BUREAU OF LAND MANAGEMENT
ROSWELL FIELD OFFICE

ENVIRONMENTAL ASSESSMENT # NM-510-2008-140

FOR

CIMAREX CAPROCK QUEEN

Sections 4, 5, 7, 9 and 18,
T. 15 S., R. 31 E., NMPM

Chaves County, New Mexico

October 28, 2008

Department of the Interior
Bureau of Land Management
Roswell Field Office
2909 W. Second Street
Roswell, New Mexico 88201

Project: CIMAREX CAPROCK QUEEN
EA Log Number: NM-510-2008-140
Applicant: Cimarex Company of Colorado
Leases: LC-069832, LC-069832-A, LC-069832-B, LC-064900, LC-060850, NM-0153471, NM-0153474
Roswell Field Office: (575) 627-0272
File Code: 3160

Finding of No Significant Impact

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, I have determined the proposed action is not expected to have significant impacts on the environment and that preparation of an Environmental Impact Statement is not warranted.

Prepared by:

/s/ Brian Novosak Date 24-Oct-2008
Brian A. Novosak
Natural Resource Specialist

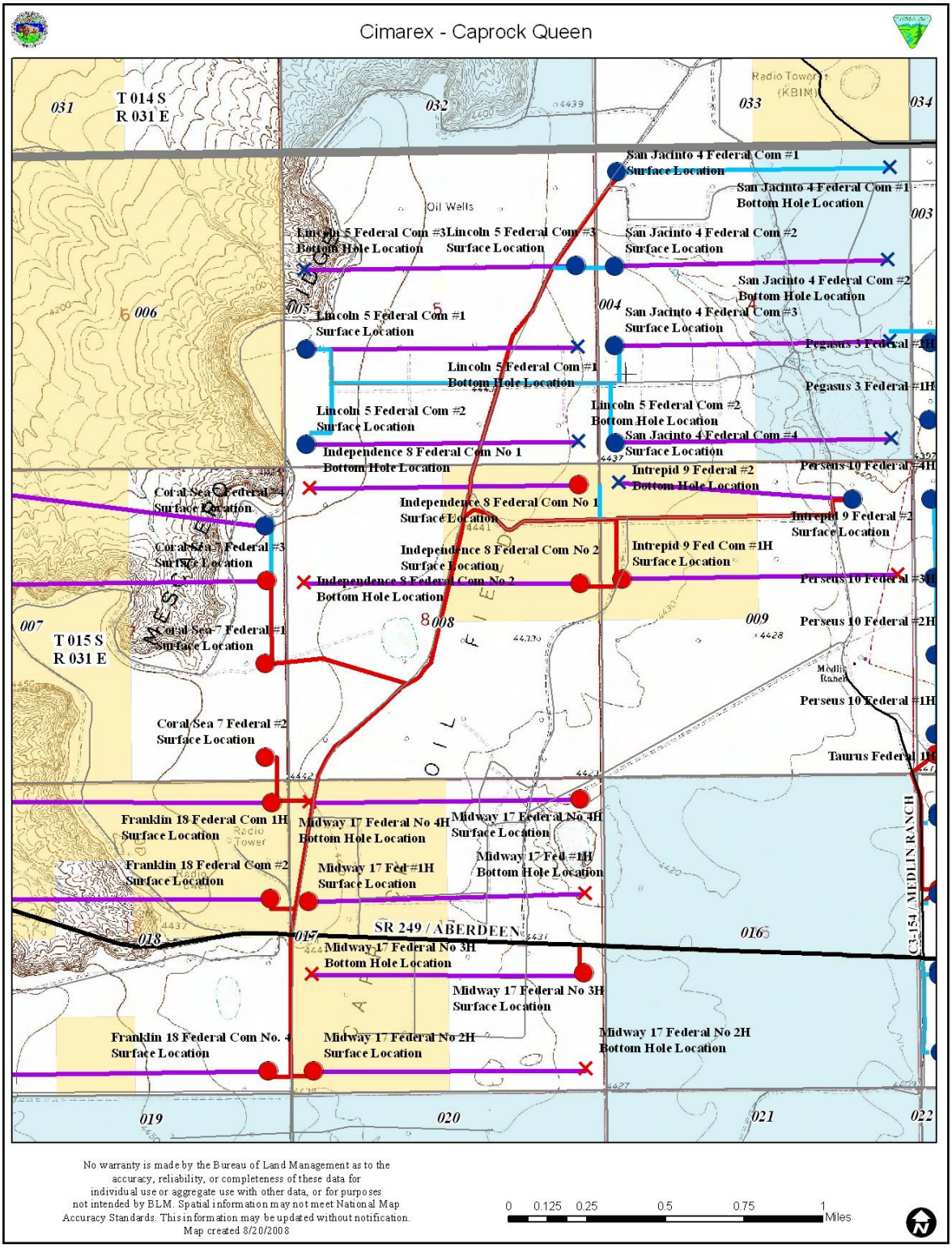
Reviewed by:

/s/ J. Howard Parman Date 28-Oct-2008
Howard Parman,
Plan and Environmental Coordinator,

Approved by:

/s/ Jerry Dutchover Date 24-Oct-2008
Angel Mayes,
Assistant Filed Manager,
Lands and Minerals

Exhibit A – General Location Map



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ENVIRONMENTAL ASSESSMENT # NM-510-2008-140
Cimarex Caprock Queen

1.0 Introduction

Cimarex Company of Colorado (Cimarex) applied for 21 oil wells, and associated rights-of-way (ROW) in southeast Chaves County, New Mexico. See Table 1 for the legal description of the surface locations of the wells. See attached map for general locations of wells and right-of-way.

This analysis tiers to and incorporates by reference the information and analysis contained in the Roswell Resource Area Resource Management Plan (RMP), as amended and addresses site-specific resources and/or impacts that are not specifically covered within the RMP, as required by the National Environmental Policy Act of 1969 (NEPA), as amended (Public Law 91-90, 42 U.S.C. 4321 et seq.). The RMP is available for review at the Roswell Field Office.

1.1 Purpose and Need

The purpose of the proposed action is the exploration and development of oil and gas resources within the following oil and gas leases:

- LC-069832,
- LC-069832-A,
- LC-069832-B,
- LC-064900,
- LC-060850,
- NM-0153471,
- NM-0153474.

1.2 Conformance with Applicable Land Use Plan and Other Environmental Assessments

The proposed action conforms to 1997 Roswell RMP, as amended. The proposed action is in conformance with the applicable LUP because it is specifically provided for in the following LUP decisions:

> Minerals Management, Fluid Minerals Goal: *Provide for the leasing, exploration and development of oil and gas resources within the Roswell Resource Area.*

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

EPA has finalized changes to its storm water regulations as they apply to field operations, including construction activities, at oil and gas exploration, production, processing or treatment operations or transmission facilities. This final action codifies changes resulting from Clean Water Act amendments in the Energy Policy Act of 2005 signed by the President on August 8, 2005. The Administrator of EPA signed the final rule on June 7, 2006 which was published in

the Federal Register, and is effective on June 12, 2006. You can view the rule and a descriptive Fact Sheet at: http://www.epa.gov/npdes/stormwater/oilgas. The final rule specifies that storm water discharges from oil and gas-related construction activities are exempt from NPDES permit coverage, except in very limited instances. EPA interprets this exclusion to apply to construction of drilling sites, waste management pits, and access roads, as well as construction of the transportation and treatment infrastructure such as pipelines, natural gas treatment plants, natural gas pipeline compressor stations, and crude oil pumping stations. Construction activities that result in a discharge of a reportable quantity release or that contribute pollutants (other than non-contaminated sediment from construction) to a violation of a water quality standard are still subject to permit coverage. This final action also adds complementary text encouraging operators of oil and gas field activities or operations to implement and maintain Best Management Practices (BMPs) to minimize erosion and control sediment during and after construction activities to help ensure protection of surface water quality during storm events. This rulemaking applies to all States, Federal land and Indian Country regardless of whether EPA or a State is the NPDES permitting authority. However, this rule is not intended to interfere with the States' authority to regulate any discharges, pursuant to state law, through a non-NPDES permit program. Additionally, an U.S. Army Corps of Engineers Section 404 permit for the discharge of dredge and fill materials may also be required. Additionally, a New Mexico Surface Water Quality Bureau 401 certification may also be required under a U.S. Army Corps of Engineers Section 404 permit. Operators are required to obtain all necessary permits and approvals prior to any disturbance activities.

The proposed projects would not be in conflict with any State, local, or county plans.

2.0 Alternatives Including the Proposed Action

2.1 Alternative A – No Action

The No Action Alternative means that the proposed activity would not take place. The No Action Alternative is presented for baseline analysis of resource impacts, and if selected, would deny the approval of the proposed application. Current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

2.2 Alternative B – Proposed Action

Cimarex Company of Colorado (Cimarex) has applied to develop 21 oil wells, and related infrastructure, in southeast Chaves County, New Mexico. See Table 1 for the legal description of the proposed locations of these wells and map for the access roads. The surface locations of these wells will be on both private and federal surface, while the subsurface locations will access state, private, and federally-owned fluid mineral resources.

The proposed actions are listed in Table 1. These initial proposals provide limited flexibility to mitigate potential resource impacts.

Cimarex proposed 21 well pads 320-feet long by 320-feet wide, aggregating 50 acres more or less. Standard oilfield construction equipment consisting of; track-type tractors, motor graders, dump trucks, and water trucks would be used to construct the access road and well pad. A rotary

drilling rig would be used to drill the wells. Associated production facilities (e.g., pipeline, separator, storage tanks, etc.) would be installed during the production phase of each well.

The road network is roughly 7.5 miles in length. Approximately 4.0 miles of these roads were proposed to be on state and private surface, **while 3.5 miles (12.73 acres, assuming a 30-foot width) is on Federal surface requiring a right-of-way**. The roads fall within portions of:

T. 15 S., R. 31 E., NMPM, Chaves County, New Mexico
Section 08: NE¼;
Section 09: NW¼;
Section 17: W½W½;
Section 18: E½NE¼.

Table 1. Surface Locations of Proposed Wells

Well Name	Case Number	Footings	Sec	Township	Range	County
Lincoln 5 Fed #1H	LC-069832	1980' FSL & 330' FWL	5	15S	31E	Chaves
Lincoln 5 Fed #2H	LC-069832	375' FSL & 375' FWL	5	15S	31E	Chaves
Lincoln 5 Fed #3H	LC-069832A	1980' FNL & 330' FEL	5	15S	31E	Chaves
San Jacinto 4 Fed Com #1H	LC-069832	375' FNL & 330' FWL	4	15S	31E	Chaves
San Jacinto 4 Fed Com #2H	LC-069832	1980' FNL & 330' FWL	4	15S	31E	Chaves
San Jacinto 4 Fed Com #3H	LC-069832	1980' FSL & 375' FEL	4	15S	31E	Chaves
San Jacinto 4 Fed Com #4H	LC-069832	330' FSL & 330' FWL	4	15S	31E	Chaves
Intrepid 9 Fed #1H	NM-053474	1980’ FNL & 330’ FWL	9	15S	31E	Chaves
Intrepid 9 Fed #2H	LC-069832B	660' FNL & 990' FEL	9	15S	31E	Chaves
Coral Sea 7 Fed #1	NM-0153471	1980’ FSL & 330’ FEL	7	15S	31E	Chaves
Coral Sea 7 Fed #2	NM-0153471	330’ FSL & 375’ FEL	7	15S	31E	Chaves
Coral Sea 7 Fed #3	NM-0153471	1980’ FNL & 375’ FEL	7	15S	31E	Chaves
Coral Sea 7 Fed #4	NM-0153471	990’ FNL & 375’ FEL	7	15S	31E	Chaves
Franklin 18 Fed Com #1H	NM-0153471	330’ FNL & 330’ FEL	18	15S	31E	Chaves
Franklin 18 Fed Com #2H	NM-0153471	1980' FNL & 330' FEL	18	15S	31E	Chaves
Franklin 18 Fed Com #4H	NM 0153471	375' FSL & 375' FEL	18	15S	31E	Chaves
Independence 8 Fed Com #1H	LC-060850	375' FNL & 375' FEL	8	15S	31E	Chaves
Independence 8 Fed Com #2H	LC-060850	1980' FNL & 330' FEL	8	15S	31E	Chaves
Midway 17 Fed #2H	LC-064900	375' FSL & 330' FWL	17	15S	31E	Chaves
Midway 17 Fed #3H	LC-064900	1980' FSL & 375' FEL	17	15S	31E	Chaves
Midway 17 Fed #4H	LC-064900	375' FNL & 375' FEL	17	15S	31E	Chaves

Table 2. Summary of Surface Disturbance

Well Name	Pad Size	Access Road Length (ft) x 14'	Total Surface Disturbance (acres)
Lincoln 5 Fed #1	320' x 320'	4000	3.64
Lincoln 5 Fed #2	320' x 320'	1000	2.67
Lincoln 5 Fed #3	320' x 320'	450	2.50
San Jacinto 4 Fed Com #1	320' x 320'	0	2.35
San Jacinto 4 Fed Com #2	320' x 320'	680	2.57
San Jacinto 4 Fed Com #3	320' x 320'	550	2.53
San Jacinto 4 Fed Com #4	320' x 320'	1025	2.68
Intrepid 9 Fed #1	320' x 320'	1140	2.72
Intrepid 9 Fed #2	320' x 320'	250	2.43
Coral Sea 7 Fed #1	320' x 320'	982	2.67
Coral Sea 7 Fed #2	320' x 320'	1260	2.76
Coral Sea 7 Fed #3	320' x 320'	1,325	2.78
Coral Sea 7 Fed #4	320' x 320'	1,000	2.67
Franklin 18 Fed Com #1	320' x 320'	400	2.48
Franklin 18 Fed Com #2	320' x 320'	300	2.45
Franklin 18 Fed Com #4	320' x 320'	240	2.43
Independence 8 Fed Com #1	320' x 320'	515	2.52
Independence 8 Fed Com #2	320' x 320'	700	2.58
Midway 17 Fed #2H	320' x 320'	400	2.48
Midway 17 Fed #3H	320' x 320'	580	2.54
Midway 17 Fed #4H	320' x 320'	1600	2.87
Total	-	*18397*	*55.28*

Applicant: Cimarex Company of Colorado
PO Box 140907
Irving, TX 75014

Surface Owners: Mr. Bill Medlin and the Bureau of Land Management

2.3 Alternative C – Preferred Alternative

A preferred alternative will provide maximum flexibility in mitigation of resource impacts. At the time of this writing, on-site field investigations have been completed on all of the proposed and alternative APDs and ROWs. While the totality of resource impacts will be analyzed herein, details of each APD will be described in a Decision Record tied to this EA.

To allow flexibility, the Interdisciplinary Review Team analyzed projects impacts beyond the original proposal submitted. Well pads were analyzed as 500' x 500' and access roads were analyzed as 75' wide. This analysis ensures that modifications to the proposed actions that increase surface disturbance after approval of the APD have been adequately analyzed. This also was an effort to limit potential utility infrastructure and surface disturbances to be within a corridor.

2.3.1 Changes as a result of the on-sites:

Franklin 18 Federal Com. #1H
The access road to the Franklin 18 Federal Com. #1H was rerouted to reduce the total amount of surface disturbance. The rerouted road would begin from an existing mainline road and the new road route is now in an east to west direction and would access the southeast corner of the Franklin 18 Federal Com. #1H well pad. The same access road will be constructed alongside the south boundary of the Midway 17 Federal #4H well pad.

Midway 17 Federal #2H
The access road to the Midway 17 Federal #2H was rerouted to connect to a developed access road on the west side of the well pad therefore reducing the total amount of new surface disturbance.

Midway 17 Federal #4H
The Midway 17 Federal #4H horizontal well location was flipped from its original proposed surface location to the bottom hole location. The surface location was flipped to protect a playa that would otherwise be impacted. The well pad is now located alongside the mainline road and the road will have to be realigned on the east side of the well pad to provide unimpeded access to other well sites.

Coral Sea 7 Federal #1H
The access road to the Coral Sea 7 Federal #1H was rerouted to the south of an abandoned well pad to avoid the possibility of impacting the reserve pit area of the abandoned well pad.

Coral Sea 7 Federal #2H
The access road from the Franklin 18 Federal Com. #1H was rerouted to align alongside the east side of the Franklin 18 Federal Com. #1H well pad and continues in a northerly direction to access the southeast corner of the Coral Sea 7 Federal Com. #2 well pad to reduce new surface disturbance and use the shortest length of road.

Coral Sea 7 Federal #4H
The Coral Sea 7 Federal #4H well surface location was moved 200 feet south from the original proposed well surface location to protect the Mescalero Ridge slope.

Lincoln 5 Federal Com. #1H & #2H
The access road was rerouted for both wells and the new access road routes will utilize an existing two-track road therefore reducing the total amount of new surface disturbance. The two-track road is west of the mainline road and at a junction on the two track road, the road will turn north to the southeast corner of the Lincoln 5 Federal Com. #1H well pad and at the same road junction will

turn south to the northeast corner of Lincoln 5 Federal Com. #1H well pad. The south edge of the Lincoln 5 Fed #2 well pad will only extend 140 feet from the drill hole location in order to avoid a playa located to the south of the well location.

San Jacinto 4 Fed Com #2
The San Jacinto 4 Fed Com #2 horizontal well surface location was moved 200 feet to the south from its original proposed surface location. The surface location was moved to protect a drainage that would otherwise be impacted.

San Jacinto 4 Federal Com. #3H
The San Jacinto 4 Federal Com. #3H horizontal well location was flipped from its original proposed surface location to the bottom-hole location. The surface location was flipped to protect a playa that would otherwise be impacted. The well pad is now located opposite side of the original proposal. The road was rerouted to access the well on the southeast corner of the well pad.

San Jacinto 4 Federal Com. #4H
The original proposed road to the San Jacinto 4 Federal Com. #4H well pad was changed. The new access road route will now access the San Jacinto 4 Federal Com. #4H well from the north and road will access the northwest corner of the well pad and reduce the total amount of new surface disturbance.

3.0 Description of Affected Environment

The proposed wells are located in Chaves County, New Mexico and described in the 1997 Roswell RMP Record of Decision. The proposed wells and the associated infrastructure fall within the reasonable foreseeable development scenario. Additional general information on air quality in these areas is contained in Chapter 3 of the Roswell Draft RMP/Environmental Impact Statement. The following elements are not present: Areas of Critical Environmental Concern, Prime or Unique Farmlands, Floodplains, Wild and Scenic Rivers, Wilderness or Wilderness Study Areas, Special Status Species, Wastes, Hazardous or Solids, and Wild Horses and Burros.

3.1 Air Resources

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

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

3.1.1 Air Quality

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

Air quality in the area near proposed well is generally good and is located in any of the areas designated by the Environmental Protection Agency as “non-attainment areas” for any listed pollutants regulated by the Clean Air Act.

GHGs, including carbon dioxide (CO2) and methane (CH4), and the potential effects of GHG emissions on climate, are not regulated by the EPA under the Clean Air Act. However, climate has the potential to influence renewable and non-renewable resource management. The EPA’s Inventory of US Greenhouse Gas Emissions and Sinks found that in 2006, total US GHG emissions were over 6 billion metric tons and that total US GHG emissions have increased by 14.1% from 1990 to 2006. The report also noted that GHG emissions fell by 1.5% from 2005 to 2006. This decrease was, in part, attributed to the increased use of natural gas and other alternatives to burning coal in electric power generation.

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

3.1.2 Climate

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures.

A 2007 US Government Accountability Office (GAO) Report on Climate Change found that, "federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the

timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses." It is not, however, possible to predict with any certainty regional or site specific effects on climate relative to the proposed lease parcels and subsequent actions.

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

3.2 Areas of Critical Environmental Concern (ACECs)

The proposed action would not be located within any ACEC designated by the RMP.

3.3 Cultural Resources

The project falls within the Southeastern New Mexico Archaeological Region. This region contains the following cultural/temporal periods: Paleoindian (ca. 12,000-8,000 B.C.), Archaic (ca. 8000 B.C. –A.D. 950), Ceramic (ca. A.D. 600-1540) Protohistoric and Spanish Colonial (ca. A.D. 1400-1821), and Mexican and American Historical (ca. A.D. 1822 to early 20th century). Sites representing any or all of these periods are known to occur within the region. A more complete discussion can be found in *Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico An Overview of Cultural Resources in the Roswell District, Bureau of Land Management* published in 1989 by the U.S. Department of the Interior, Bureau of Land Management. A cultural resource inventory shall be conducted of the area of effect for the proposed project prior to any ground disturbing activities.

3.4 Native American Religious Concerns

A review of existing information indicates the proposed action is outside any known Traditional Cultural Property.

3.5 Environmental Justice

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

3.6 Invasive, Non-native Species

There are no known populations of invasive or noxious weed species on the proposed access road and well pad.

Infestations of noxious weeds can have a disastrous impact on biodiversity and natural ecosystems. Noxious weeds affect native plant species by out-competing native vegetation for

light, water and soil nutrients. Noxious weeds cause estimated losses to producers $2 to $3 billion annually. These losses are attributed to: (1) Decreased quality of agricultural products due to high levels of competition from noxious weeds; (2) decreased quantity of agricultural products due to noxious weed infestations; and (3) costs to control and/or prevent the noxious weeds.

Further, noxious weeds can negatively affect livestock and dairy producers by making forage either unpalatable or toxic to livestock, thus decreasing livestock productivity and potentially increasing producers' feed and animal health care costs. Increased costs to operators are eventually borne by consumers.

Noxious weeds also affect recreational uses, and reduce realty values of both the directly influenced and adjacent properties.

Recent federal legislation has been enacted requiring state and county agencies to implement noxious weed control programs. Monies would be made available for these activities from the federal government, generated from the federal tax base. Therefore, all citizens and taxpayers of the United States are directly affected when noxious weed control prevention is not exercised.

3.7 Wildlife

The vegetation found at these sites provide habitat to a large range of wildlife species. Some of the common mammals are mule deer, pronghorn, badger, coyote, fox, jackrabbit, cottontail, kangaroo rats, and pocket gophers. It also provides habitat for a variety of grassland and desert birds. Important passerine birds include meadowlarks, horned larks, lark buntings, Cassin's sparrows, lark sparrows, Chihuahuan ravens, and loggerhead shrikes. Other birds include scaled quail, mourning doves, roadrunners, common nighthawks, killdeer, and a variety of raptors including red-tailed and Swainson's hawks, northern harriers, great horned owls, and burrowing owls. It also provides habitat to a large variety of common lizards and snakes.

3.8 Threatened or Endangered Species

There are no known threatened or endangered species of plant or animals within the project area. The list of federal threatened, endangered and candidate species reviewed for this EA can be found in Appendix 11 of the Roswell Approved RMP (AP11-2).

Under Section 7 of the Endangered Species Act of 1973 (as amended), the BLM is required to consult with the U.S. Fish and Wildlife Service on any proposed action which may affect Federal listed threatened or endangered species or species proposed for listing. RFO reviewed and determined the proposed action is in compliance with listed species management guidelines outlined in Biological Assessments Cons. #2-22-96-F-102, Cons. #22420-2006-I-0144, and Cons. #22420-2007-TA-0033. No further consultation with the Service is required.

3.9 Special Status Species

There are no known special status species in the project area.

In accordance with BLM Manual 6840, BLM manages certain sensitive species not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. Included in this category are State listed endangered species and Federal candidate species which receive no special protections under the Endangered Species Act.

3.10 Wastes, Hazardous or Solid

No waste material will be removed from the project area and upon reclamation of the reserve pit the NMOCD rules will be imposed and the reserve pit contents will be encapsulated.

3.10 Water Quality

Surface:

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

Ground:

Groundwater within the area is affected by geology and precipitation. Factors that currently affect groundwater resources in the area include livestock grazing management, oil and gas development, groundwater pumping and possible impacts from brush control treatments.

The New Mexico State Engineer's water listing shows fresh water for stock in the Quaternary Alluvium. Surrounding townships and historical well files suggest water at approximate depths of 80 ft to 320 ft. The interval at 280 to 320 is used for domestic, stock and secondary recovery of oil. The deepest expected usable water occurs at 320 ft.

3.11 General Topography/Surface Geology

The topographic characteristics and/or regional setting of the project area are: The area is very flat on top of the escarpment. There are no major land features that will be disturbed by the construction operation of the new access road and well pad.

3.12 Mineral Resources

There are no known local federal sources of construction material (caliche/gravel) for surfacing the access road and well. Material could be obtained from a private source or from abandoned oil and gas well pads or roads.

3.13 Paleontology

This undertaking is unlikely to affect paleontological resources.

3.14 Soil

The *Soil Survey of Chaves County, New Mexico, Southern Part (USDA Soil Conservation Service 1980)* was used to describe and analyze impacts to soil from the proposed action. The soil map units represented in the project area are:

Kimbrough gravelly loam, 0 to 3 percent slopes (Km) Permeability is moderate. Runoff is medium. The hazard of erosion is slight.

Kimbrough-Stegall-Slaughter complex, 0 to 3 percent slopes (Kt) Permeability is moderate. For the Kimbrough soil runoff is medium. For Stegall and Slaughter soil, runoff is slow. The hazard of erosion for this complex is slight.

3.15 Watershed – Hydrology

The watershed and hydrology in the area is affected by land and water use practices. The degree to which hydrologic processes are affected by land and water use depends on location, extent, timing and the type of activity. Factors that currently cause short-lived alterations to the hydrologic regime in the area include livestock grazing management, recreational use activities, groundwater pumping and also oil and gas developments such as a well pad, permanent and temporary road, pipeline and powerline.

3.16 Vegetation-Grassland Community

This lease is within the Grassland Plant Community as identified in the Roswell Resource Management Plan/Environmental Impact Statement (RMP/EIS). Appendix 11 of the Draft RMP/EIS describes the Desired Plant Community (DPC) concept and identifies the components of this community with vegetative cover by percent composition of 30-85 for grasses, 10-15 for forbs which is a vital requirement for pronghorn *(Antilocapra americana)* and 1-10 for shrubs respectively. Components of this community include several grass species; blue grama *(Bouteloua gracilis),* black grama *(Bouteloua eriopoda),* sideoats grama *(Bouteloua curtipendula)* and vine mesquite *(Panicum obtusum).* Forbs include but are not limited to globemallow *(Sphaeralcea* spp.), croton *(Croton* spp.) and bladderpod *(Lesquerella* spp.). Shrubs include cholla *(Opuntia spinosa)* and invasions of mesquite *(Prosopis glandulosa).* Biological crusts are also an important component on this plant community soil type.

The Ecological Site Description for the well pad and access road is **HP-3 loamy (Southern High Plains).**

3.17 Livestock Grazing/Range

This proposed action is located on BLM grazing allotment #65048 Upper Caprock 3. Current permitted use is 12 AU's year long @ 100% public land use for 144 Animal Unit Months (AUM's). Cattle are the class of livestock authorized.

This proposed action is also located on BLM grazing allotment #65548 Upper Caprock 15. Current permitted use is 6 AU's year long at 100% public land use for 72 AUM's. Cattle are the class of livestock authorized.

3.18 Visual Resources

Visual Resource Management (VRM) on public land is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411.

3.19 Recreation

The area around the proposed action site is primarily used by recreational visitors engaged in hunting, caving, sight-seeing, driving for pleasure, off-highway vehicle use, and other recreational activities. Non-recreation visitors include oil and gas industrial workers and ranchers.

3.20 Cave/Karst

While the proposed action is located in the *Low Potential Karst Area*, no surface cave/karst features were observed in the immediate vicinity of the proposed action.

3.21 Public Health and Safety

The project will not be detrimental to public health. The operator will insure that all phases of the project operations are conducted in workman like manner. Precautionary procedures and/or measures will be strictly adhered to in order provide a safe and sound working environment for the general existence of the well.

4.0 Environmental Consequences and Proposed Mitigation Measures

A summary of potential surface disturbance is presented in Table 2. Descriptions of potential impacts on individual resources for action alternatives are presented in the following text. Also described are mitigation measures that are to be incorporated by the BLM where appropriate as Conditions of Approval attached to the permit.

<u>Alternative A – No Action Alternative</u>

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

<u>Alternative B – Proposed Action</u>

- Under Alternative B, the Proposed Action, the wells would be drilled as originally proposed, without changes to reduce the potential impact to the environment.

Alternative C – Preferred Alternative

- Under Alternative C, the Preferred Action, the wells would be drilled as amended, using the changes to reduce the potential impact to the environment.

4.1 Air Resources

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

4.1.1 Direct and Indirect Effects

Air Quality

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

The Federal Clean Air Act requires that air pollutant emissions be controlled from all significant sources in areas that do not meet the national ambient Air quality standards. The New Mexico Air Quality Bureau (NMAQB) is responsible for enforcing the state and national ambient air quality standards in New Mexico. Any emission source must comply with the NMAQB regulations (USDI, BLM 2003b). At the present time, the counties that lie within the jurisdictional boundaries of the Roswell Field Office are classified as in attainment of all state and national ambient air quality standards as defined in the Clean Air Act of 1972, as amended (USDI, BLM 2003b).

The Environmental Protection Agency (EPA), on October 17, 2006, issued a final ruling on the lowering of the National Ambient Air Quality Standard (NAAQS) for particulate matter ranging from 2.5 micron or smaller particle size. This ruling became effective on December 18, 2006, stating that the 24-hour standard for PM2.5, was lowered to 35 ug/m^3 from the previous standard of 65 ug/m^3. This revised PM2.5 daily NAAQS was promulgated to better protect the public from short-term particle exposure. The significant threshold of 35 ug/m^3 daily PM2.5 NAAQS is not expected to be exceeded under the proposed action.

Over the last 10 years, the leasing of Federal oil and gas mineral estate in Roswell Field Office has resulted in an average total of 60 wells drilled on federal leases annually. These wells would contribute a small percentage of the total emissions (including GHG's) from oil and gas activities in New Mexico.

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

The reasonable and foreseeable development scenario developed for the Roswell RMP demonstrated 60 wells would be drilled annually for Federal minerals. Current APD permitting trends within the field office confirm that these assumptions are still accurate. This level of exploration and production would contribute a small incremental increase in overall hydrocarbon emissions, including GHGs, released into the planet's atmosphere. When compared to total national or global emissions, the amount released as a result of potential production from the proposed lease tracts would not have a measurable effect on climate change due to uncertainty and incomplete and unavailable information.

Consumption of oil and gas developed from the proposed well is expected to produce GHGs. Consumption is driven by a variety of complex interacting factors including energy costs, energy efficiency, availability of other energy sources, economics, demography, and weather or climate.

Climate

The assessment of GHG emissions and climate change is in its formative phase. It is currently not feasible to know with certainty the net impacts from the proposed action on climate . The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level. When further information on the impacts to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

4.1.2 Mitigation

The EPA's inventory data breaks down the total US sources of GHG gases by major categories that include "Natural Gas Systems" and "Petroleum Systems." The inventory lists the contributions of natural gas and petroleum systems to total CO2 and CH4 emissions (natural gas and petroleum systems do not produce significant amounts of any of the other greenhouse gases). For Natural Gas Systems, the EPA categorizes emissions from distinct stages of the larger category of natural gas systems. These stages include field production, processing, transmission and storage, and distribution. The BLM has regulatory jurisdiction only over field production. Petroleum Systems sub-activities include production field operations, crude oil transportation, and crude oil refining. Within the petroleum systems emission categories, the BLM has authority to regulate production field operations.

The BLM's regulatory jurisdiction over field production of Natural Gas Systems and production field operations of Petroleum Systems has resulted in the development of "Best Management Practices (BMPs)" designed to reduce impacts to air quality by reducing all emissions from field production and operations. The future development of the lease parcels may be subject to appropriate conditions of approval (COAs) to reduce or mitigate GHG emissions. This may occur at the project level through additional analysis. Specific measures developed at the project stage would be incorporated as COAs in the approved APD, and are binding on the operator. Typical measures may include: flare hydrocarbon and gases at high temperatures in order to reduce emissions of incomplete combustion; water dirt roads during periods of high use in order to reduce fugitive dust emissions; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and re-vegetate areas of the pad not required for production facilities to reduce the amount of dust from the pads.

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

4.2 Cultural Resources

4. 2.1 Direct and Indirect Impacts

There should be no direct or indirect impacts to cultural resources in regard to this undertaking.

4.2.2 Mitigation

To ensure there are no direct or indirect impacts to cultural resources an archaeological survey must be completed prior to any ground disturbing activities. If during the archaeological survey cultural resources are encountered then the proposed undertaking must be moved to avoid the archaeological site or the site may be further mitigated through testing or data recovery.

4.3 Native American Religious Concerns

4.3.1 Direct and Indirect Impacts

To date, the areas to be affected by project construction have not been identified by interested tribes as being of tribal concern.

4.4 Environmental Justice

4.4.1 Direct and Indirect Impacts

No minority or low income populations would be directly affected in the vicinity of the proposed action. Indirect impacts could include impacts due to overall employment opportunities related

to the oil and gas and service support industry in the region, as well as the economic benefits to State and County governments related to royalty payments and severance taxes. Other impacts could include a small increase in activity where vehicular traffic increases in areas used for grazing or hunting. However, these impacts would apply to all public land users in the project area.

4.5 Invasive, Non-native Species

4.5 .1 Direct and Indirect Impacts

The construction of an access road and well pad may unintentionally contribute to the establishment and spread of noxious weeds. Noxious weed seed could be carried to and from the project areas by construction equipment, the drilling rig and transport vehicles.

The main mechanism for seed dispersion on the road and well pad is by equipment and vehicles if they were previously used and or driven across or through noxious weed infested areas. The potential for the dissemination of invasive and noxious weed seed may be elevated by the use of construction equipment typically contracted out to companies that may be from other geographic areas in the region. Washing and decontaminating the equipment prior to transporting onto and exiting the construction areas would minimize this impact. Impacts by noxious weeds will be minimized due to requirements for the company to eradicate the weeds upon discovery. Multiple applications may be required to effectively control the identified populations.

4.5 .2 Mitigation

In the event noxious weeds are discovered after the construction of the access road and well pad, measures will be taken to mitigate those impacts.

4.6 Water Quality:

A. Surface;

4.6.1A Direct and Indirect Impacts

Surface disturbance from the construction of the well pad, closed system or steel tanks, access road, pipelines, and powerlines can result in degradation of surface water quality and groundwater quality from non-point source pollution, increased soil losses, and increased gully erosion.

Potential direct impacts that would occur due to construction of the well pad, access road, pipelines, and power lines include increased surface water runoff and off-site sedimentation brought about by soil disturbance: increased salt loading and water quality impairment of surface waters; channel morphology changes due to road and pipeline crossings; and possible contamination of surface waters by produced water.

The magnitude of these impacts to water resources would depend on the proximity of the disturbance to the drainage channel, slope aspect and gradient, degree and area of soil

disturbance, soil character, duration and time within which construction activity would occur, and the timely implementation and success or failure of mitigation measures.

Direct impacts would likely be greatest shortly after the start of construction activities and would likely decrease in time due to natural stabilization, and reclamation efforts. Construction activities would occur over a relatively short period; therefore, the majority of the disturbance would be intense but short lived. Direct impacts to surface water quality would be minor, short-term impacts which may occur during storm flow events. Indirect impacts to water-quality related resources, such as fisheries, would not occur.

Petroleum products and other chemicals, accidentally spilled, could result in surface and groundwater contamination. Similarly, possible leaks from reserve and evaporation pits could degrade surface and ground water quality. Authorization of the proposed projects would require full compliance with BLM directives and stipulations that relate to surface and groundwater protection.

4.6.2A Mitigation

The use of a closed system or steel tanks would reduce or eliminate the seepage of drilling fluid into the soil and groundwater. Spills of produced fluids (e.g., saltwater, oil, and/or condensate in the event of a breech, overflow, or spill from storage tanks) could result in contamination of the soil onsite, or offsite, and may potentially impact surface and groundwater resources in the long term.

A containment structure or earthen dike shall be constructed and maintained around all sides of the outside boundary of the well pad for the Lincoln 5 Fed #2H and the San Jacinto 4 Fed Com #2H well locations. The containment structure or earthen dike is required for the Lincoln 5 Fed #2H due to the close proximity to the drainage located to the north. The containment structure or earthen dike is required for the San Jacinto 4 Fed Com #2H due to the close proximity of the playa located to the south. The containment structure or earthen dike shall be constructed two (2) feet high (the containment structure or earthen dike can be constructed higher than the two (2) feet high minimum). The containment structure or earthen dike is required so that if oilfield waste contaminant or product contaminant were leaked, spilled, and or released upon the well pad the oilfield waste contaminant or product contaminant shall be contained on the well pad. If the well pad is constructed into a cut on a slope then the uphill side of the well pad will not require the construction of the containment structure or earthen dike, but the construction of the containment structure or dike will be required on the remaining three sides of the well pad which will extend into the uphill portion of the well pad.

B. Groundwater;

4.6.1B Direct and Indirect Impacts

Petroleum products and other chemicals, accidentally leaked through casing, could result in surface and groundwater contamination. Similarly, possible leaks from closed systems or steel tanks could degrade ground water quality.

4.6.2B Mitigation

The use of a closed system or steel tanks would reduce or eliminate seepage of drilling fluid into the soil and groundwater

The casing and cementing requirements imposed on the proposed well would reduce or eliminate the potential for groundwater contamination from drilling muds and other surface sources.

Proposed mud program and water protection string(s) will protect all anticipated usable fresh water zones.

4.7 General Topography/Surface Geology

The surface disturbance anticipated from the construction of the well pad and access road would have minimal impacts on the area of the operations. No major land or soil displacement would occur from the cradle to grave operations associated with construction of the access road and well pad.

4.7.1 Direct and Indirect Impacts

Direct impacts would result from the removal of the surface soils (topsoil) during construction of the well pad and access road. The consequential earth moving activities would indirectly impact the vegetation and would cause the fragmentation of the surface habitat where small animals live in the project area.

4.7.2 Mitigation

The inclusion of mitigation measures to conserve the landscape as much as possible in the Conditions of Approval would lessen the impacts from the surface disturbance activities on this project.

4.8 Soil

4.8.1 Direct and Indirect Impacts

The construction of the access road, well pad, and closed system or steel tanks would physically disturb topsoil and would expose the substratum soil. (See -Table 2 for Summary of Disturbance).

Direct impacts resulting from these surface disturbing activities include removal of vegetation, exposure of the soil, mixing of horizons, compaction, loss of top soil productivity and susceptibility to wind and water erosion. Wind erosion would be expected to be a minor contributor to soil erosion with the possible exception of dust from vehicle traffic. These impacts could result in increased indirect impacts such as runoff, erosion and off-site sedimentation. Activities that could cause these types of indirect impacts include construction and operation of well sites, access roads, gas pipelines and facilities.

Contamination of soil from drilling and production wastes mixed into soil or spilled on the soil surfaces could cause a long-term reduction in site productivity. Some of these direct impacts can be reduced or avoided through proper design, construction and maintenance and implementation of best management practices.

Additional soil impacts associated with lease development would occur when heavy precipitation causes water erosion damage. When water saturated segment(s) on the access road become impassable, vehicles may still be driven over the road. Consequently, deep tire ruts would develop. Where impassable segments are created from deep rutting, unauthorized driving may occur outside the designated route of the access road.

4.8.2 Mitigation

The operator shall stockpile the topsoil from the surface of the well pad which will be used for surface reclamation of the well pad. The direct and indirect impacts to soil resulting from the surface disturbing activities will be mitigated through the instructions and/or orders for surface reclamation/restoration of the disturbed areas.

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation/restoration of the disturbed areas as described in the attached Conditions of Approval.

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

4.9 Watershed - Hydrology

4.9.1 Direct and Indirect Impacts

Construction and surface disturbance activities from the construction of the well pad, access road, pipelines and powerlines can result in long term and short term alterations to the hydrologic regime. Peak and low flow of perennial streams, ephemeral, and intermittent rivers and streams would be directly affected by an increase in impervious surfaces resulting from the construction of the well pad and road. The potential hydrologic effects to peak flow is reduced infiltration where surface flows can move more quickly to perennial or ephemeral rivers and streams, causing peak flow to occur earlier and be larger. Increased magnitude and volume of peak flow can cause bank erosion, channel widening, downward incision and disconnection from the floodplain. The potential hydrologic effects to low flow is reduced surface storage and groundwater recharge, resulting in reduced baseflow to perennial, ephemeral, and intermittent rivers and streams. The direct impact would be that hydrologic processes may be altered where the perennial, ephemeral, and intermittent river and stream system responds by changing physical parameters, such as channel configuration. These changes may in turn impact chemical parameters and ultimately the aquatic ecosystem.

Long term direct and indirect impacts to the watershed and hydrology would continue for the life of the well and would decrease once the surfacing material has been removed from the well pad and access road. Short term direct and indirect impacts to the watershed and hydrology would

occur from access roads that are not surfaced with material and would likely decrease in time due to reclamation efforts.

4.9.2 Mitigation

The operator will stockpile the topsoil from the surface of the well pad which will later be used for surface reclamation of the well pad. Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer will issue instructions and/or orders for surface reclamation/restoration of the disturbed areas as described in the attached Conditions of Approval.

4.10 Vegetation

4.10.1 Direct and Indirect Impacts

The construction of the access road and well pad would remove native vegetation. (See - Table 2 for Summary of Disturbance).

If it is a producing well, reclamation would not commence until the well is a depleted producer and is plugged and abandoned. Vegetative recovery on the access road and well pad would depend on life of the well. Native vegetation would encroach on the well pad over time and where high volumes of vehicular traffic occur, the areas driven over would remain un-vegetated. If the well is drilled as a dry hole and is plugged, the reclamation of the access road and well pad would immediately follow. The impacts to the vegetation would be short-term if the reclamation efforts of the disturbed areas have re-vegetated successfully within a few years.

4.10.2 Mitigation

No impact to vegetation is anticipated. However measures will be taken in the event impacts to vegetation are found.

4.11 Livestock Grazing/Range

4.11.1 Direct and Indirect Impacts

During the construction and drilling phases of the well, there would be some minor disruption of livestock grazing in the pastures, specifically on the well pad. The increase of vehicle traffic within the project areas could lead to conflicts with livestock.

4.11.2 Mitigation

If any conflicts with livestock do arise as a result of the access road and well pad construction, mitigation measures will be taken, and consultation with the allotee will mitigate those impacts.

4.12 Wildlife

4.12.1 Direct and Indirect Impacts

Some small wildlife species may be killed and their dens or nests destroyed during construction of the access road and well pad. The construction of the access road and well pad could cause fragmentation of wildlife habitat. The short-term negative impact to wildlife would occur during the construction phase of the operations would be due to noise and habitat destruction. In general, most wildlife species would become habituated to the new facilities. For other wildlife species with a low tolerance to activities, the operations on the well pad would continue to displace wildlife from the area due to disturbances by the high volumes of vehicle traffic during equipment maintenance. Upon abandonment of the well, the area would re-vegetate and wildlife would return to previous levels.

4.12.2 Mitigation

The conditions of approval would alleviate most losses of wildlife species, such as; netting storage tanks, installation or other modifications of cones on separator stacks, and timing stipulations.

4.13 Recreation

Oil and gas activities would have little or no affect on recreational opportunities within this area. Large blocks of public land would allow recreationist to use public land and avoid the oil and gas facilities within the area.

4.13.1 Direct and Indirect Impacts - None

4.13.2 Mitigation - None

4.14 Visual Resources

Facilities, such as produced water, condensate or oil storage tanks that rise above eight feet, would provide a geometrically strong vertical and horizontal visual contrast in form and line to the characteristic landscape and vegetation, which have flat, horizontal to slightly rolling form and line. The construction of an access road, well pad and other ancillary facilities, other than facilities greater in height than eight feet, would slightly modify the existing area visual resources.

The Class III objective is to: Partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Facilities, such as condensate and produced water or oil storage tanks that rise above eight feet, would provide a geometrically strong vertical and horizontal visual contrast in form and line to the characteristic landscape and vegetation, which have flat, horizontal to slightly rolling form and line.

Under visual resource Class III, the method for repeating the basic elements would be to remove strong vertical and horizontal contrast through use of low-profile facilities as reflected in the Roswell RMP (1997, p. AP1-4). Depending on the production nature of the well site, multiple low-profile condensate and/or oil or produced water tanks would be necessary to accommodate the project.

Through color manipulation, by painting well facilities to blend with the rolling to flat vegetative and/or landform setting with a gray-green to brownish color, the view is expected to favorably blend with the form, line, color and texture of the existing landscape. Juniper Green (Standard Environmental Color Chart, June 2008) also closely approximates the color of the setting. All facilities, including the meter building, would be painted this color.

The construction of an access road and other ancillary facilities, other than facilities greater in height than eight feet, would slightly modify the existing area visual resources. To further implement visual goals of a Class III setting, the well pad and pits would be designed to reduce vegetative and soil disturbance with the pits either dug provided as steel pits, black, gray or brush brown in color. The access road, well pad, pit(s) and berm(s) would be similar to the texture and horizontal line found throughout the setting. This strategy would be generally acceptable to the various visitors and workers in this setting.

Cumulative adverse visual impacts can be avoided by gradually moving into a more appropriate vegetative/landform setting color scheme. Facilities with low-profile horizontal line and form would facilitate favorable blending as older facilities go out of production and are removed.

4. 14.1 Direct and Indirect Impacts

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

4.14.2 Mitigation

Juniper Green (Standard Environmental Color Chart, June 2008) is to be used on all facilities to closely approximate the vegetation within the setting. All facilities, including the meter building, would be painted this color.

4.15 Cave/Karst

While the proposed action is located in the *Low Potential Karst Area*, no surface cave/karst features were observed in the immediate vicinity of the proposed action.

4. 15.1 Direct and Indirect Impacts - None

4. 15.2 Mitigation - None

4.16 Public Health and Safety

4.16.1 Direct and Indirect Impacts

The construction and drilling operations will be conducted in a safe workman like manner and no impacts are anticipated to occur when the operations are conducted in a professional constructive manner.

4.16.2 Mitigation - non-required

4.17 Cumulative Impacts

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

Due to the absence of regulatory requirements to measure GHG emissions and the variability of oil and gas activities on federal minerals, it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of making the proposed tracts available for leasing. Some general assumptions however can be made: leasing the proposed tracts may contribute to drilling new wells.

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

There are approximately 4,500 existing oil and gas wells in the Roswell Field Office, which account for approximately 9 percent of the total wells in New Mexico. Therefore, GHG emissions from all wells within the field office amount to approximately 1.764 metric tons annually (19,6 mmt X 0.09 = 1.764 mmt). Federal oil and gas wells amount to approximately 40 percent of the wells within the field office (see Appendix 7 of the 2006 Draft Special Status Species RMP Amendment.). Annual GHG emissions from federal oil and gas wells are approximately 0.71 metric tons (1.763 mmt X 0.4 = 0.71 mmt).

These totals, when compared to the estimates used for the cumulative analysis previously referenced, show that wells drilled on federal leases wells may be expected to produce approximately 3.6 percent of the GHG emissions produced from wells drilled in New Mexico. This amount of GHG emissions represents a small, incremental contribution to the total emissions and is also insignificant when compared to global GHG emission levels. This small incremental contribution to global GHG gases cannot be translated into incremental effects on climate change globally or in the area of these site-specific actions. As oil and gas and natural gas production technology continues to improve in the future, one assumption is that it may be feasible to further reduce GHG emissions.

The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. However, potential impacts to natural resources and plant and animal species due to climate change are likely to be varied, including those in the southwestern United States. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened/endangered plants may be accelerated.

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

While it is likely that there will be no significant cumulative impact from the proposed actions, continued oil and gas development, and other surface-disturbing activities in these areas, may potentially have negative cumulative impacts on vegetation, soil, water, livestock, wildlife and visual resources.

4.17.1 Residual Impacts

Direct impacts to the local environment detailed above remain throughout the life of the proposed operation, however, these impacts would be substantially reduced by mitigation measures.

4.17.2 Mitigation Measures

Mitigation measures have been identified and have been incorporated into stipulations and are made part of the permit. These measures include but are not limited to dust control, noxious weed control, road construction, maintenance, and termination.

5.0 Consultation/Coordination

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

Table 5.1 Summary of Public Contacts Made During Preparation of Document and Interdisciplinary Team

Public Contact	Title	Organization	Present at Onsite?
Dorsey Rogers	Drilling Superintendent	Cimarex	Yes
Bill Medlin	Private Surface Landowner	Owner	Yes
Ernest Carlisle	Surveyor	Basin Surveys	Yes
Sue Carlisle	Surveyor	Basing Surveys	Yes
ID Team Member	Title	Organization	Present at Onsite?
Richard G. Hill	Environmental Protection Specialist	RFO	Yes
Michael McGee	Hydrologist	RFO	Yes
Brian Novosak	Natural Resource Spec.	RFO	Yes
Scott Sanderford	Realty Specialist	RFO	Yes

6.0 Appendices

The Roswell Field Office; Well Location Map (Exhibit A), Pecos District-RFO, Conditions of Approval (Exhibit B), and the Right-Of-Way stipulations if applicable (Exhibit C), as well as the special requirements derived from this EA, would be applied to this proposed action to minimize the surface disturbance and conserve the surrounding landscape.

6.1.0 References

EPA Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006. Environmental Protection Agency, Washington, D.C.

EPA, Natural Gas Star Program (2006 data) at: http://www.epa.gov/gasstar/accomplish.htm. Environmental Protection Agency, Washington, D.C.

Enquist, Coralyn and Gori, Dave. Implications of Recent Climate Change on Conservation Priorities in New Mexico. April 2008.

Goddard Institute for Space Studies. 2007. Annual Mean Temperature Change for Three Latitude Bands. Datasets and Images. GISS Surface Temperature Analysis, Analysis Graphs and Plots. New York, New York. (Available on the Internet: http://data.giss.nasa.gov/gistemp/graphs/Fig.B.lrg.gif.)

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Basis (Summary for Policymakers). Cambridge University Press. Cambridge, England and New York, New York. (Available on the Internet: http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf)

Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007, Synthesis Report. A Report of the Intergovernmental Panel on Climate Change.

National Academy of Sciences. 2006. Understanding and Responding to Climate Change: Highlights of National Academies Reports. Division on Earth and Life Studies. National Academy of Sciences. Washington, D.C. (Available on the Internet: http://dels.nas.edu/basc/Climate-HIGH.pdf.)

US Government Accountability Office Report "Climate Change, Agencies Should Develop Guidance for Addressing the Effects on Federal Land and Water Resources" GAO-07-863, August 2007 (1st paragraph, 1st page, GAO Highlights) at: http://www.gao.gov/news.items/d07863.pdf.

U.S. Department of the Interior, Bureau of Land Management. 1997. Roswell Proposed Resource Management Plan and Final Environmental Impact Statement. Roswell, New Mexico.

U.S. Department of the Interior, Bureau of Land Management. 1997. Roswell Approved Resource Management and Plan Record of Decision. Roswell, New Mexico.

U.S. Department of the Interior, Bureau of Land Management. 2008. Special Status Species Resource Management Plan Amendment and Record of Decision. Roswell, New Mexico.

6.1.1 APD

6.1.2 Authorities

Code of Federal Regulations (CFR)

40 CFR All Parts and Sections inclusive Protection of Environment, Revised as of July 1, 2001.

43 CFR, All Parts and Sections inclusive - Public Lands: Interior. Revised as of October 1, 2000.

U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). 2001. The Federal Land Policy and Management Act, as amended. Public Law 94-579.

Department of the Interior
Bureau of Land Management
Roswell Field Office
2909 W. Second Street
Roswell, New Mexico 88201

Project: Lincoln 5 Fed Com #3
EA Log Number: NM-510-2008-140
SH Location: 1980' FNL & 330' FEL, Sec. 5 T15S-R31E; Fee
BH Location: 1980' FLN &330' FWL, Sec. 5 T15S-R31E; LC-069832-A
Archaeological Report: 09-R-024-A
Applicant: Cimarex Energy Company of Colorado
Roswell Field Office: (575) 627-0272

Decision Record

Based upon the analysis, the proposed drilling of the above well is approved. This includes a 365' x 300' well pad and 330' x 30' of new access road construction aggregating 2.75 acres on private surface.

The Bureau of Land Management's approval of the APD does not relieve the lessee and operator from obtaining required authorizations from the private surface owner.

This proposed action is in compliance with the 1997 Roswell Resource Management Plan, as amended. This plan has been reviewed to determine if the proposed action conforms to the land-use planning terms and conditions required by 43 CFR 1610.5. This action does not conflict with existing Chaves County land-use planning or zoning.

Administrative Review and Appeal: Under BLM regulations, this Decision Record (DR) is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this DR must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, 1474 Rodeo Road, Santa Fe, NM 87505, no later than 20 business days after this DR is received or considered to have been received.

Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Approved by:

/s/ Jerry Dutchover Date 4-Dec-2008
Angel Mayes,
Assistant Field Manager,
Lands and Minerals

EXHIBIT B

PECOS DISTRICT - RFO
CONDITIONS OF APPROVAL

December 4, 2008

Project: Lincoln 5 Fed Com #3
EA Log Number: NM-510-2008-140
SH Location: 1980' FNL & 330' FEL, Sec. 5 T15S-R31E; Fee
BH Location: 1980' FLN &330' FWL, Sec. 5 T15S-R31E; LC-069832-A
Archaeological Report: 09-R-024-A
Applicant: Cimarex Energy Company of Colorado
Roswell Field Office: (575) 627-0272

GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

I. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD (Filing of a Sundry Notice is required for this 60 day extension).

II. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

III. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations (access road and/or well pad). Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

IV. CONSTRUCTION

A. NOTIFICATION:

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Roswell Field Office at (505) 627-0247 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved Application for Permit to Drill and Conditions of Approval on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL:

The topsoil will be stripped to approximately 6 inches in depth within the area designated for construction of the well pad. The operator shall stockpile the stripped topsoil on the side of the well pad. The topsoil will be used for interim and final reclamation of the surface disturbance created by the construction of the well pad.

C. CLOSED SYSTEMS OR STEEL TANKS: No reserve pit will be used.

Steel tanks are required for drilling operations: No Pits Allowed.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT:

If the operator elects to surface the access road and/or well pad using federal mineral materials, payment shall be made to the BLM prior to removal. Call the Roswell Field Office at (505) 627-0236.

E. WELL PAD SURFACING:

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational need.

F. ON LEASE ACCESS ROADS:

Road Egress and Ingress

The access road shall be constructed to access the corner of the well pad.

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

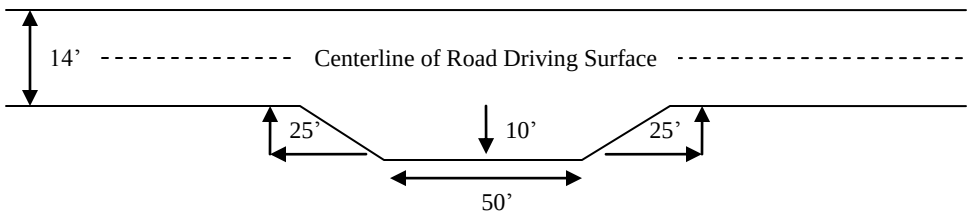
Crowning

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Turnouts

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

Standard Turnout – Plan View

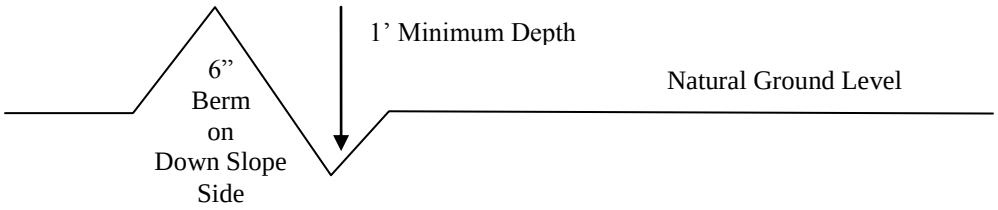


Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section Of Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula For Spacing Interval Of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

Fence Requirement

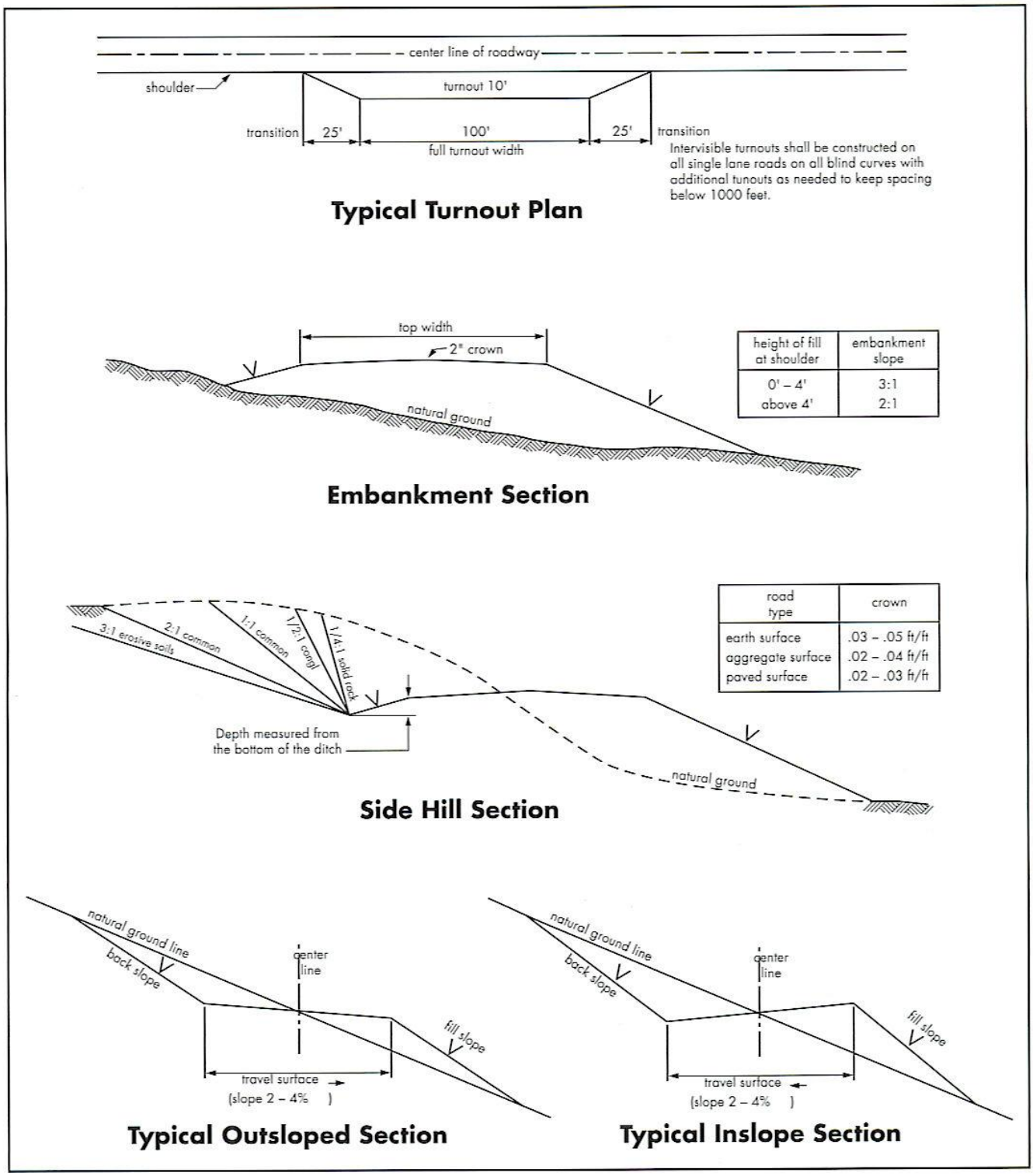
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Figure 1 – Cross Sections and Plans For Typical Road Sections



V. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS:

1 Call the Roswell Field Office, 2909 West Second St., Roswell, NM 88201. During office hours call (575) 627-0205 or after office hours call (575) 910-6024. Engineer on call during office hours call (575) 627-0275 or after office hours call (575) 626-5749.

2. The BLM is to be notified a minimum of 24 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

BOPE Tests

3. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

4. Include the API Number assigned to well by NMOCD on the subsequent report of setting the first casing string.

5. The operator will accurately measure the drilling rate in ft/min to set the base of the usable water protection casing string(s) opposite competent rock. The record of the drilling rate along with the caliper-gamma ray-neutron well log run to surface will be submitted to this office as well as all other logs run on the borehole 30 days from completion

6. Air, air-mist or fresh water and non toxic drilling mud shall be used to drill to the base of the usable water protection casing string(s). Any polymers used will be water based and non-toxic.

B. CASING:

1. The **13-3/8** inch usable water protection casing string(s) shall be set in any competent bedrock occurring between 340 ft to 1375 ft.

If not the operator is required to set usable water protecting casing in the next thick competent bedding (i.e. 15 to 25 ft or greater) encountered and cemented to the surface.

a. If cement does not circulate to the surface, the Roswell Field Office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

b. Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin or 500 pounds compression strength, whichever is greater. (This is to include the lead cement).

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compression strength, whichever is greater.

d. If cement falls back, remedial action will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is **sufficient to circulate to the surface.** If cement does not circulate see B.1.a-d above.

3. The minimum required fill of cement behind the **7** inch production casing is **sufficient to tie back 500 feet above the uppermost perforation in the pay zone**. If cement does not circulate, a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

4. There is no required fill of cement behind the **4-1/2** inch production casing since a Peak Systems Iso-Pak liner will be used for lateral and will not require cementing.

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL:

1. Before drilling below the **13-3/8** inch surface casing shoe, the blowout preventer assembly shall consist of a minimum of One Annular Preventer or Two Ram-Type Preventers and a Kelly Cock/Stabbing Valve. Before drilling below the **9-5/8** inch intermediate casing shoe, the blowout preventer assembly shall consist of a minimum of One Annular Preventer, Two Ram-Type Preventers, and a Kelly Cock/Stabbing Valve.

2. Before drilling below the **13-3/8** inch surface casing shoe, minimum working pressure of the blowout preventer and related equipment (BOPE) shall be **2000** psi. Before drilling below the **9-5/8** inch intermediate casing shoe, minimum working pressure of the blowout preventer and related equipment (BOPE) shall be **3000** psi.

3. The BOPE shall be installed before drilling below the **13-3/8** inch surface casing and the **9-5/8** inch intermediate casing and shall be tested as described in Onshore Order No. 2. Any equipment failing to test satisfactorily shall be repaired or replaced.

a. The BLM Roswell Field office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

b. The tests shall be done by an independent service company.

c. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

d. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the BLM Roswell Field Office at 2909 West Second Street, Roswell, New Mexico 88201.

e. Testing fluid must be water or an appropriate clear liquid suitable for sub-freezing temperatures. Use of drilling mud for testing is not permitted since it can mask small leaks.

f. Testing must be done in a safe workman like manner. Hard line connections shall be required.

g. The requested variance to test the BOPE prior to **drilling below the 13-3/8 inch surface casing** to the reduced pressure of **1000** psi using the rig pumps is approved.

VI. PRODUCTION

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Containment Structures

The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, Juniper Green (Standard Environmental Color Chart June 2008).

VRM Facility Requirement

Low-profile tanks not greater than eight-feet-high shall be used.

VII. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

During the life of the development, all disturbed areas not needed for active support of production operations should undergo "interim" reclamation in order to minimize the environmental impacts of development on other resources and uses.

During reclamation, the removal of caliche is important to increasing the success of re-vegetating the site. Removed caliche may be used in road repairs, fire walls or for building other roads and locations. In addition, in order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing re-vegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be re-vegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

Loamy, SD-3 Ecological Site; Loamy CP-2; Gyp Upland CP-2 (for Loamy HP-3)

Common Name and Preferred Variety	Scientific Name	Pounds of Pure Live Seed Per Acre
Blue grama,	(*Bouteloua gracilis)*	4.00 LBS.
Sideoats grama,	(*Bouteloua curtipendula)*	1.0 LB.
Sand dropseed	(*Sporobolus cryptandrus)*	0.5 LB.
Vine mesquite	(*Panicum obtusum)*	1.0 LB.
Plains bristlegrass	(*Setaria macrostachya)*	1.0 LB.
Indian blanketflower	(*Gaillardia aristata)*	0.5 LB.
Desert or Scarlet	(*Sphaeralcea ambigua*)	1.0 LB.
Globemallow or	(*S. coccinea)*	
Annual sunflower	(Helianthus annuus)	0.75 LB.
TOTAL POUNDS PURE LIVE SEED (pls) PER ACRE		9.75 LBS.

Certified Weed Free Seed. If one species is not available, increase ALL others proportionately. Use No Less than 4 species, including one forb. No less than 9.75 pounds lbs per acre shall be applied.

VIII. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

a. Upon abandonment of the well and/or when the access road is no longer in service, a Notice of Intent for Final Abandonment with the proposed surface restoration procedure must be submitted for approval.

b. On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the Private Surface Land Owner agreements and a copy of the release is to be submitted upon abandonment.

c. Upon abandonment of the well, all casing shall be cut-off at the base of the cellar or 3-feet below final restored ground level (whichever is deeper). A 4-inch pipe, 10 feet in length, shall be installed 4 feet above ground and embedded in cement. The following information shall be permanently inscribed on the dry hole marker: Well name and number, the name of the operator,

the lease serial number, the surveyed location (the quarter-quarter section, section, township and range or other authorized survey designation acceptable to the authorized officer; such as metes and bounds).

d. Surface Reclamation must be completed within 6 months of well plugging. If the operator proposes to modify the plans for surface reclamation approved on the APD, the operator must attach these modifications to the Subsequent Report of Plug and Abandon using Sundry Notices and Reports on Wells, Form 3160-5.