SMS): potential foraging habitat available; potential nesting habitat available near proposed project area
- Golden eagle (BLM SMS): potential foraging habitat available
- Peregrine Falcon (BLM Threatened): potential foraging habitat available
- Pinyon jay (BLM Sensitive): potential foraging habitat available
- Spotted Bat (BLM Threatened): potential foraging habitat available

3.6.2. Impacts from the Proposed Action

Direct and Indirect Impacts

Aztec Gilia and Brack's Fishhook Cactus

As discussed in Section 2.1.2 (Description of Proposed Project – Design Features and Best Management Practices - Protection of Flora and Fauna, including SSS and Livestock), during the comprehensive biological survey, it was determined that there was too much snow cover to adequately survey for Aztec gilia and Brack's fishhook cactus. Under BLM-FFO guidance (BLM 2013c), surveys will be conducted when conditions are suitable to identify the species. Further discussion regarding potential mitigation measures following surveys is provided in Section 2.1.2 and in the BSR (Appendix B). Based on survey results, additional stipulations to protect Brack's cactus and Aztec gilia may be required.

The proposed project would result in the disturbance of up to 5.1 acres of Aztec gilia/Brack's fishhook cactus habitat. Of this, 1.4 acres would remain unvegetated and in use by project personnel throughout the lifetime of the proposed project. Approximately 0.8 acre would be reseeded (not recontoured) during interim reclamation. The remaining 2.9 acres would be fully reclaimed during interim reclamation. The reseeded and fully reclaimed acreage could become populated by Aztec gilia and Brack's fishhook cactus in the future, although the likelihood of these species becoming reestablished in a recently disturbed area is unlikely.

During final reclamation, WPX would reclaim all portions of the proposed project area that were not fully reclaimed during interim reclamation. This would include clearing the vegetation from within the 0.8-acre reseed working area that was only reseeded (not recontoured) during interim reclamation. It is possible that if Aztec gilia and/or Brack's fishhook cacti become established within this reseed-only area following interim reclamation, they could be killed during the clearing-and-recontouring phase of final reclamation.

Ferruginous Hawk

Ferruginous hawks could potentially utilize the proposed project area for foraging, and could potentially utilize rock formations in the general vicinity for nesting. Due to the mobility of adult birds, it is unlikely that these raptors would be directly harmed by activities associated with the proposed project. Audial and visual disturbances associated with the proposed project could potentially deter ferruginous hawks from nesting in the immediate area.

Golden Eagle and Peregrine Falcon

These three BLM SSS could potentially utilize the proposed project area for foraging. Due to the mobility of adult birds, it is unlikely that these raptors would be directly harmed by activities associated with the proposed project.

Bendire's Thrasher and Pinyon Jay

Due to the mobility of adult birds, Bendire's thrashers and pinyon jays would be unlikely to be directly harmed by the proposed project. As discussed in Section 2.1.2 (Description of Proposed Project – Protection of Flora and Fauna, Including SSS and Livestock), if construction activities would occur during the migratory bird breeding season, a pre-construction migratory bird nest survey would be conducted within the proposed project area. Therefore, it is unlikely that nests, eggs, or young birds would be directly harmed.

Spotted Bat

Spotted bats are nocturnal animals, and would likely be roosting during daylight hours, when the vegetation-clearing phase of the proposed project would occur. Because there are no roosting sites available within the proposed project disturbance area, it is unlikely that spotted bats would be directly impacted as a result of the proposed project. It is possible that the clearing of vegetation within the proposed project area would remove habitat for spotted bat prey. However, there is available, similar habitat in the surrounding area that this species could utilize for foraging. Audial and visual disturbances associated with the proposed project could temporarily deter this species from utilizing the proposed project area and immediately adjacent lands.

Cumulative Impacts

The spatial analysis area includes the proposed project area, staging area, and an approximately 2-mile radius around the proposed well pad. Within the spatial analysis area, there is existing and proposed disturbance, and the region has been fragmented. Existing and reasonably foreseeable future disturbances within the spatial analysis area are listed in Section 3.6.2 (Wildlife – Direct and Indirect Impacts – Cumulative Impacts).

Aztec Gilia and Brack's Fishhook Cactus

The majority of the spatial analysis area is within the Aztec gilia and Brack's fishhook cactus potential habitat "zone" (BLM 2013b). Within this zone, actual appropriate Aztec gilia/Brack's fishhook cactus habitat has not been determined; therefore, the amount of existing and reasonably foreseeable future disturbance within appropriate habitat cannot be quantified. It can be safely assumed, however, that existing and reasonably foreseeable future disturbance within the spatial analysis area has and will continue to reduce the amount of habitat available to these species. The proposed project, which is within appropriate habitat for these species, would contribute to the reduction of available Aztec gilia/Brack's fishhook cactus habitat.

Bendire's Thrasher, Pinyon Jay, Ferruginous Hawk, Golden Eagle, Peregrine Falcon, and Spotted Bat

Cumulative impacts to these wildlife SSS would be similar to those described for wildlife (Section 3.5.2 [Wildlife]).

3.7. Cultural Resources

3.7.1. Affected Environment

The proposed project area is located within the archaeologically rich San Juan Basin of northwestern New Mexico. In general, the history of the San Juan Basin can be divided into five major periods: PaleoIndian (circa [ca.] 10,000 B.C. to 5,500 B.C.); Archaic (ca. 5,500 B.C. to A.D. 400); Basketmaker II-III and Pueblo I-IV (aka Anasazi; A.D. 1-1,540); and historic (A.D. 1,540 to present), which includes Native American as well as later Hispanic and Euro-American settlers. Detailed descriptions of these various periods are provided in the BLM-FFO PRMP/FEIS (BLM 2003a, 3-65 – 3-84) and will not be reiterated here. Additional information can also be found in an associated documented, the Cultural Resources Technical Report (Science Applications International Corporation 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.

The entire Area of Potential Effect (APE) for the proposed action was archaeologically surveyed by LAC at a BLM Class III (100-percent) level.

The archaeological report, LAC Report No. 2013-5mm (2013, BLM Report No. 2014(I)022F), was prepared 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).

The Class III inventory resulted in the identification of no cultural sites within the APE. (LAC 2013). No TCPs are known to exist in the APE.

3.7.2. Impacts from the Proposed Action

Direct and Indirect Impacts

There are no cultural sites within the APE. The proposed action would not be expected to physically threaten any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or otherwise hinder the performance of traditional ceremonies/rituals. The proposed action would have no direct or indirect impacts on cultural sites.

Cumulative Impacts

There would be no negative cumulative impact on cultural resources as significant cultural sites would be avoided. A positive cumulative effect is the additional scientific information yielded by the archaeological survey.

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:

- Heather Riley, WPX
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- Andrea Felix, WPX
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- Mark Lepich, WPX
- Steven Fuller, LAC

4.2. List of Preparers

This EA was prepared by 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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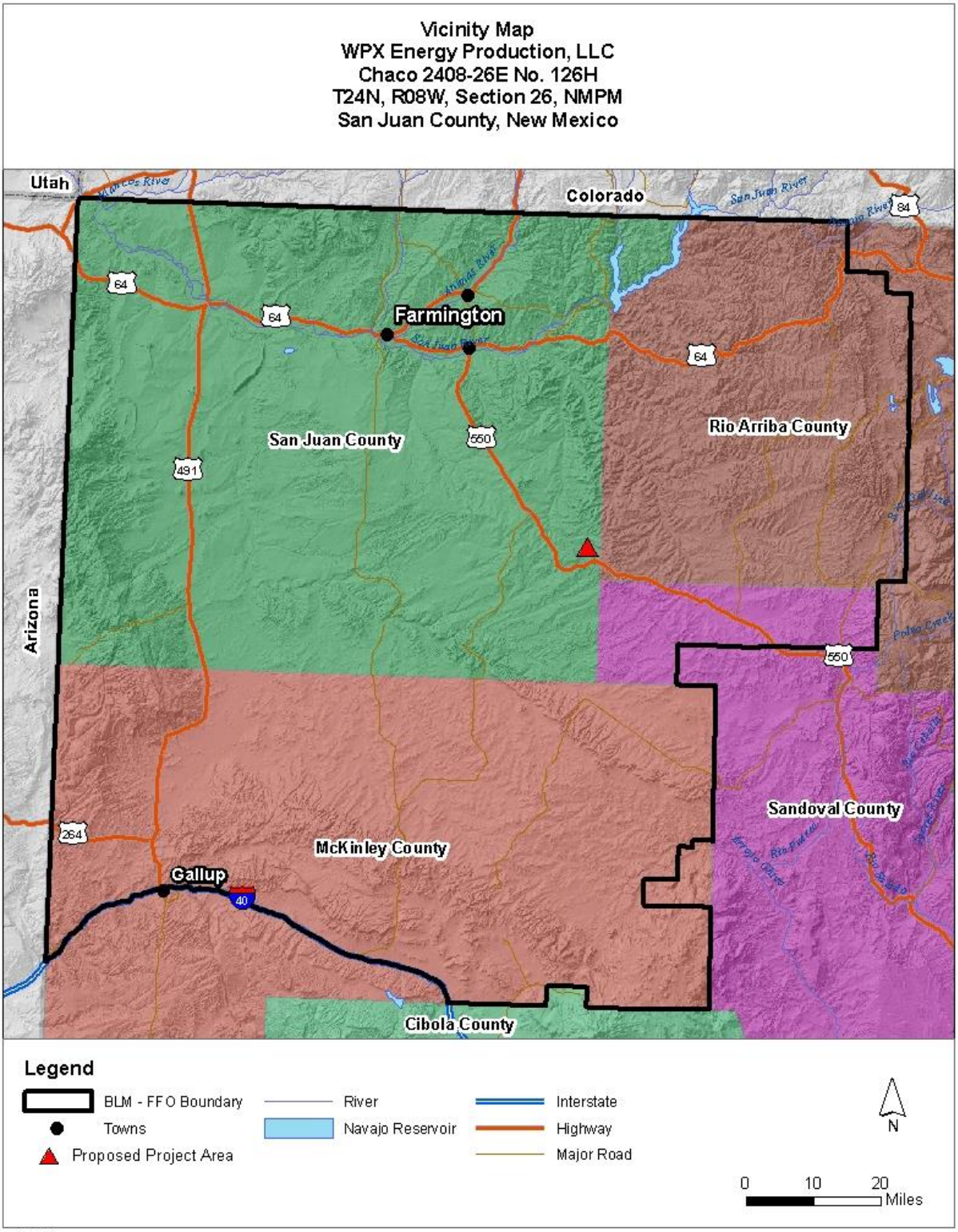
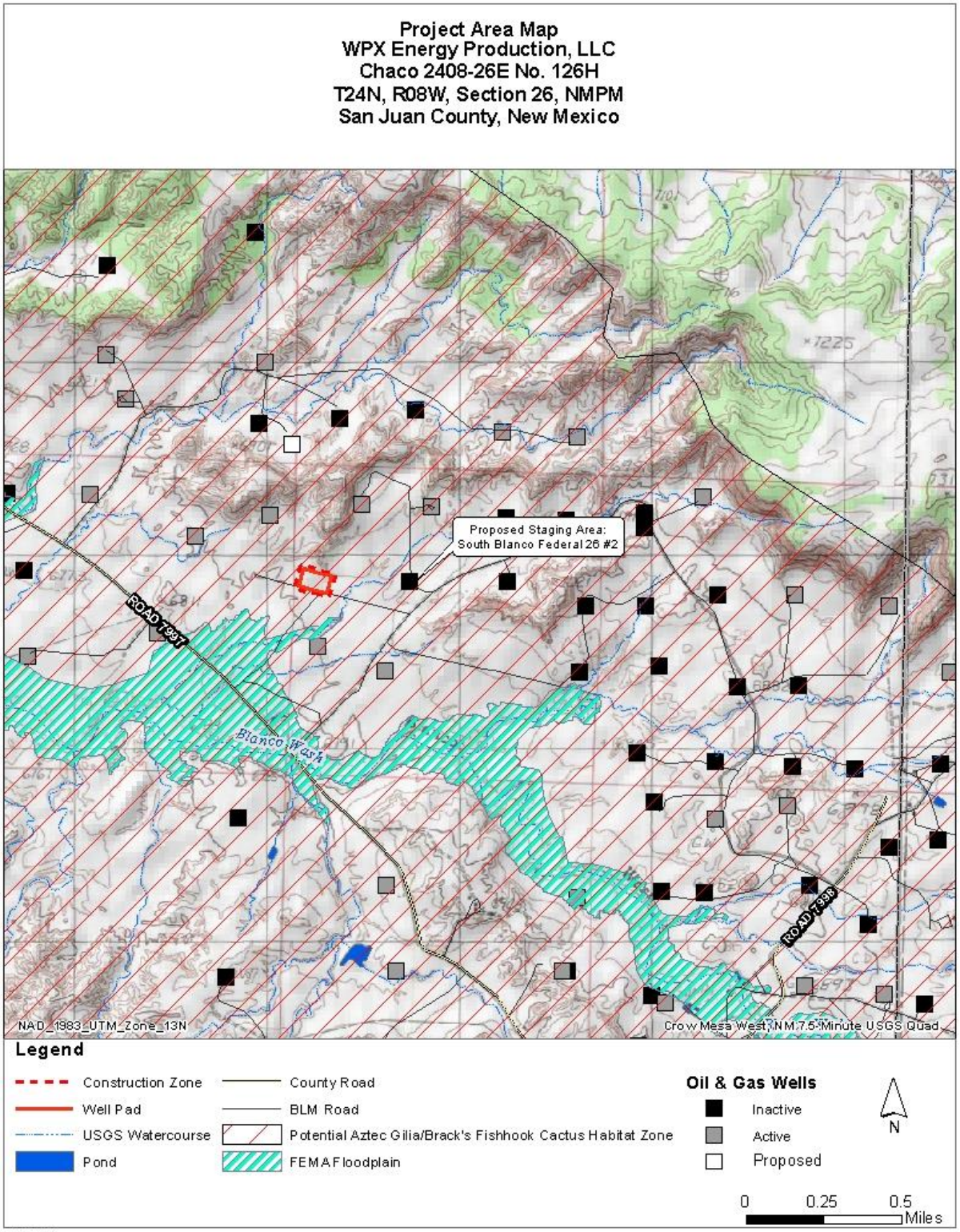
APPENDIX A. MAPS

A.1. Vicinity Map



1/2/2014

A.2. Project Area Map



1/2/2014

A.3. Aerial Map

Aerial Map
WPX Energy Production, LLC
Chaco 2408-26E No.126H
T24N, R08W, Section 26, NMPM
San Juan County, New Mexico

Legend

- Access Road
- BLM Road
- Construction Zone
- Well Pad

N

0 260 520 Feet

2/7/2014

APPENDIX B. BIOLOGICAL SURVEY REPORT

APPENDIX C. 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
	CHACO 2408-26E	126H

[7] OGRID No.	[8] Operator Name	[9] Elevation
120782	WPX ENERGY PRODUCTION, LLC	6812'

[10] Surface Location

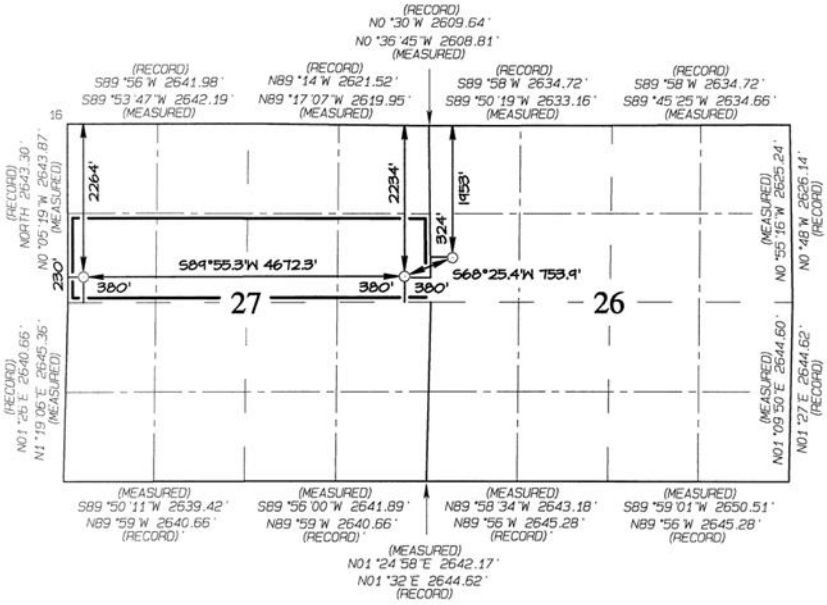
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	26	24N	8W		1953	NORTH	324	WEST	SAN JUAN

[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
E	27	24N	8W		2264	NORTH	230	WEST	SAN JUAN

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
160.0 Acres S/2 N/2 - Section 27			

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



END-OF-LATERAL
2264' FNL 230' FWL
SECTION 27, T24N, R8W
LAT: 36.28635°N
LONG: 107.67665°W
DATUM: NAD1927

LAT: 36.28636°N
LONG: 107.67726°W
DATUM: NAD1983

POINT-OF-ENTRY
2234' FNL 380' FEL
SECTION 27, T24N, R8W
LAT: 36.28635°N
LONG: 107.66079°W
DATUM: NAD1927

LAT: 36.28636°N
LONG: 107.66140°W
DATUM: NAD1983

SURFACE LOCATION
1953' FNL 324' FWL
SECTION 26, T24N, R8W
LAT: 36.28711°N
LONG: 107.65841°W
DATUM: NAD1927

LAT: 36.28712°N
LONG: 107.65902°W
DATUM: NAD1983

[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

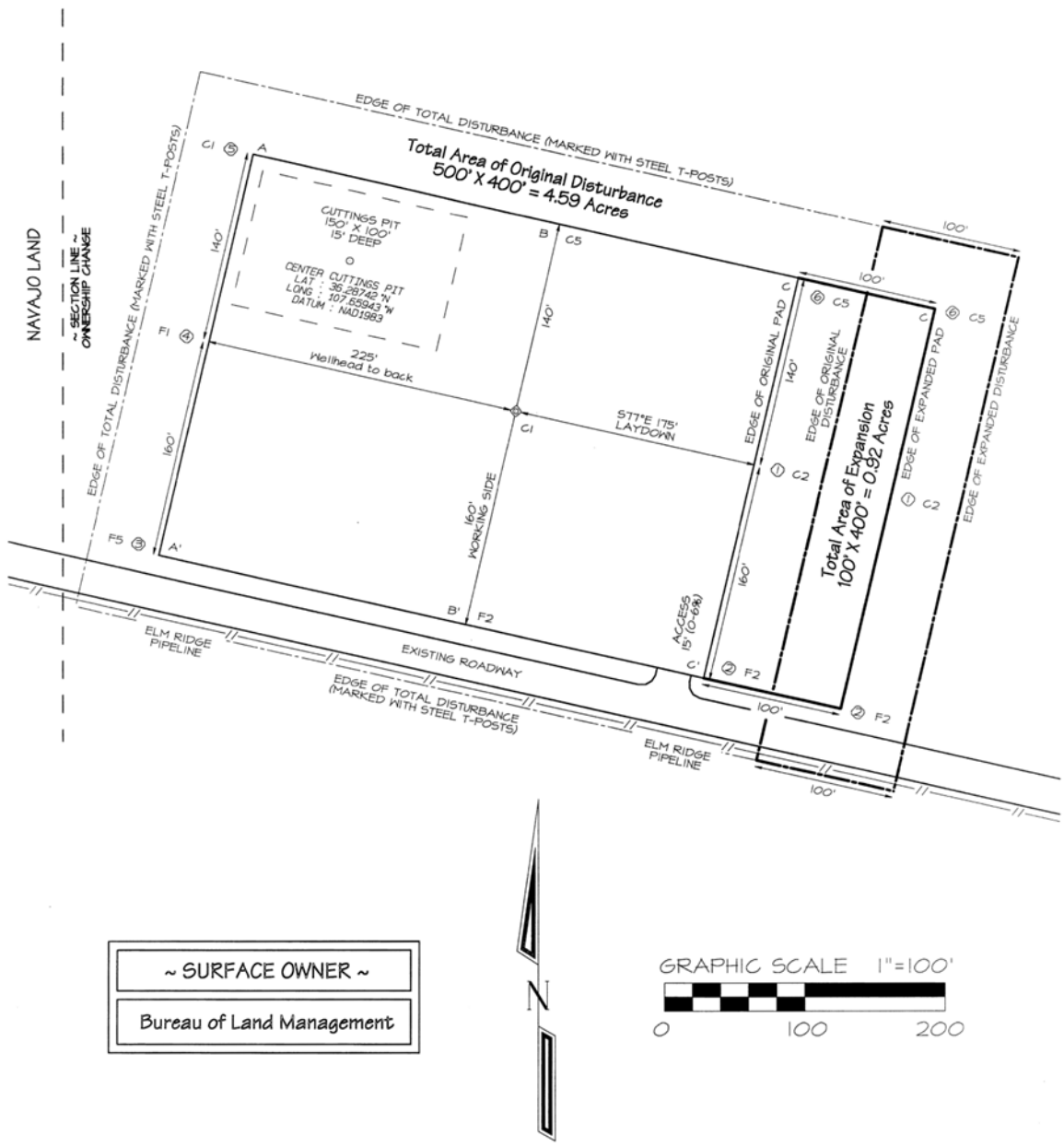
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Revised: NOVEMBER 9, 2013
Date of Survey: JUNE 25, 2013

Signature and Seal of Professional Surveyor

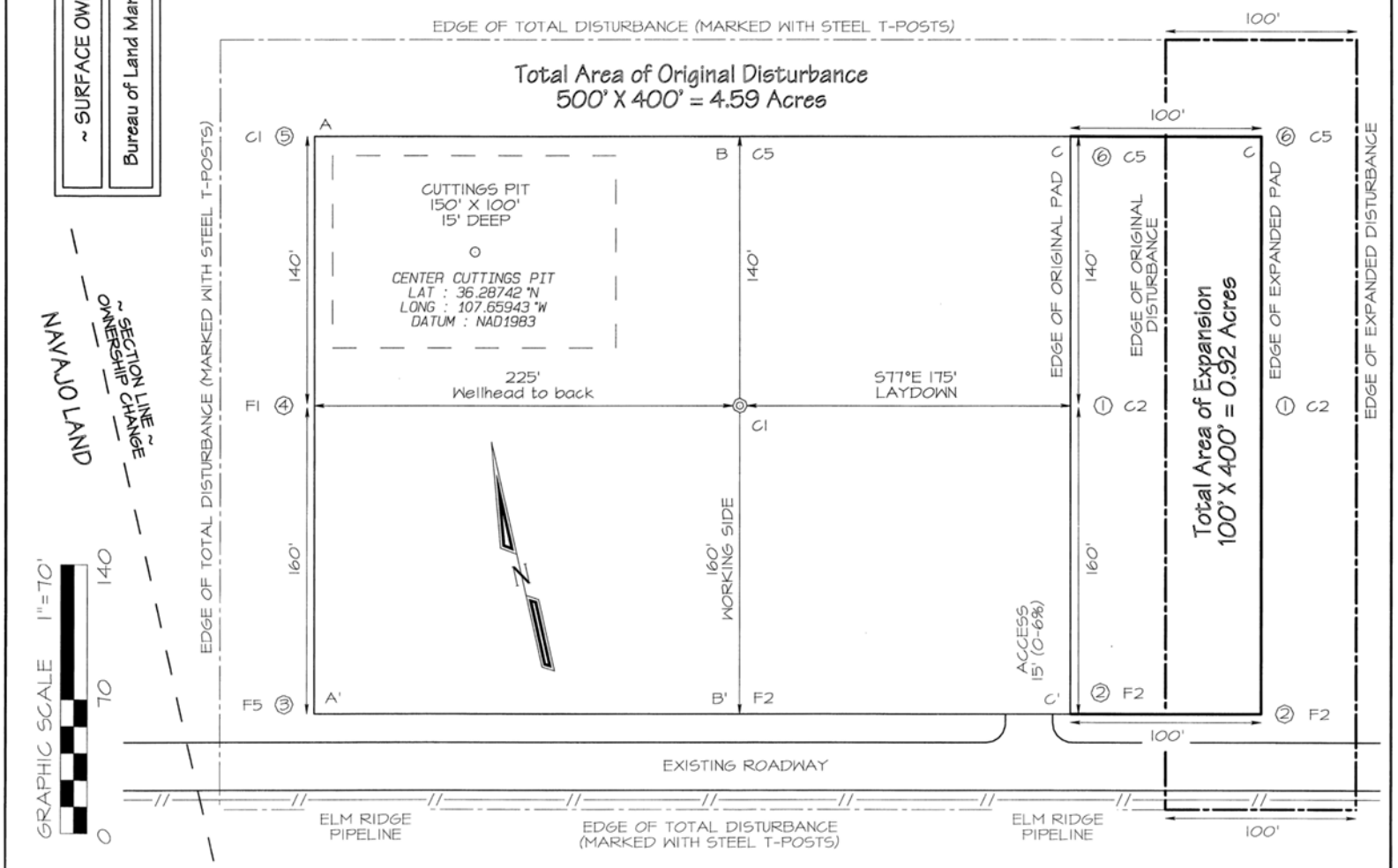
JASON C. EDWARDS
Certificate Number 15269

WPX ENERGY PRODUCTION, LLC CHACO 2408–26E #126H
1953' FNL & 324' FWL, SECTION 26, T24N, R8W, NMPM
SAN JUAN COUNTY, NEW MEXICO ELEVATION: 6812'
LAT: 36.28712°N LONG: 107.65902°W DATUM: NAD1983



Steel T-Posts have been set to define Edge of Disturbance limits which are 50' offset from edge of staked wellpad.

WPX ENERGY PRODUCTION, LLC CHACO 2408–26E #126H
1953' FNL & 324' FWL, SECTION 26, T24N, R8W, NMPM
SAN JUAN COUNTY, NEW MEXICO ELEVATION: 6812'
LAT: 36.28712°N LONG: 107.65902°W DATUM: NAD1983

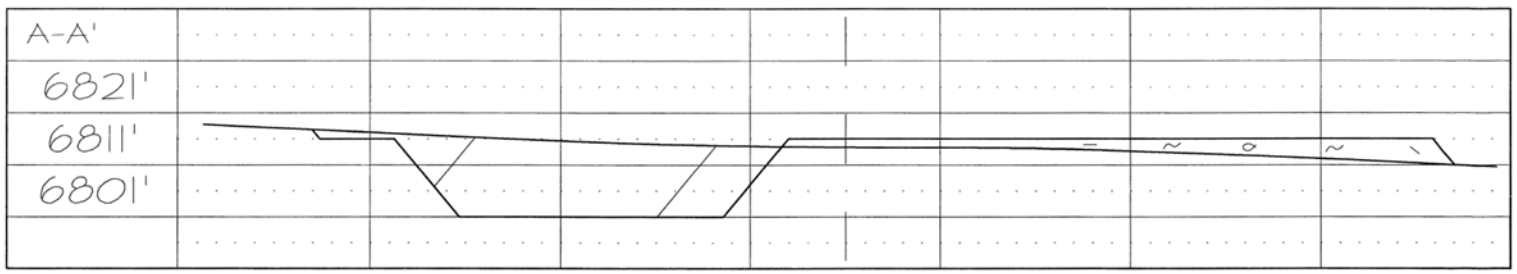


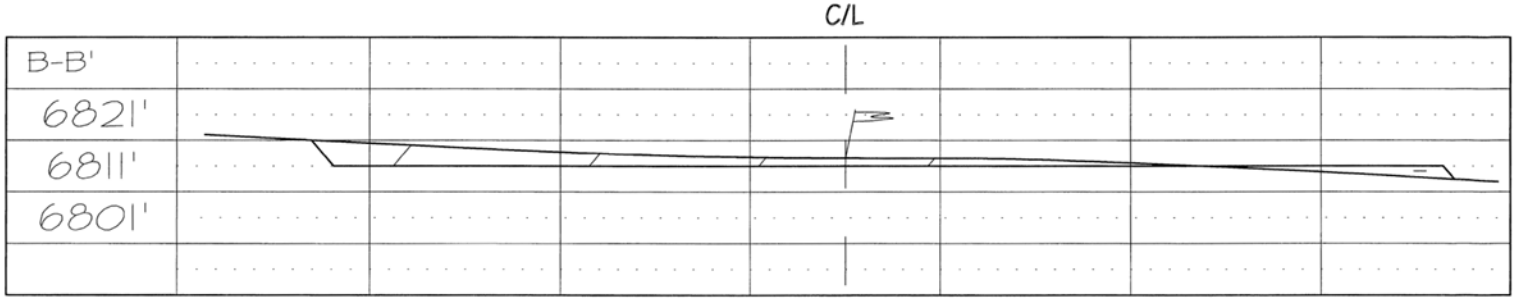
Steel T-Posts have been set to define the Edge of Disturbance limits which are 50' offset from the edge of the staked wellpad.

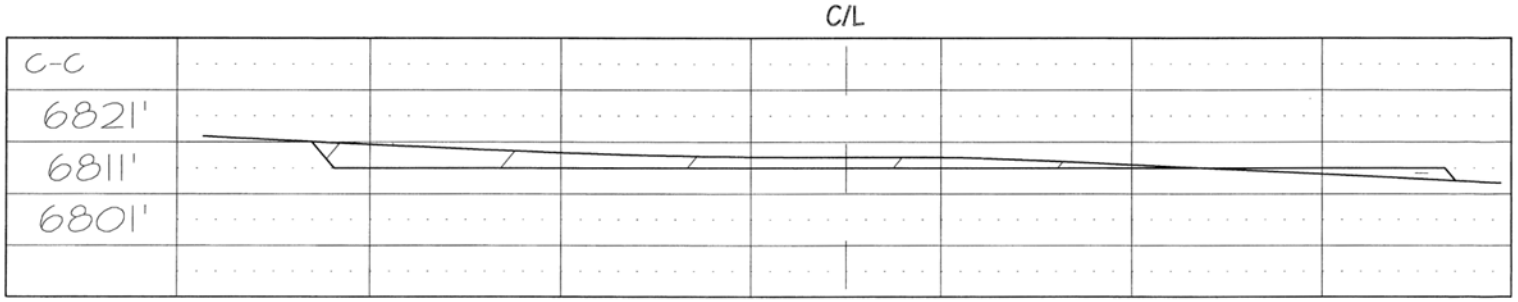
WPX ENERGY PRODUCTION, LLC CHACO 2408–26E #126H
1953' FNL & 324' FWL, SECTION 26, T24N, R8W, NMPM
SAN JUAN COUNTY, NEW MEXICO ELEVATION: 6812'

HORIZONTAL SCALE
1"=40'

VERTICAL SCALE
1"=30'





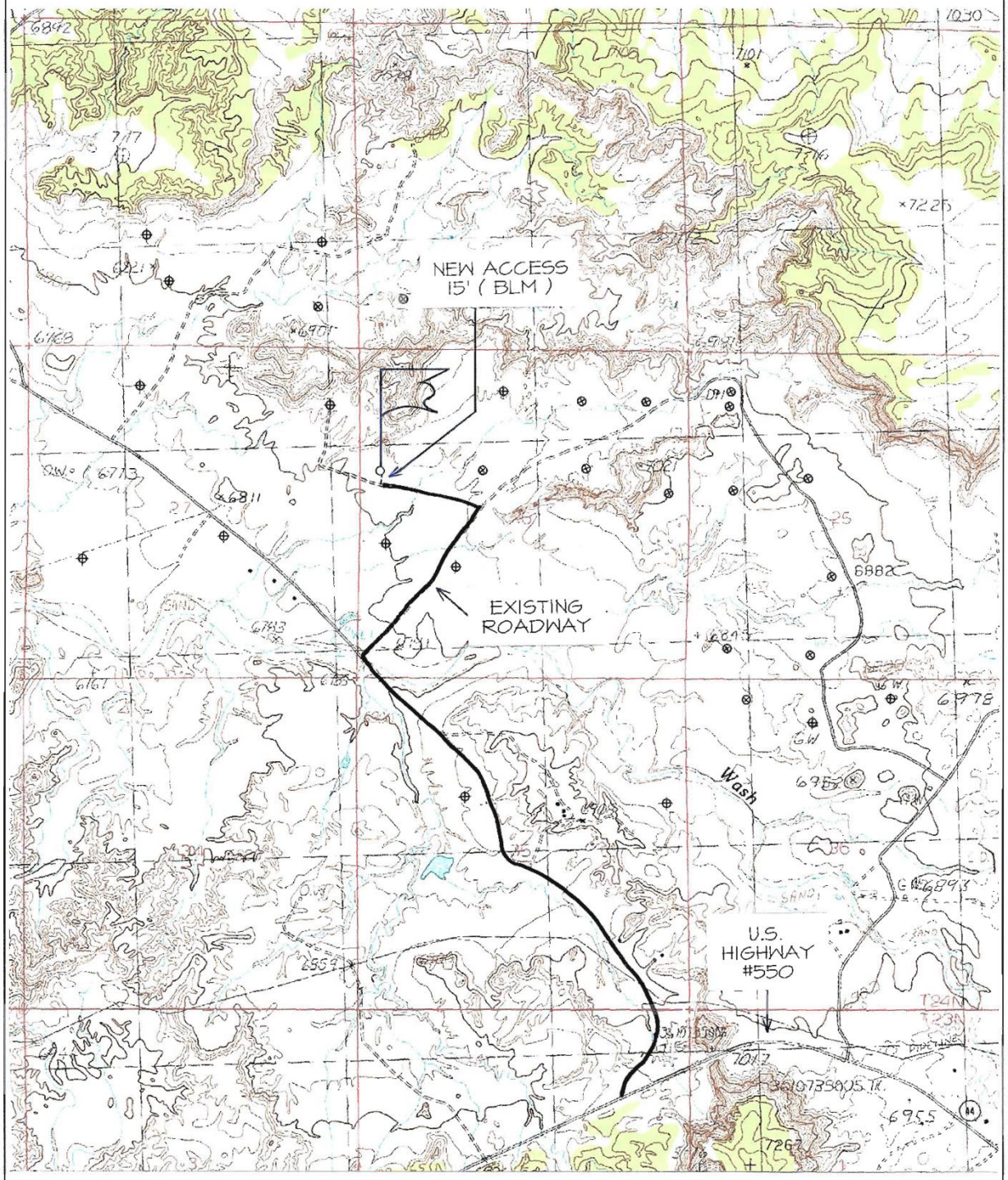


NCE SURVEYS IS NOT LIABLE FOR LOCATION OF UNDERGROUND UTILITIES OR PIPELINES.

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 CHACO 2408-26E #126H

1953' FNL & 324' FWL, SECTION 26, T24N, R8W, N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO



NAME OF TOPO MAP : CROW MESA WEST ⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

APPENDIX D. PHOTOGRAPHS

View from the beginning of the proposed access road facing northward, toward the end of the access road.

View from southwestern corner of the proposed construction zone (corner 3), looking northeastward.

View from the proposed wellhead facing northward

View from the wellheads facing southward

View from the wellheads facing eastward

View from the beginning of the proposed access road facing northward, toward the end of the access road (taken during preliminary site survey in September 2013) .

View of sagebrush shrubland with desert scrub habitat within proposed well pad area. Photo taken during the preliminary site survey.

APPENDIX E. SURFACE RECLAMATION PLAN