



11394
United States Department of the Interior
BUREAU OF LAND MANAGEMENT



IN REPLY REFER TO:

NMNM 71526
3162 (03100)

Las Cruces District Office
1800 Marquess
Las Cruces, New Mexico 88005
www.nm.blm.gov

NOV 26 2007

Re: Environmental Assessment #NM-030-2006-161, BENNETT RANCH UNIT #6 Errata Sheets

Dear Interested Party:

Copies of the Bennett Ranch Unit #6 Application for Permit to Drill (APD) Environmental Assessment (EA) were distributed to interested parties on November 7, 2007. It has come to our attention that the EA contained a number of errors which require correction. Enclosed are pages containing the correct language for the affected sections of the EA. Please replace pages 2, 5, 7 and 14 of the original document with the like numbered pages provided.

A corrected version of the EA as well as the errata sheets is also available on the New Mexico BLM website at www.nm.blm.gov under the Planning/NEPA section for the Las Cruces District Office. Additional information regarding the APD is available at the Las Cruces District Office.

In view of the necessary corrections, the comment period will be extended to January 15, 2008.

Comments on this proposal should be submitted in writing to:

John Besse
Environmental Protection Specialist
BLM Las Cruces District Office
1800 Marquess Street
Las Cruces, NM 88005

Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

We look forward to your comments. If you need additional information, or if you have questions concerning the project, please contact John Besse at (575) 525-4363.

Sincerely,

Acting for

Tim L. Sanders
Assistant District Manager
Division of Multi-Resources

4 Enclosures

RECEIVED
2007 DEC 3 PM 1 31

RMPA because it is located within an area identified in that document as open to oil and gas leasing and is within a previously issued Federal lease. The PRMPA/FEIS and ROD are available for review at the Las Cruces District Office. This EA addresses the resources and potential impacts on a site-specific basis as required by the National Environmental Policy Act (NEPA) of 1969. The proposed project would not be in conflict with any local, county, or State plans.

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

Under Section 402 of the Clean Water Act (as amended), the U.S. Environmental Protection Agency (EPA), was directed to develop a phased approach to regulate storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. Industrial activities disturbing land may require permit coverage through a NPDES storm water discharge. Depending on the acreage disturbed, either a Phase I industrial activity (5 or more acres disturbance) or a Phase II small construction activities (between 1 and 5 acres disturbance) permit may be required. Additionally, a U.S. Army Corps of Engineers Section 404 permit for the discharge of dredge and fill materials may also be required. Operators are required to obtain all necessary permits and approvals prior to any disturbance activities.

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

Additionally, the Operator is required to:

- Obtain a waiver from New Mexico Oil Conservation Division for the use of a reserve pit if a reserve pit is used (Rule 21 waiver).
- Comply with all applicable Federal, State and local laws and regulations.
- Obtain the necessary permits for the drilling, completion and production of these wells including water rights appropriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.

2.0 Alternatives Including the Proposed Action

2.1 Alternative A - No Action

The BLM NEPA Handbook (H-1790-1) and the National Environmental Policy Act and associated Code of Federal Regulations states that for EAs on externally initiated proposed actions, 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.

TABLE 3.0 AFFECTED ENVIRONMENT AND BASIS FOR DETERMINATION NO FURTHER ANALYSIS				
RESOURCES	NOT PRESENT ON SITE	NO IMPACTS	MAY BE IMPACTS	MITIGATION INCLUDED
CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT				
Air Quality			X	X
Areas of Critical Environmental Concern			X	
Cultural Resources			X	
Native American Religious Concerns		X		
Environmental Justice		X		
Farmlands, Prime or Unique	X			
Floodplains	X			
Invasive, Non-native Species			X	X
Threatened or Endangered Species	X			
Wastes, Hazardous or Solid			X	
Water Quality - Surface/Ground			X	X
Wetlands/Riparian Zones	X			
Wild and Scenic Rivers	X			
Wilderness	X			
NON-CRITICAL ELEMENTS				
General Topography/Surface Geology			X	
Mineral Resources			X	
Paleontology		X		
Soils			X	X
Watershed/Hydrology			X	X
Vegetation, Forestry			X	X
Livestock Grazing			X	X
Special Status Species			X	X
Wildlife			X	X
Wild Horse and Burros	X			
Recreation			X	X
Visual Resources			X	X
Public Health and Safety		X		

would evaluate or cause to have evaluated the information provided to determine if it is an historic property and eligible for inclusion on the National Register of Historic Places.

3.6 Invasive, Non-native Species

There are no known populations of noxious weeds within the project area. However, on the adjacent grazing allotment within 10 miles of the project area, there are known populations of African rue. Key characteristics used to identify this perennial species include bushy growth habit, fleshy stems and leaves, and a five-petal white flower. African rue is spread by seed, roots, and root fragments. The known populations exist primarily along the shoulders of county-maintained roads which are the main access routes into the project area.

3.7 Wastes, Hazardous or Solid

There are no known hazardous or solid waste issues in the area of the proposed well.

3.8 Water Quality

3.8.1 Surface Water

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

3.8.2 Ground Water

Groundwater in the area occurs in basin-fill deposits and in consolidated rock. The basin-fill aquifers consist mainly of unconsolidated to semi-indurated sedimentary deposits. The material is generally of Quaternary and Tertiary ages and ranges from poorly-sorted to moderately-sorted mixtures of gravel, sand, silt, and clay from consolidated rock in the nearby mountain ranges. Evaporite deposits, limestone, conglomerate, and volcanic rocks are present in places. Groundwater in the basins is primarily recharged by ephemeral streams draining the surrounding mountains and discharging either across the permeable alluvial fans at the mouths of the steep canyons or by underflow in these canyons, which enters the alluvial fan directly. Discharge can occur by evapotranspiration, movement to rivers and streams or groundwater withdrawals. Factors that currently affect groundwater resources in the area include management of livestock grazing, groundwater pumping, and possible impacts from brush control treatments. Most of the groundwater in the area is currently used for rural domestic and livestock purposes.

The proposed well is located on the geomorphic feature of Otero Mesa which is the western edge of the Salt Basin and is included in the Basin and Range Province. More importantly, the area is included as part of the Rio Grande Rift Valley. The Rift Valley, by its nature, connotes faulting and fracturing of the rocks both on the surface and subsurface. The proposed well location in the western portion of the Salt

view. This falls within the exception (B-6) provided in the decision which allows surface disturbance within the buffer that is not visible from the Trail.

Alternative C : No surface disturbance under alternative C would occur within the ¼-mile buffer of the Butterfield Trail as defined in either the White Sands RMP or the 2005 RMPA.

Any area to be disturbed by drilling and construction operations would receive cultural clearances prior to any ground disturbance occurring. Any historic property or sacred site identified during clearance surveys would be avoided. No direct or indirect adverse effects to cultural resources are anticipated.

4.3.1 Mitigation

Mitigation is not required.

4.4 Native American Religious Concerns

No impacts to Native American religious concerns are anticipated to result from either alternative.

4.4.1 Mitigation

Mitigation is not required.

4.6 Invasive, Non-native Species

Alternative B: Although there are no known weed populations in the actual project area, there are known populations along the shoulder of the main access routes into the project area. Weed seeds could be picked up on the wheels equipment and carried into the project area. Ground disturbing activities associated with roads and drill pads would create a favorable environment for the establishment and spread of noxious weeds. If noxious weeds are detected, abatement measures would be implemented. These include weed inventory surveys, weed monitoring programs, and a control program. Impacts from and mitigation for invasive, non-native species would be the same for steel tanks as for earthen pits.

Alternative C: Impacts to invasive, non-native species under Alternative C would be the same as Alternative B.

11394

ENVIRONMENTAL ASSESSMENT (EA)

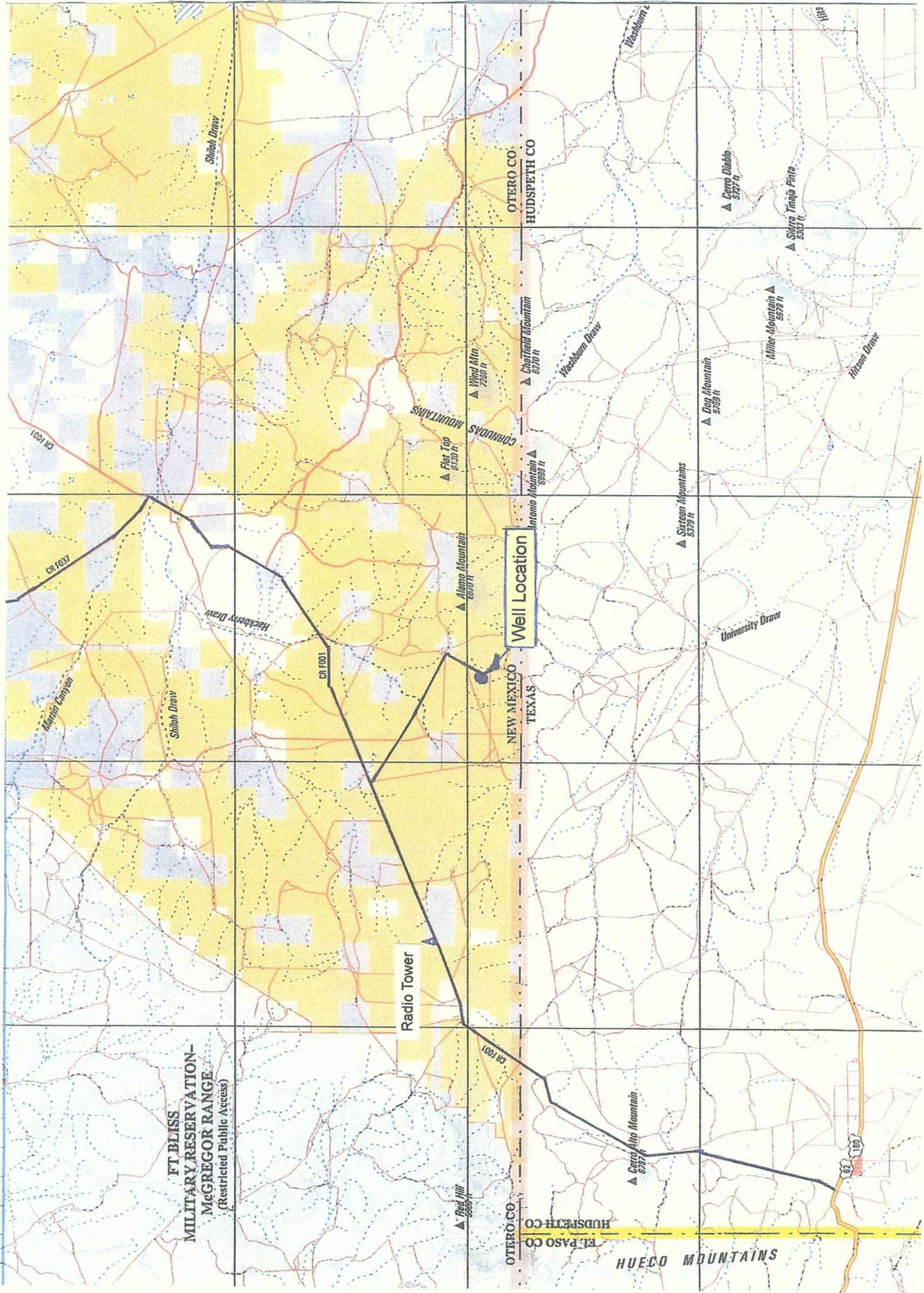
FOR

BENNETT RANCH UNIT #6

EA #NM-030-2006-161

NOVEMBER 2007





PROPOSED HEYCO WELL LOCATION 006

Map 1



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Las Cruces District Office
1800 Marquess
Las Cruces, New Mexico 88005
www.nm.blm.gov



IN REPLY REFER TO:

NMNM 71526
3162 (03100)

NOV 7 2007

Dear Interested Party:

The Bureau of Land Management (BLM) has received an Application for Permit to Drill (APD) from the Harvey E. Yates Company (HEYCO). HEYCO proposes to drill an exploratory natural gas well on Federal land in Otero County, New Mexico. The proposed well is located on HEYCO lease number NMNM 71526 in T. 26 S., R. 12 E., section 23, SW¹/₄, NMPM.

An Environmental Assessment (EA) has been prepared by the BLM analyzing the potential environmental impacts that could result from the Proposed Action. A copy of the EA is enclosed.

The purpose of this letter is to inform the public of the project and provide the opportunity for interested parties to comment on the EA. Additional information regarding the HEYCO APD is available at the Las Cruces District Office. Comments on this proposal must be received by December 10, 2007. Comments should be submitted in writing to:

John Besse
BLM Las Cruces District Office
1800 Marquess Street
Las Cruces, NM 88005

Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

We look forward to your comments. If you need additional information, or if you have questions concerning the project, please contact John Besse at (505) 525-4363.

Sincerely,

Tim L. Sanders
Assistant District Manager
Division of Multi-Resources

1 Enclosure

BENNETT RANCH UNIT #6
EA #NM-030-2006-161

1.0 Introduction

This site-specific analysis tiers to and incorporates by reference the information and analysis contained in the Proposed Resource Management Plan Amendment/Final Environmental Impact Statement (RMPA/FEIS) for Federal Fluid Minerals Leasing and Development in Sierra and Otero Counties, December 2003. The RMPA/FEIS is available for review at the Las Cruces District Office. This project Environmental Assessment (EA) addresses site-specific resources and impacts that are not specifically covered in the RMPA/FEIS, as required by the National Environmental Policy Act of 1969 (NEPA), as amended.

The proposed project is located in an area of south-central New Mexico known as the Otero Mesa. The area is located in a large expanse of northern Chihuahuan grassland. See Map 1 for location.

Although fluid minerals exploration has occurred on Otero Mesa in the past, there has been no development until recently. Oil and gas exploration has occurred within the area since at least 1925, when the first well was drilled. Since that time many more wells have been drilled in Otero County. Shows of oil or gas were reported for a number of the wells; however, extensive field development has not resulted. To date, only two producible natural gas wells exist on Otero Mesa which is currently shut-in pending construction of a gathering system to transport the gas to market.

In 1997, a gas find on Otero Mesa resulted in renewed interest on the part of the oil and gas industry in the area. Large increases in the number of lease nominations prompted BLM to review the 1986 White Sands RMP with regard to guidelines for fluid minerals leasing and development. The BLM determined the 1986 RMP needed to be amended to support large scale leasing. In January 2005, the BLM issued a final RMPA for fluid minerals thereby amending the 1986 RMP. The RMPA determined which lands overlying Federal fluid minerals were suitable and available for leasing and subsequent development and how those leased lands were to be managed.

1.1 Purpose and Need

The purpose for the proposal is to drill a well for and produce oil or natural gas on Federal oil and gas mineral leases issued to the applicant by the BLM. The Mineral Leasing Act of 1920, as amended [30 USC 181 et seq.], authorizes the BLM to issue oil and gas leases and permit the development of those leases. Leases are binding legal contracts that allow development of the mineral by the applicant. The well is being drilled on a lease that was made a part of the Bennett Ranch Unit, which was established to test a geologic prospect delineated by the applicant. The applicant has already completed two producible gas wells that are currently shut-in. The regulations for unit agreements (43 CFR 3181), require the applicant to timely develop the unit area, or the unit will contract to those areas that are determined to be capable of production in paying quantities. The proposed well is intended to further explore and develop the BRU. An approved Application for Permit to Drill (APD), issued by the BLM, would authorize the applicant to construct and drill the proposed well.

1.2 Conformance with Applicable Land Use Plan and Other Environmental Assessments

This site-specific EA tiers to and incorporates by reference the information and analysis contained in the Proposed RMPA/FEIS for Federal Fluid Minerals Leasing and Development in Sierra and Otero Counties, December 2003, which was approved as the Final RMP for the Las Cruces District Office by the Record of Decision (ROD) signed January 24, 2005. The proposed well is in conformance with the

RMPA because it is located within an area identified in that document as open to oil and gas leasing and is within a previously issued Federal lease. The PRMPA/FEIS and ROD are available for review at the Las Cruces District Office. This EA addresses the resources and potential impacts on a site-specific basis as required by the National Environmental Policy Act (NEPA) of 1969. The proposed project would not be in conflict with any local, county, or State plans.

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

Under Section 402 of the Clean Water Act (as amended), the U.S. Environmental Protection Agency (EPA), was directed to develop a phased approach to regulate storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. Industrial activities disturbing land may require permit coverage through a NPDES storm water discharge. Depending on the acreage disturbed, either a Phase I industrial activity (5 or more acres disturbance) or a Phase II small construction activities (between 1 and 5 acres disturbance) permit may be required. Additionally, a U.S. Army Corps of Engineers Section 404 permit for the discharge of dredge and fill materials may also be required. Operators are required to obtain all necessary permits and approvals prior to any disturbance activities.

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

Additionally, the Operator is required to:

- • Obtain a waiver from New Mexico Oil Conservation Division for the use of a reserve pit if a reserve pit is used (Rule 21 waiver).
- • Comply with all applicable Federal, State and local laws and regulations.
- • Obtain the necessary permits for the drilling, completion and production of these wells including water rights appropriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.

2.0 Alternatives Including the Proposed Action

2.1 Alternative A - No Action

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

Under the terms of valid Federal mineral leases, the lessee has the exclusive right to develop mineral resources. Other laws, regulations, and policy include provisions for the economic development of existing leases. By Federal law, the government must abide by the terms, conditions, and provisions agreed to when leases were issued. The No Action Alternative is presented for baseline analysis of resource impacts.

2.2 Alternative B - Proposed Action

The Harvey E. Yates Company (HEYCO) has submitted an Application for Permit to Drill (APD) for an exploratory gas well and associated infrastructure.

Proposed Well Information:

Well Name	Number	Township	Range	Section	Lease Number	Date Lease Issued
BENNETT RANCH UNIT	#6	T 26 S	R 12 E	24	NM71526	03/24/1988

County: Otero

Applicant: Harvey E. Yates Company

Surface Owners: Bureau of Land Management

The Proposed Action involves the development of the project, which includes the following:

- Construction of a 3.7-acre pad and drilling of a gas well to a depth of 6,100 feet.
- No new access roads will be required.
- In the event a producing well is drilled, a tank battery may be constructed on the location.
- In the event a producing well is drilled, a buried gas line approximately 300 feet in length may be constructed to connect the well to a proposed gathering system.

Detailed descriptions of design features and construction practices associated with the Proposed Action are contained in the APD (which is available for review in the Las Cruces District Office). Map 1 shows the location of the proposed well and associated facilities.

The Proposed Action includes construction of a lined earthen reserve pit 170 feet x 100 feet in size as per standard industry practice. However, New Mexico State regulation NMAC 19.15.1.21(B) (Rule 21) prohibits the use of earthen reserve pits at that location. Rule 21 would require the use of a closed loop system of steel tanks to contain fluids during drilling. HEYCO is currently pursuing an exemption to Rule 21 from the State of New Mexico, and the matter remains unresolved at this time. This analysis will address the impacts of both drilling methods. If approved, the APD will be issued contingent upon the operator resolving the reserve pit issue with the State of New Mexico.

2.3 Alternative C

Modifications, or alternatives, to the original proposal received from the operator, were considered during the pre-approval on-site inspection on September 20, 2006. At the on-site, all areas of proposed surface disturbance were inspected to ensure that potential impacts to natural resources would be minimized. Alternatives to the different aspects of the Proposed Action are always considered and applied as pre-approval changes, site-specific mitigation or Conditions of Approval (COAs), if they will alleviate or minimize environmental impacts of the operator's proposal. One specific prospective change was identified for the Bennett Ranch Unit #6 and is listed below:

- Moving the well location to a point south of the proposed location in order to avoid creating surface disturbance within the Butterfield Trail controlled surface use area.

The proposed well location falls within the controlled surface use area which was established .25 miles on either side of the Butterfield Trail in the 2005 RMPA for Federal Fluid Minerals Leasing and Development in Sierra and Otero Counties. The RMPA specifies no surface occupancy in this area in order to protect cultural and scenic values associated with the Trail. The proposed location was determined by the operator on the basis of subsurface geologic information without regard to the existence of the controlled surface use area. According to 43 CFR 3101.1-2, "Measures shall be deemed consistent with the lease rights granted provided that they do not: require relocation of proposed operations by more than 200 meters . . ." This alternative would move the location 200 meters to the south-southeast, just outside the Butterfield Trail controlled surface use area. The description of the construction details of this alternative are the same as the Proposed Action with the exception of the change in location.

The above change and mitigation measure to the Proposed Action will be analyzed as Alternative C and would be incorporated by the BLM as a COA attached to the permit.

3.0 Description of Affected Environment

This section describes the environment that would be affected by implementation of the alternatives described in Section 2. Aspects of the affected environment described in this section focus on the relevant major resources or issues. Certain critical environmental components require analysis under BLM policy. Only those environmental components that may be impacted will be described below (see Table 3.0).

3.1 Air Quality

The air quality of the proposed project area is considered good and is designated a Class II air quality area. Class II areas allow for moderate amounts of air quality degradation. Presently, the primary source of air degradation is pm10 (dust) generated off-site during high wind events. These events are fairly common in southern New Mexico, especially during the spring months. Unpaved roads and other disturbed areas are especially susceptible to contributing to fugitive dust during high wind events.

3.2 Areas of Critical Environmental Concern (ACECs)

The Proposed Action and alternatives would not be located within any ACEC presently designated by the RMP; however, it is adjacent to the Alamo Mountain ACEC. The Alamo Mountain ACEC contains an estimated 20,000 petroglyphs or images pecked into rock from the Archaic, Jornada Mogollon, Apache, and historic periods.

3.3 Cultural Resources

A cultural resources inventory was conducted for the area of potential effect for this project as proposed. This is documented in the report entitled Archaeological Inventory of 8,26 Acres near Alamo Mountain, Otero County, New Mexico, for the Bennett Ranch Unit #6 Well pad. No historic properties were identified within the area of potential effect.

Six recent cultural resources inventories have been undertaken in the lease area. These are comprised of linear surveys and small block surveys associated with oil and gas explorations and drilling. No historic properties were identified within the areas of potential effect for these projects.

One historic property, the Butterfield Trail (Laboratory of Anthropology Site Number (LA) 131080) transects the lease sale area. The Butterfield Trail was operative from 1858 to 1861 and is significant

**TABLE 3.0
AFFECTED ENVIRONMENT AND BASIS FOR DETERMINATION NO FURTHER ANALYSIS**

RESOURCES	NOT PRESENT ON SITE	NO IMPACTS	MAY BE IMPACTS*	MITIGATION INCLUDED
CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT				
Air Quality			X	X
Areas of Critical Environmental Concern			X	
Cultural Resources			X	
Native American Religious Concerns		X		
Environmental Justice			X	
Farmlands, Prime or Unique	X			
Floodplains	X			
Invasive, Non-native Species			X	X
Threatened or Endangered Species	X			
Wastes, Hazardous or Solid			X	
Water Quality - Surface/Ground			X	X
Wetlands/Riparian Zones	X			
Wild and Scenic Rivers	X			
Wilderness	X			
NON-CRITICAL ELEMENTS				
General Topography/Surface Geology			X	
Mineral Resources			X	
Paleontology		X		
Soils			X	X
Watershed/Hydrology			X	X
Vegetation, Forestry			X	X
Livestock Grazing			X	X
Special Status Species			X	X
Wildlife			X	X
Wild Horse and Burros	X			
Recreation			X	X
Visual Resources			X	X
Public Health and Safety		X		

because it was the first regular transport of mail, passengers, and cargo from the United States through its southwestern territories to California. The remains of the Alamo Springs Stage Station, one of many stations to support the Trail, are located approximately 2 miles northeast of the Proposed Action and is a contributing element to the Butterfield Trail.

The Trail trends southwest from the Alamo Springs Stage Station and terminates at County Road F010 to the northeast of the project area. It registers on-the-ground as an observable trace or swale at this location. The White Sands RMP (1986) provided a ¼-mile buffer of the Trail at this location ending at County Road F010. The Trail then proceeds west as isolated segments immediately south and adjacent to a bladed road. Blading of the road has obliterated much of the Trail; segments remain, but are difficult to discern on-the-ground. This latter section of the Butterfield Trail is directly north of the proposed project area and was given a ¼-mile buffer in the RMPA for Federal Fluid Minerals Leasing and Development in Sierra and Otero Counties (2005).

Although no other prehistoric or historic sites have been recorded within the subject area, it abuts the Alamo Mountain ACEC. The Alamo Mountain ACEC contains an estimated 20,000 petroglyphs or images pecked into rock from the Archaic, Jornada Mogollon, Apache, and historic periods.

3.4 Native American Religious Concerns

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

A sacred site as defined by Executive Order No. 13007 "...means any specific, discrete, narrowly delineated location of Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

In order for the BLM to take into account the effects its actions may have on traditional cultural properties or sacred sites, BLM must have the specific location of these resources on-the-ground and have some information about their character and importance as it relates to the practices or beliefs of a living community and their importance in maintaining the continuing cultural identity of the community. BLM must also have the specific, delineated location of a sacred site to avoid adversely affecting the physical integrity of a sacred site at the location specified.

Interested Native American entities were informed of the proposed drilling project by mail on December 13, 2006 as part of the scoping process. Comments received are incorporated in Section 5 of this document. Formal consultation was initiated by certified mail on September 17, 2007. Further scoping will be conducted and comments addressed upon completion of the EA.

Should specific locations and knowledge regarding TCP sacred sites be forthcoming, BLM would keep such information confidential where it is appropriate and has been requested by the Native American entity.

Where specific sacred site locations and their associations are identified, BLM would, in consultation with the interested Native American entity, work to make the changes necessary to accommodate access and ceremonial use of the location and make the changes necessary to avoid adverse effect to the physical integrity of the sacred site location. Where information has been provided concerning a TCP, BLM

would evaluate or cause to have evaluated the information provided to determine if it is an historic property and eligible for inclusion on the National Register of Historic Places.

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. There are no minority/low income populations in the area of the proposed location that could be affected disproportionately by the Proposed Action.

3.6 Invasive, Non-native Species

There are no known populations of noxious weeds within the project area. However, on the adjacent grazing allotment within 10 miles of the project area, there are known populations of African rue. Key characteristics used to identify this perennial species include bushy growth habit, fleshy stems and leaves, and a five-petal white flower. African rue is spread by seed, roots, and root fragments. The known populations exist primarily along the shoulders of county-maintained roads which are the main access routes into the project area.

3.7 Wastes, Hazardous or Solid

There are no known hazardous or solid waste issues in the area of the proposed well.

3.8 Water Quality

3.8.1 Surface Water

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

3.8.2 Ground Water

Groundwater in the area occurs in basin-fill deposits and in consolidated rock. The basin-fill aquifers consist mainly of unconsolidated to semi-indurated sedimentary deposits. The material is generally of Quaternary and Tertiary ages and ranges from poorly-sorted to moderately-sorted mixtures of gravel, sand, silt, and clay from consolidated rock in the nearby mountain ranges. Evaporite deposits, limestone, conglomerate, and volcanic rocks are present in places. Groundwater in the basins is primarily recharged by ephemeral streams draining the surrounding mountains and discharging either across the permeable alluvial fans at the mouths of the steep canyons or by underflow in these canyons, which enters the alluvial fan directly. Discharge can occur by evapotranspiration, movement to rivers and streams or groundwater withdrawals. Factors that currently affect groundwater resources in the area include management of livestock grazing, groundwater pumping, and possible impacts from brush control treatments. Most of the groundwater in the area is currently used for rural domestic and livestock purposes.

The proposed well is located on the geomorphic feature of Otero Mesa which is the western edge of the Salt Basin and is included in the Basin and Range Province. More importantly, the area is included as part of the Rio Grande Rift Valley. The Rift Valley, by its nature, connotes faulting and fracturing of the rocks both on the surface and subsurface. The proposed well location in the western portion of the Salt

Basin is separated from the eastern portion of the Basin by a series of major northwest-southeast trending faults.

Sandia Laboratories and the U. S. Geological Survey (USGS) estimate 57 million acre-feet of water lie under Otero Mesa. Sandia Labs and the USGS used 100 wells for this estimate. However, of the subject wells, only nine are located on or near Otero Mesa. That translates to one well per township in and around the area of the Otero Mesa. Given what is known of Otero Mesa, it is uncertain how much usable water it may contain or where that water occurs.

The three oil and gas wells drilled in the Bennett Ranch Unit Area, the BRU No. 1, BRU No. 1-Y and the BRU 25 No. 1, all were drilled using compressed air which allows detection of subsurface in the well bore. None of the wells encountered water above 900 feet. However, the BRU No. 1-Y did encounter usable water below the gas zones at depths around 2,200 feet and 3,600 feet.

Other than the above gas wells, what is known about the water on the Mesa comes from the following water wells in the general area:

T. 26 S., R. 12 E., NMPM

Sec. 12, well depth – 560 feet; water level 420 feet.

Sec. 16, well depth – 610 feet; water level 540 feet.

T. 26 S., R. 13 E., NMPM

Sec. 7, well depth – 560 feet; water level 535 feet.

Sec. 16, well depth – 800 feet; water level 610 feet.

Sec. 34, well depth – no data; water level no data

3.9 General Topography/Surface Geology

The topography of the Otero Mesa area is gently rolling terrain with thin to moderate topsoil and scattered surface exposures of caliche. The area is incised by shallow ephemeral drainages. There are occurrences of isolated igneous intrusive features in the Cornudas Mountains to the east. The proposed well is on gently sloping ground with a southern exposure bounded on the north by a low ridge.

3.10 Mineral Resources

With the exception of oil and gas, there are no known mineral resources in the area other than widespread occurrences of caliche. Caliche, a shallow calcium carbonate deposit, is commonly used as a construction material for surfacing roads and well pads.

3.11 Paleontology

The presence and extent of paleontological resources at the site is unknown.

3.12 Soils

The proposed project area occurs primarily on a low, rolling hills landscape typically with shallow soils on and near the crest of the hills and ridges and deeper soils near the bottom of the hills and in the draws. Slopes range from nearly level to approximately 10 percent.

The soils at the project area site are typically calcareous and shallow over a caliche layer. Soil textures are sandy loam on the surface and a sandy loam or light sandy clay loam subsurface. The cemented caliche layer generally occurs at a depth of 6-20 inches and in some cases may be slightly deeper.

The soils down slope to the south are generally deeper with textures of sandy loam, light sandy clay loam or silt loams. The soils are calcareous throughout and a weakly cemented caliche layer or calcium carbonate coated gravels and cobbles may occur at a depth of 20 to 50 inches.

3.13 Watershed – Hydrology

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

3.14 Vegetation

In general, the project area is a grassland site with temperature and rainfall that favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of the site. Forb production fluctuates greatly from season-to-season and year-to-year.

The dominant range site is Shallow Sandy. This site occurs on upland plains, and tops of low ridges and mesas, associated with Sandy, Loamy Sand, and Shallow sites. The potential plant community consists primarily of grasses such as black grama, blue grama, bush muhley, and sideoats grama. Yucca, cholla cactus, creosotebush and mesquite can also occur on the site. Shrubs, especially mesquite and creosotebush can increase or colonize due to dispersal of seed by livestock or wildlife. This increase may be enhanced by proximity to areas with existing high shrub densities.

This ecological site is within the Southern Desertic Basins, Plains and Mountains Major Land Resource Area (SD-3), and is described by the Natural Resource Conservation Service (NRCS) on their web site: <http://www.nm.nrcs.usda.gov/technical/fotg/section-2/esd.html>

3.15 Livestock Grazing

The project area is located within the Alamo Mountain Allotment No. 09001. The allotment is permitted for 573 cattle and 5 horses. The allotment is fenced into five pastures and a few small traps and is generally run using a "best pasture" approach. This entails continuously evaluating the different pastures as the cow/calf herd is moved from one pasture to another, based on forage conditions. Range improvement projects such as windmills, water delivery systems (pipelines, storage tanks, and water troughs), earthen reservoirs, and fences are located within the project area. In general, the carrying capacity for the project area is about 10 cattle per section.

3.16 Wildlife

The BLM conducted an inventory of wildlife habitats on the Otero Mesa using the Integrated Habitat Inventory and Classification System (IHICS) in 1982. Standard Habitat Sites (SHS) occurring in the proposed well site location include:

- Grass Rolling Upland (approximately 90%)
- Grass Flat (approximately 10%)

SHS descriptions can be found starting on page 3-21 of the White Sands Resource Area Draft RMP/EIS.

The project area provides habitat for approximately 7 species of amphibians, 38 species of reptiles, 63 species of mammals, and 147 species of birds. Wildlife information by habitat type in Otero County is available for review at the BLM Las Cruces District Office.

3.17 Special Status Species

3.17.1 Plants

Presence of special status plant species and their habitats in Otero County was considered using Las Cruces District species occurrence/habitat records and New Mexico Natural Heritage Program species records. Species descriptions and distributions were derived from Las Cruces District office records and New Mexico Rare Plant Technical Council (NMRPTC) [1999, New Mexico Rare Plants, Albuquerque, NM: New Mexico Rare Plants Home Page. <http://nmrareplants.unm.edu> (Latest update: 18 January 2006)]. There are no known occurrences of special status plants within the lease boundary.

There is a potential for one sensitive plant species to occur: grama grass cactus, a BLM sensitive plant. Grama grass cactus (*Sclerocactus papyracanthus*) occurs in two ecotypes occurring from 5,000 to 7,300 feet. The two ecotypes include grama and galleta grasslands with sandy soils and alkali sacaton grasslands in gypseous soils.

3.17.2 Animals

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

Special Status animal species lists for Otero County were compiled from U.S. Fish and Wildlife Service and New Mexico Department of Game and Fish websites: (www.wildlife.state.nm.us/conservation/threatened_endangered_species/index.htm and http://www.fws.gov/southwest/es/NewMexico/SBC_view.cfm?spcnty=Otero) and from the BLM NM/OK/TX/KS Sensitive Species List. Known geographic distribution and habitat requirements were considered for each species in comparison with habitat types in the lease area. The results of this analysis are that of 41 special status species in Otero County, 17 species are considered to have potential habitat within the lease boundary.

Table 3.17.1 BLM Las Cruces District Special Status Wildlife Species	
SPECIES	STATUS
Peregrine falcon	FD, FWSS, NMT
Ferruginous hawk	BLMS
Northern aplomado falcon*	FE, NME
Mountain plover	FWSS
Common ground dove	NME
Loggerhead shrike	BLMS
Burrowing owl	BLMS, FWSS
Baird's sparrow	NMT, BLMS, FWSS
Texas horned lizard	BLMS
Western small-footed myotis	BLMS
Cave myotis	BLMS
Long-eared myotis	BLMS
Long-legged myotis	BLMS
Fringed myotis	BLMS
Spotted bat	BLMS, NMT
Townsend's big-eared bat	BLMS, FWSS
Big free-tailed bat	BLMS
<p>NOTES: FD=FEDERAL DELISTED, FWSS=USFWS SPECIES OF CONCERN, NMT=NEW MEXICO THREATENED, BLMS=BLM SENSITIVE, FE=FEDERAL ENDANGERED, NME=STATE OF NM ENDANGERED</p> <p>*The Federally endangered Northern aplomado falcon is currently listed under Section 10J of the Endangered Species Act as an experimental, nonessential population in New Mexico and Arizona. Under this listing, the falcon is treated as a Federally Proposed species, and the BLM must conference with the USFWS on any action that may affect this falcon.</p>	

Habitat descriptions for these special status wildlife species are available for review at the BLM Las Cruces District Office.

3.18 Visual Resources

The project area appears as an undifferentiated parcel of desert grassland, which is the characteristic landscape of the area. The site does not possess any dominant features that make it stand out in the landscape. There is no sense of boundary restrictions when the site is viewed from points outside of the site.

The project area is within an area designated in the White Sands RMP (October 1986), as Visual Resource Management Class IV. VRM on public land is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411. Class IV designation provides for management activities which allow major modification of the existing landscape. These management activities can focus the view of a casual observer and can dominate the landscape; however, every attempt should be made to minimize the impact of these activities. Changes may subordinate the original composition, but must reflect a natural occurrence.

3.19 Recreation

The project area is remote and receives little direct recreational use. Small-game hunting and backcountry driving are the primary recreational uses that take place on-site. The area is also passed through by recreationists en route to Alamo Mountain. The region is visited by people from both New Mexico and Texas.

The Alamo Mountain ACEC was established to protect unique cultural resources that exist there. It is nearby, but outside of the project area and receives a modest amount of public visitation. From the western slope of the ACEC, the project area is within the immediate viewing area, and the southwestern portion of Alamo Mountain is visible from the site. The historic Butterfield Trail, which passes near the project area, attracts a few visitors annually. The proposed sites are not readily visible from the Trail.

4.0 Environmental Consequences and Proposed Mitigation Measures

4.0.1 No Action Alternative

Under the No Action Alternative, the proposed well would not be drilled. There would be no new impacts due to oil and gas exploration/production to the resources in this location. Current land and resource uses in the project area would continue unaffected by oil and gas activity at this site. The No Action Alternative will not be evaluated further in Chapter 4.

4.0.1 Alternative B

Under Alternative B (Proposed Action), the well would be drilled as proposed, without changes to reduce potential impacts to the environment. Descriptions of potential impacts on individual resources for this alternative are presented in the following text. Also described are mitigation measures that could be incorporated by the BLM where appropriate as COAs attached to the permit.

4.0.1 Alternative C

Under Alternative C, the well would be drilled as originally proposed with the exception of changing the location to a point approximately 200 meters to the south-southeast. Total surface disturbance under this alternative would remain the same as under Alternative B. Descriptions of potential impacts on individual resources for this alternative are presented in the following text. Also described are mitigation measures that could be incorporated.

4.1 Air Quality

Alternative B: Air quality would temporarily be impacted by pollution from exhaust emissions, chemical odors, and dust that would be caused by the motorized equipment used to construct the well pad, reserve pit, and by the rotary drilling rig itself. No new access roads would be needed, but traffic to and from the drill site would raise dust on existing dirt roads in the area. Dust dissemination would be greatly

reduced upon completion of the construction phase of the well pad. Air pollution from the motorized heavy equipment would discontinue entirely upon completion of the drilling phase of the operation. Winds generally disperse odors and emissions. The impact to air quality would become greatly reduced when the construction phase is completed. Air quality impacts would cease altogether at the end of the drilling activity, which is estimated to last for 60 days. The RMPA quantifies fugitive dust emissions expected to result from drilling activities in terms of total suspended particulates (TSP). TSP is estimated at approximately 10 tons during a 30-day per well pad construction and drilling period.

If steel tanks are used in place of a reserve pit, air quality impacts during the construction phase would be the same except for an incremental reduction in dust impacts because an earthen pit would not be dug. Dust impacts would continue during the drilling operation and be increased because of increased truck traffic to and from the well site. While the well bore is being advanced, the steel circulation tanks must be emptied regularly into a tank truck to maintain the chemical composition of the fluid and remove cuttings. This material would have to be hauled off-site to an approved disposal facility.

Alternative C: Impacts to air quality under Alternative C would be the same as those under Alternative B.

4.1.1 Mitigation

Extensive ground disturbing activity will be avoided during periods of high winds, unless dust abatement measures are employed.

4.2 Areas of Critical Environmental Concern

The Alamo Mountain ACEC lies approximately 2 miles northeast of both the proposed and alternative well location. Either location may be visible from higher elevations on Alamo Mountain; however, no other impacts to the ACEC are anticipated.

4.2.1 Mitigation

Mitigation is not required.

4.3 Cultural Resources

The proposed well is located within Federal lease number NMNM-71526 which was issued on March 24, 1988 under the provisions of the White Sands RMP (October 1986). The White Sands RMP identified a number of well preserved segments of the Butterfield Trail to be protected by a ¼-mile buffer either side of the Trail where no surface occupancy is allowed.

The White Sands RMP was amended by the January 2005 RMPA for Federal Fluid Minerals Leasing and Development in Sierra and Otero Counties. The RMPA extended the ¼-mile buffer along the entire length of the Butterfield Trail through Otero County. However, the RMPA included an exception which provided for surface disturbance within the buffer that was not visible from the Trail.

No stipulations in regard to the Butterfield Trail were included in Lease number NMNM-71526 at the time of issuance.

Alternative B: The project location is within the ¼ Butterfield Trail buffer as designated in the White Sands RMP and the 2005 RMPA. However it sits at a lower elevation than the Trail and is shielded from

view. This falls within the exception (B-6) provided in the decision which allows surface disturbance within the buffer that is not visible from the Trail.

Alternative C: No surface disturbance under alternative C would occur within the ¼-mile buffer of the Butterfield Trail as defined in either the White Sands RMP or the 2005 RMPA.

Any area to be disturbed by drilling and construction operations would receive cultural clearances prior to any ground disturbance occurring. Any historic property or sacred site identified during clearance surveys would be avoided. No direct or indirect adverse effects to cultural resources are anticipated.

4.3.1 Mitigation

Mitigation is not required.

4.4 Native American Religious Concerns

No impacts to Native American religious concerns are anticipated to result from either alternative.

4.4.1 Mitigation

Mitigation is not required.

4.5 Environmental Justice

Alternative B: 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 and noise disturbance in areas used for grazing or hunting. However, these impacts would apply to all public land users in the project area.

Alternative C: Impacts to environmental justice under alternative C would be the same as those under Alternative B.

4.5.1 Mitigation

Mitigation is not required.

4.6 Invasive, Non-native Species

Alternative B: Although there are no known weed populations in the actual project area, there are known populations along the shoulder of the main access routes into the project area. Weed seeds could be picked up on the wheels equipment and carried into the project area. Ground disturbing activities associated with roads and drill pads would create a favorable environment for the establishment and spread of noxious weeds. If noxious weeds are detected, abatement measures would be implemented. These include weed inventory surveys, weed monitoring programs, and a control program. Impacts from and mitigation for invasive, non-native species would be the same for steel tanks as for earthen pits.

Alternative C: Impacts to invasive, non-native species under Alternative C would be the same as Alternative B.

4.6.1 Mitigation

The operator will include provisions for noxious weed prevention and treatment in the SUPO. Prevention measures may include removal of weed sources and preventing weed seed transport into relatively weed-free areas. In the event noxious weeds are discovered during construction of the well pad, measures will be taken to mitigate those impacts. These may include mechanical, chemical, biological, or other methods approved by the BLM. Measures to ensure the prevention of the spread of noxious weeds will be in place such as the washing of vehicles prior to entering the project area and before leaving infested areas.

4.7 Wastes, Hazardous or Solid

Alternative B: The lease action falls under environmental regulations that impose responsibility and liability on the operator for the protection of human health and the environment from harmful waste management practices or discharges. These regulations ensure that adequate procedures are in place to provide for the safe handling and disposal of any drilling fluids, additives, cuttings or saline water used or produced during drilling operations.

The New Mexico Oil Conservation Division Rule 21 requires a closed loop system. The applicant has requested a waiver from those regulations.

Alternative C: Impacts to solid or hazardous wastes under Alternative C would be the same as Alternative B.

4.7.1 Mitigation

Mitigation is not required.

4.8 Water Quality

4.8.1 Surface Water

Alternative B: If a Rule 21 waiver is granted, circulating fluid in an earthen drilling pit would be contained by a soil berm. There is a risk that this berm may leak or break, releasing fluids off the well site. There are no nearby surface waters in the area, and the site is adjacent to a normally dry drainage. There is a remote possibility that the reservoir could be compromised if a leak were to occur during a heavy rain event. If steel tanks are used, impacts to surface water from circulating fluids would not occur unless an unanticipated water flow were encountered causing the tanks to overflow. The proper use of blow out prevention and pressure control equipment along with the construction of earthen berms surrounding the tanks would mitigate this impact.

Surface disturbance from the construction of the well pad and ancillary facilities can result in minor 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 include increased surface water runoff and off-site sedimentation brought about by soil disturbance, increased salt loading and water quality impairment of surface waters and possible contamination of surface waters by produced water. The magnitude of these impacts to water resources are expected to be minor and 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.

Alternative C: Impacts to surface water quality under Alternative C would be the same as Alternative B.

4.8.1.1 Mitigation

If a Rule 21 waiver is granted by New Mexico Oil Conservation, use of a plastic-lined reserve pit would reduce or eliminate seepage of drilling fluid into the soil and eventually reaching groundwater. Spills or produced fluids (e.g., saltwater, oil, and/or condensate in the event of a breach, overflow, or spill from storage tanks) could result in contamination of the soil on-site, or off-site, and may potentially impact surface and groundwater resources in the long-term.

4.8.2 Groundwater

Alternative B: There is a remote probability that accidental contamination of soils and groundwater by drilling fluids (seepage) could occur during the drilling phase. There is the possibility that seepage from an earthen pit would occur. After drilling operations, all drilling material would be left on-site within the reserve pit and buried. There is the long-term potential for groundwater contamination from water infiltration at the reserve pit location, especially if there is no liner to contain pit contents. The potential impact to groundwater could be mitigated if the pit contents were removed prior to closure of the pit.

If steel tanks are used, the possibility that drilling fluid contamination could occur during the drilling phase is more remote than with earthen pits. If this happens, the effects would be minimal because steel tanks would be used to contain drilling fluids and protect soils and groundwater from mud contamination and seepage. There is the potential for drilling fluids, cuttings, and returns to exceed the capacity of the steel tanks, in which case, contamination could still occur to soils and groundwater. This impact would be mitigated with the proper use of blow out prevention and pressure control equipment.

The useable groundwater could be contaminated by cross formation or intra-formational invasion of salt water whether from an aquifer or as produced (salt) water in association with hydrocarbons. In addition, drilling with mud systems containing toxic chemicals and the like could also invade useable water aquifers.

Alternative C: Impacts to groundwater under Alternative C would be the same as Alternative B.

4.8.2.1 Mitigation

The casing and cementing requirements imposed on the proposed well will reduce or eliminate the potential for groundwater contamination from drilling muds and other surface sources. Onshore Order No. 1 clearly requires the BLM to protect both known and potential occurrences of useable water. Drilling with air or fresh water mud systems eliminates contamination of the useable water by drilling mediums. Setting surface or intermediate casing below the last known useable water and cementing the

casing to surface reduces or eliminates the potential for groundwater contamination from drilling mud and other surface sources. Based on the best available data derived from local water wells as shown in 3.10 above, the BLM will require the operator to set surface casing to a depth of at least 900 feet to protect useable groundwater sources.

4.9 General Topography/Surface Geology

The surface disturbance anticipated from the construction of the well pad 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 drilling the well.

Alternative B: Direct impacts would result from the removal of the surface soils during construction of the well pad. The consequential earth moving activities would indirectly impact the vegetation and would cause a degree of fragmentation of the surface habitat where small animals live in the project area.

Alternative C: Impacts to general topography/surface geology under Alternative C would be the same as Alternative B.

4.9.1 Mitigation

The inclusion of mitigation measures to conserve the landscape to the extent possible, such as limiting the size of the disturbed area, in the COA will lessen the impacts from the surface disturbance activities on this project.

4.10 Mineral Resources

Mineral resources are classified by the BLM as salable, locatable, and leaseable. Each of these types of resources may be extracted by their applicable authorities.

Alternative B: Construction materials, considered salable, may be used onsite for construction of the well pad as authorized by the provisions for sundries under 43 CFR 3100. These materials would not be removed from the site and would remain once the well pad is reclaimed. No locatable minerals are known to occur within the area of the Proposed Action, nor are there any active mining claims. Leaseable minerals include oil and gas which would be impacted through extraction.

Placement of the well pad would tend to physically impede the exploitation of mineral resources other than oil and gas if they existed beneath it. However, as there are no known resources besides oil and gas beneath the proposed well pad, it is unlikely that any such conflict would exist.

Alternative C: Impacts to mineral resources under Alternative C would be the same as Alternative B.

4.10.1 Mitigation

No mitigation is required.

4.11 Paleontology

No direct and indirect impacts would occur from either alternative.

4.12 Soils

Alternative B: The construction of the well pad would physically disturb about 3.7 acres of topsoil material. No additional access road construction is anticipated because the well site is directly adjacent to an existing county road. Where exposed, soils would be susceptible to wind blowing and water erosion. This impact could be remedied upon reclamation when the well pad is reseeded. An earthen pit area would take longer to reclaim because of the well bore fluids contained in the pit. The pit area would be more difficult to reclaim, and there is a risk that the pit area may not re-vegetate as well as the remainder of the well pad.

If steel tanks are used, the area of surface disturbance and attendant construction impacts would be the same because the well site layout and the need for level space would not be reduced even though steel tanks would take up less area on the pad than earthen pits. There would be no below-grade disturbance of soils caused by a dug pit. Circulating fluids would be contained in steel tanks, reducing the risk of reclamation problems in the area of the circulating tanks.

The construction of the well pad, and reserve pit would physically disturb about 3.7 acres of topsoil and would expose the substratum soil. Direct impacts resulting from construction of the well pad and reserve pit 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 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.

Alternative C: Impacts to soils under Alternative C would be the same as Alternative B.

4.10.1 Mitigation

The operator will construct the well pad in such a way that limits the overall surface disturbance to the minimum area practicable. In addition, the operator will stockpile the topsoil from the surface of the well pad which will be used for surface reclamation of the well pad. During reclamation of the well pad, stockpiled soil will be distributed over the well pad to form a seed bed and reestablish vegetation.

If a reserve pit is constructed, it shall be recontoured and reseeded as described in the attached COAs. Upon abandonment of the well, the Authorized Officer shall issue instructions or orders for surface reclamation/restoration of the disturbed areas as described in the COA.

4.11 Watershed - Hydrology

Alternative B: Construction and surface disturbance activities from the construction of the well pad can result in long-term and short-term alterations to the hydrologic regime. The potential hydrologic effects include reduced infiltration, bank erosion and channel widening

Long-term direct and indirect impacts to the watershed and hydrology would continue for the life of the well and would decrease once all well pad and road surfacing material has been removed and reclamation of the well pad has taken place. Short-term direct and indirect impacts to the watershed and hydrology

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

Alternative C: Impacts to watershed/hydrology under Alternative C would be the same as Alternative B.

4.11.1 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 reserve pit shall be recontoured and reseeded as described in the COAs. Upon abandonment of the well or when the access road is no longer in service, the Authorized Officer shall issue instructions or orders for surface reclamation/restoration of the disturbed areas as described in the COAs.

4.12 Vegetation

Alternative B: The construction of the well pad would require removal of about 3.7 acres of native vegetation to accommodate drilling and well completion equipment. Following well completion, the pad would be reduced in size to approximately 2.2 acres and the remaining 1.5 acres reclaimed. If it is a producing well, full reclamation would not commence until the well is a depleted producer and plugged and abandoned. Vegetative recovery on the well pad would depend on life of the well. Native vegetation would encroach on the well pad over time with only high traffic areas remaining un-vegetated. If drilled as a dry hole and plugged, reclamation of the access road and well pad would immediately follow. Vegetative impacts would be short-term when the access road and well pad re-vegetate within a few years, and reclamation of the well pad are successful. Impacts to and mitigation for vegetation would be the same regardless of whether earthen pits or steel tanks are used.

Alternative C: Impacts to vegetation under Alternative C would be the same as Alternative B.

4.12.1 Mitigation

No long-term impact to vegetation is anticipated. Revegetation measures by the operator will continue for as long as necessary until the site is fully recovered.

4.13 Livestock Grazing

Alternative B: The construction of pads, pits, and associated facilities would cause forage to be lost on the Alamo Mountain Allotment. On average, it takes approximately 65 acres of forage to support one cow. Using this figure and the reasonable foreseeable development scenario, forage to support less than one cow would be lost from the allotment. These numbers would not cause the grazing permit to be adjusted.

There could be occasional livestock injuries or deaths due to accidents such as collisions with vehicles, falling into mud pits or other excavations, and ingesting plastic or other materials present at the work site. These impacts make the day-to-day livestock management actions more difficult. Impacts to and mitigation for vegetation would be the same regardless of whether earthen pits or steel tanks are used.

Alternative C: Impacts to livestock grazing under Alternative C would be the same as Alternative B.

4.13.1 Mitigation

If conflicts arise with livestock as a result of construction of the well pad, measures will be taken as necessary to mitigate those conflicts in coordination with the allottee and the Authorized Officer. Mitigation measures will likely include fencing the well pad to exclude livestock, dust abatement and road maintenance.

4.14 Wildlife

Alternative B: Development of the well would have impacts on wildlife habitat and populations. Mechanisms through which oil and gas activities impact wildlife and wildlife habitats include:

- Altered vegetation structure
- Altered fire regime
- Alteration of soil structure
- Alteration of water regimes
- Increased human and vehicular activity

The development of this tract would lead to the degradation/fragmentation and the possible reduction of local wildlife populations and their habitats due to the increase in activity associated with oil and gas operations (gas lines, water lines, oil lines, etc) on approximately 4 acres of public land.

Alternative C: Impacts to wildlife and wildlife habitats under Alternative C would be the same as Alternative B.

4.14.2 Mitigation

Mitigation is not required.

4.15 Special Status Species

Alternative B:

Grass cactus (*Sclerocactus papyracanthus*), BLM Sensitive plant species. This cactus could be impacted by equipment and vehicles during development.

American peregrine falcon (*Falco peregrinus anatum*). Development is not anticipated to preclude this species from occurring.

Ferruginous hawk (*Buteo regalis*). There is suitable feeding habitat for ferruginous hawks that may winter on the proposed well site. Development at levels that maintain adequate prey resources (rodents and rabbits) for this hawk would not have significant adverse impacts.

Northern aplomado falcon (*Falco femoralis septentrionalis*). The Northern aplomado falcon habitat model indicates that the proposed development would be in high potential habitat for aplomado falcons. Formal consultation occurred with the USFWS (Cons. # 2-22-01-F-373) for the larger Bennett Ranch Unit Gathering System that this well is a part of. Aplomado falcons were designated a nonessential experimental population on July 26, 2006, under section 10(j) of the Endangered Species Act. For BLM, species with this designation are considered a "proposed" species for purposes of compliance with Section 7 of the Act. BLM NM/OK/KS/TX policy (IM NM 2007-12) states that for BLM actions that

May Affect, Not Likely to Adversely Affect a proposed species, BLM is only required to send an informational courtesy letter to the Fish and Wildlife Service (FWS) that describes the action and documents the thought process to support the effect determination. BLM would confer with the FWS and/or National Marine Fisheries Service (NMFS) on any action that is likely to adversely affect a proposed species or proposed critical habitat. Development of the proposed well may affect, but is not likely to adversely affect the aplomado falcon.

Mountain plover (*Eupoda Montana*). There are no prairie dog towns that could provide potential mountain plover habitat on the proposed well site. Clearing of the well site may enhance mountain plover habitat on a temporary basis when human activity is lacking.

Common ground dove (*Columbina passerina pallescens*). Implementation of the Proposed Action is anticipated to reduce seeds available to birds including the common ground dove.

Loggerhead shrike (*Lanius ludovicianus*). Fluid mineral development is anticipated to provide adequate habitat for loggerhead shrikes.

Burrowing owl (*Athene cunicularia hypugaea*). There are no known prairie dog towns that provide potential burrowing owl habitat in the lease area.

Baird' sparrow (*Ammodramus bairdii*). Development activities must be managed at levels that maintain grasslands, both as cover and seed sources for these sparrows.

Texas horned lizard (*Phrynosoma cornutum*). Development can have direct impacts on these lizards, since they move slowly enough that they are susceptible to vehicle mortality. Surface disturbance reduces grass seed availability, which is the food of harvester ants upon which Texas horned lizards feed, so development has a net detrimental impact on these lizards.

Western small-footed Myotis (*Myotis ciliolabrum melanorhinus*), cave myotis (*Myotis velifer*), long-eared myotis (*Myotis evotis*), long-legged Myotis (*Myotis volans*), fringed myotis (*Myotis thysanodes*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii pallescens*), big free-tailed bat (*Nyctinomops macrotis*). Development would likely reduce bat food (insects) on the landscape as a whole, and human activity may cause these bats to avoid feeding on or near the proposed well pad.

Alternative C: Impacts to special status species under Alternative C would be the same as Alternative B.

4.15.1 Mitigation

Based on previous informal consultation with the USFWS, site mitigation measures for the aplomado falcon will include:

- Minimize pad size as much as possible
- Net any open pits to prevent bird mortality
- Locate the pad away from potential nest sites (tall, multi-branched yuccas and tree-form mesquites with raptor nests)
- Conduct surveys for aplomado falcons
- Conduct further NEPA analysis and Section 7 Conference for commercial production proposals

4.16 Visual Resources

Alternative B: Visual impacts would be most pronounced during the active drilling phase of the project and would diminish when only low profile structures are left on-site. Minimizing the size and number of structures and utilization of the recommended earth tone colors would greatly reduce the visual impacts. Proper restoration/reclamation efforts would be essential to restore the visual balance to the area.

Alternative C: Impacts to visual resources under Alternative C would be the same as Alternative B.

4.16.1 Mitigation

The flat color Carlsbad Canyon (2.5Y 6/2) from the Standard Environmental Colors Chart will be used on all facilities to closely approximate the vegetation within the setting. All facilities, including the meter building, would be painted this color.

4.17 Recreation

Alternative B: Although the proposed project area receives little direct recreational visitation, the recreational value of the land would be moderately diminished by the exploration and development of the area. People would tend to spend less time in an area that has lost a degree of naturalness and the feeling of remoteness. Sightseers, photographers, and birdwatchers would seek out other places that seem more natural. Many hunters would avoid using an area where conflicts may arise. Some visitors may not linger in an area that appears to be designated for other uses.

Potential cumulative effects may occur if an oil and gas field is discovered, and the whole area is developed further. This may lead to an increase in industry personnel and vehicle traffic, roads, structures, fences, dust, and noise in the expanded area. Vegetation, wildlife, and visual beauty would decrease. All of this would have an impact on recreation in the area as well as in the quality of the recreational experience.

Alternative C: Impacts to recreation under Alternative C would be the same as Alternative B.

4.17.1 Mitigation

Minimizing the number and size of roads, structures, and bare ground will help to maintain the recreational appeal of the area. Proper restoration/reclamation efforts will also help in this regard. Restoration will take place as soon as areas are no longer needed.

4.18 Cumulative Impacts

Alternative B: According to the Reasonable Foreseeable Development (RFD) scenario contained in the RMPA, the cumulative impacts for leasing and development activities are anticipated to be minimal for most resources over the 20-year planning timeframe. This is due to the limited nature of expected surface disturbance unless a substantial amount of development was to occur in one area that has sensitive resource concerns.

However, there is potential for cumulative impacts to result in substantive effects on visual resources, wildlife habitat, and water resources. Potential cumulative impacts may be anticipated to occur on visual resources, wildlife habitat, groundwater levels, surface water quality, and socioeconomic resources.

Because of the open and undeveloped landscape within the Otero Mesa area, the potential exists for cumulative visual impacts if fluid mineral development occurs in visual proximity to other past, present, or reasonably foreseeable future actions.

The greatest concern is if the combination of visual effects of the Proposed Action and other development were to result in a moderate to strong visual contrast to the setting. Potential cumulative effects may occur if an oil and gas field is discovered and developed further. Additional wells, structures, pipelines, and roads would significantly alter the visual appeal of the landscape. In addition, the view shed from the nearby Alamo Mountain ACEC would be noticeable degraded. Visual scars would be visible for a long time from the elevation of the Alamo Mountain ACEC.

These types of cumulative impacts may be mitigated through siting and other proposed mitigation measures. The volume of road development is not large relative to the existing road network; however, the density or location of new access may have a cumulative effect on a previously undisturbed area. Although the associated road networks would not be particularly dense, especially given the existing access in the area, the possibility exists that cumulative direct and indirect effects may be notable in terms of habitat fragmentation for larger wildlife.

Water requirements for fluid minerals development would be limited and are not anticipated to cause significant impacts to the groundwater supply. Water table declines are monitored by the Office of the State Engineer, and the water right allotment and well permit system are in place to ensure that all interested parties have access to their allotted water. Development of hydrocarbons could produce positive primary and secondary effects on local economies (through employment and purchases of goods and services) as well as generate royalties and tax revenue for state and local governments.

Alternative C: Cumulative impacts to the project area under Alternative C would be the same as Alternative B.

4.18.1 Mitigation

The BLM will incorporate appropriate Best Management Practices (BMPs) as COAs for the subject APD as well as any future proposed oil and gas related actions. BMPs are innovative, dynamic, and economically feasible mitigation measures applied on a site-specific basis to reduce, prevent, or avoid adverse environmental or social impacts. BMPs are applied to management actions for the purpose of achieving desired outcomes for safe, environmentally sound resource development by preventing, minimizing, or mitigating adverse impacts and reducing conflicts. The early incorporation of BMPs into APDs by the oil and gas operator helps to ensure an efficient and timely APD process. BMPs set standards for minimizing adverse effects resulting from the construction of facilities and infrastructure, which should mitigate potential cumulative impacts and habitat fragmentation. The BLM has developed BMPs specific to public land management in Otero County. These BMPs are listed in Appendix C of the RMPA.

5.0 Consultation/Coordination

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

5.0.1 Comments Received

PUBLIC CONTACT	TITLE	ORGANIZATION	PRESENT AT ONSITE?
Arturo Sinclair	Governor	Ysleta Del Sur Pueblo	Not present
Carlos Hisa	Lt. Governor	Ysleta Del Sur Pueblo	Not present
Ron Curry	Cabinet Secretary	New Mexico Environment Department	Not present
Lisa Kirkpatrick	Chief	Conservation Services Division, New Mexico Dept. of Game and Fish	Not Present
Glen Landers	Private Citizen	N/A	Present
Joanna Prukop	Cabinet Secretary	New Mexico Energy, Minerals and Natural Resources Dept.	Not present
Ruth Burstrom	President	New Mexico Audubon Council	Not present
Nada Culver	Senior Counsel	The Wilderness Society	Not present
Katherine Slick	State Historic Preservation Officer	New Mexico State Historic Preservation Office	Not Present

An initial public scoping letter identifying the proposed drilling project and soliciting comments was distributed by mail to interested parties on December 13, 2006. Responses were received from persons and organizations listed in Table 5.1. All comments received were considered and incorporated into this document as appropriate. An additional 30-day public scoping period will follow completion of this EA and any further comments that are received will be addressed at that time.

5.1 Interdisciplinary Team

Team Member	Title	Organization	Present at Onsite?
John Besse	Environmental Protection Specialist	Las Cruces DO	Present
Lisa Phillips	Range Management Specialist	Las Cruces DO	Not Present
Mark Hakkila	Wildlife Biologist	Las Cruces DO	Present
Tom Holcomb	Archaeologist	Las Cruces DO	Not Present
Bruce Call	Soil Scientist	Las Cruces DO	Present
Oz Gomez	Outdoor Recreation Planner	Las Cruces DO	Not Present
John Simitz	Geologist	Roswell FO	Not Present

6.0 References

U.S. Department of the Interior, Bureau of Land Management. White Sands Resource Management Plan Las Cruces, New Mexico: Las Cruces District Office, October 1986.

U.S. Department of the Interior, Bureau of Land Management. Proposed Resource Management Plan Amendment/Final Environmental Impact Statement (RMPA/FEIS) for Federal Fluid Minerals Leasing and Development in Sierra and Otero Counties Las Cruces, New Mexico: Las Cruces District Office, December 2003.

6.1 Appendices

6.1.1 APD

The Bennett Ranch Unit #6 APD is available for review in the Las Cruces District Office. Map 1 in this EA shows the location of the proposed well.

6.1.2 Authorities

40 CFR, All Parts and Sections inclusive Protection of Environment, Revised as of July 1, 2006.
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.

6.1.3 Other Supporting Information

6.1.3.1 Conditions of Approval

OPERATOR: Harvey E. Yates Company
LEASE NO: NM-71526
WELL NAME & NO.: Bennett Ranch Unit #6
LOCATION: Section 24, T. 26 S., R. 12 E., NMPM.
QUARTER/QUARTER & FOOTAGE: NW¼SW¼ - 660 feet FWL & 1140 feet FSL
COUNTY: Otero County, New Mexico

1. The Harvey E. Yates Company shall hereafter be identified as the operator in these requirements. The Authorized Officer is the person who approves the Conditions of Approval.
2. The operator shall indemnify the United States against any liability for damage to life or property arising from occupancy or use of public land under this authorization.
3. The operator shall have surface use approval prior to any construction work on change(s) or modification(s) to the access road and/or well pad. The operator shall submit (Form 3160-5), Sundry Notice and Report On Wells, an original plus one (1) copy to the Roswell Field Office, stating the basis for any changes to previously approved plans. Prior to any revised construction, the holder shall have an approved Sundry Notice and Report On Wells or written authorization to proceed with the change in plans ratified by the Authorized Officer.
4. **Weed Control:**
 - A. The operator shall be held responsible if noxious weeds become established within the area. Evaluation of the growth of noxious weeds shall be made upon discovery. Weed control will be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipelines, and adjacent land affected by the establishment of weeds due to this action. The holder is responsible for consultation with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policy.

B. The operator shall insure that the equipment or vehicles that will be used to construct, maintain and administer the access roads, well pad and resulting well are not transporting invasive and noxious weed seed. Transporting of invasive and noxious weed seed could occur if the equipment and vehicles were previously used in noxious weed infested areas. In order to prevent the spread of noxious weeds, the Authorized Officer shall require that the equipment and vehicles be cleaned with either high pressure water or air prior to moving the equipment to the site of construction, maintenance and administration of the access roads, well pad, and resulting well.

5. Hazardous Substances:

A. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act Of 1976, as amended (15 U.S.C. 2601, *et. seg.*) with regard to any toxic substances that are used, generated by or stored on the project/pipeline route or on facilities authorized. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

B. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substances or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, *et. seg.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et. seg.*) on this project/pipeline (unless the release or threatened release is wholly unrelated to the holder's activity on the pipeline). This agreement applies without regard to whether a release is caused by the operator, its agent, or unrelated third parties.

C. Leaking equipment will be promptly repaired or removed from the site to prevent contamination from spills. Any soil or water that has been contaminated will be placed in appropriate containers and removed from the site. Disposal of vehicle fluids on public land will not be authorized.

D. Copies of spill prevention, control, and countermeasure plans are required, and must be provided to the Authorized Officer.

E. Use of pesticides and herbicides shall comply with applicable Federal and State laws. Prior to use of pesticides, the BLM Authorized Officer will approve a plan for its use.

F. Storage tanks will have a berm constructed around them, of sufficient dimensions to contain the contents of the largest tank, to serve as secondary containment should a spill occur.

G. The concentration of hazardous substances in the reserve pit at the time of pit backfilling must not exceed the standards set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

H. All drilling-related CERCLA hazardous substances removed from the location and not reused at another drilling location must be disposed of in accordance with applicable Federal and State regulations.

I. All pits and tanks containing liquids or semi-liquids will be covered with netting to prevent the entrapment or contamination of wildlife.

J. Reserve pits, if used, shall be lined with BLM approved materials and shall be surrounded by a BLM approved 4 strand barb wire fence to exclude livestock.

6. Well Pad Construction:

A. Construction must conform to the approved well site and layout plan in the Surface Use Plan of Operations (SUPO).

B. All topsoil shall be removed from the area to be disturbed and stockpiled for reapplication during reclamation.

C. The total surface area disturbed for construction of the well pad shall be limited to the absolute minimum required subject to the approval of the Authorized Officer. Upon completion of the well, the pad shall be reduced to the minimum area necessary for production and the remainder reclaimed.

D. Control measures (water bars, slope reduction, recontouring, terracing etc.) shall be utilized as necessary to prevent erosion of soil disturbed by construction of the well pad.

E. Reserve pits, if used, shall be constructed in 100 percent cut material at a depth which will allow for at least 3 feet of cover when the pad is recontoured to original grade.

F. Aboveground structures shall be painted to blend with the natural color of the landscape. The flat color Carlsbad Canyon (2.5Y 6/2) from the Standard Environmental Colors Chart shall be used on all facilities to closely approximate the vegetation within the setting.

G. The operator shall notify the BLM 15 days notice prior to commencing work at the site to provide for a pre-construction aplomado falcon survey.

7. Interim Well Pad Reclamation:

A. Following completion of a producing well, the well pad shall be reduced in size to the minimum area required for actual operation of the well. Caliche shall be removed from the balance of the disturbed area followed by recontouring and topsoil reapplication. Seeding will be accomplished prior to the beginning of the next growing season.

B. Reserve pits, if used, shall be dry prior to backfilling and pit contents shall not exceed CERCLA standards for hazardous substances.

C. Pit shall be covered with a minimum of 3 feet of fill and mounded to facilitate drainage and allow for settling.

D. Seeded areas shall be fenced to exclude cattle for the duration of the revegetation process.

8. Well Pad Abandonment:

A. All surface structures including tanks, poles, powerlines etc., shall be removed upon abandonment, relinquishment or termination of use.

B. Proper disposal methods for debris and other trash including all toxic products shall be followed.

C. Wells shall be plugged in accordance with BLM and New Mexico State requirements.

D. All caliche applied for surfacing during construction/operation shall be removed from the site prior to recontouring. Caliche may be recovered and reused for road maintenance or other beneficial use.

E. The disturbed area shall be restored to original pre-disturbance contours and stockpiled topsoil reapplied prior to reseeded.

F. The entire disturbed area shall be fenced to exclude cattle for the duration of the revegetation process

9. Seed Mixes:

A. The operator shall use a BLM prescribed seed mix the composition of which will be determined according to soil and range type.

10. Dust Control:

A. The operator shall utilize all means necessary to control surface erosion and airborne dust emissions from the site during construction and operation. Dust abatement measures shall include water application and avoiding construction activity during periods of high winds.

11. Reclamation Standards:

A. The operator shall be responsible for successful completion of reclamation to BLM standards. Revegetation success will be evaluated using performance based standards. Reclamation will not be considered successful until ground cover with desired species is established and the site is free of noxious weeds. Establishment would be indicated by the existence of healthy, mature annuals and perennials in the correct density and composition, as compared to the seed mixture established by the Authorized Officer. Parameters will include percent basal cover of mature approved species as compared to an adjacent undisturbed area. Timeframes for release will be at least 2 years. Operators shall use any BLM approved means necessary to achieve acceptable revegetation including, but not limited to:

- Importation of additional topsoil if stockpiled topsoil from the site proves insufficient in quantity or quality.
- Irrigation if rainfall during the growing season proves insufficient to sustain plant growth.
- Mulching to control wind erosion, evaporative water loss and seed loss.

Operators shall make every effort to accomplish reclamation of the site within two growing seasons. If revegetation is not acceptable at the end of that timeframe more intensive reclamation methods may be required by the Authorized Officer.

Under no circumstances will the operator be released from responsibility for reclamation until the site is determined to be fully recovered by the Authorized Officer based on BLM standards. Reclamation efforts by the operator shall continue for as long as required to achieve full recovery.

12. Archaeological, Paleontology, and Historical Sites:

A. Any cultural or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder 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 will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder shall be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

B. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of the project work, the holder shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The holder or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes. Any unauthorized collection or disturbance of cultural resources may result in a shutdown order by the Authorized Officer.

13. Sanitation:

A. The holder shall be responsible for maintaining the site in a sanitary condition at all times; waste materials shall be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

14. Open-top Tanks:

A. Any open-top tank containing oil or toxic fluids shall be covered with netting or equipped to prevent birds, bats, and other wildlife from entering the open-top tank.

15. Undesirable Events:

A. If, during any phase of the construction, operation, maintenance, or termination of the authorization, any oil or other pollutants, should be discharged, and impacting Federal land, the control and total removal, disposal, and cleaning up of such oil or other pollutants, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal land, or to repair all damages to Federal land resulting there from, the Authorized Officer may take such measures as deemed necessary to control and cleanup.