BLM

U.S. Department of the Interior
Bureau of Land Management

Environmental Assessment

Matlock #9

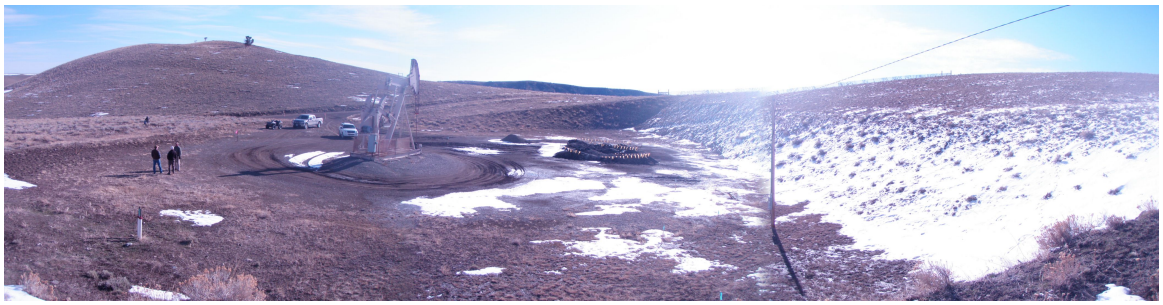
May 2010

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Worland Field Office

NATIONAL SYSTEM OF PUBLIC LANDS

Environmental Assessment: Matlock #9 : Application for Permit to Drill (APD)



Bureau of Land Management
Worland Field Office
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Chapter 1. Introduction

1.1. Identifying Information:

1.1.1. Title, EA number, and type of project:

Matlock #9 APD

DOI-BLM-WY-R010-2010-0001-EA

1.1.2. Location of Proposed Action:

The proposed action is located in the North Sunshine Oil Field. The well site would be mostly contained on the existing Matlock #4 well.

Table 1.1. Legal description for the proposed action

Well Name	Section; 1/4–1/4	Township/Range	Footage	Lat./Long.
Matlock #9	Sec. 27 SENW	T47N, R101W	1594’ FNL & 1669’ FWL	44.10483; 108.96957

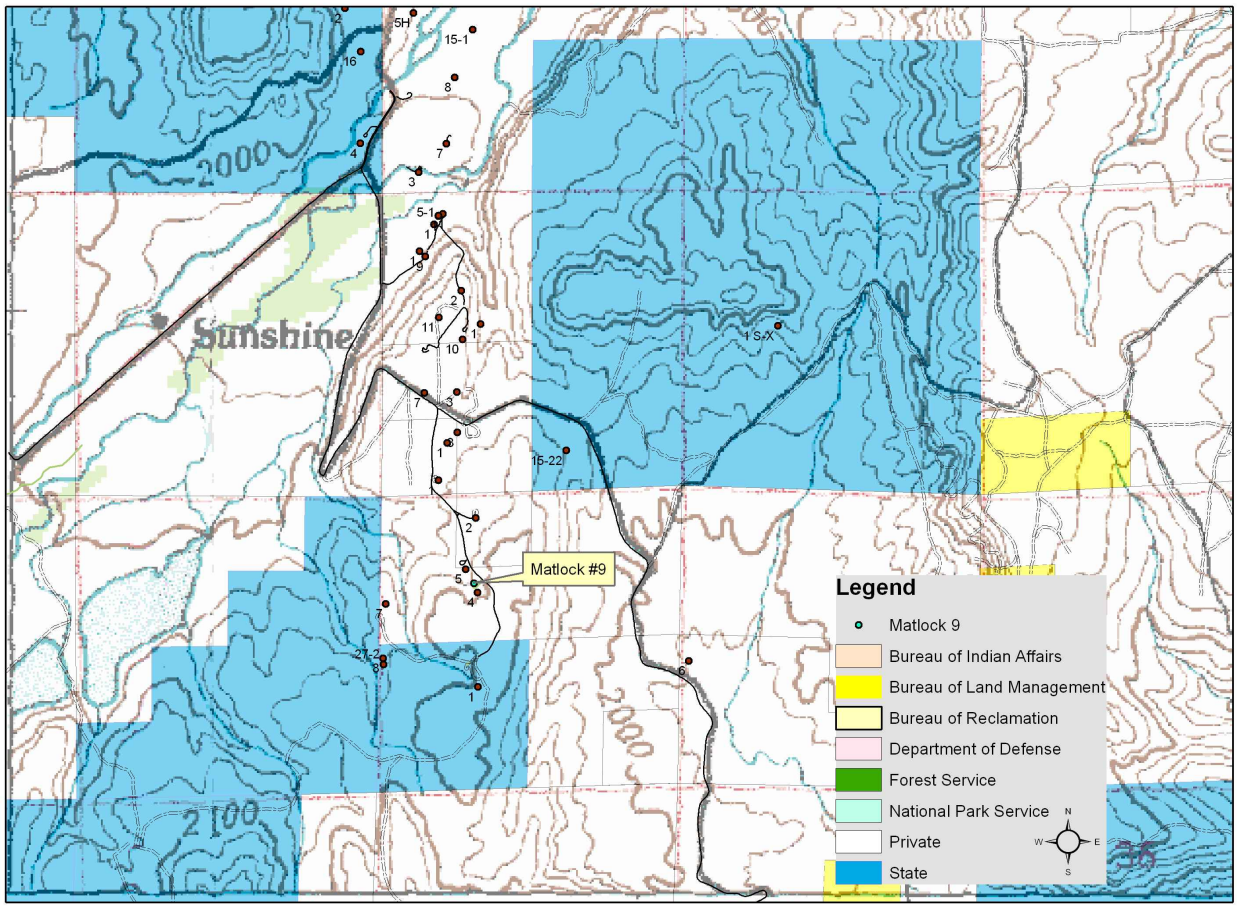

Figure 1.1. Well Site Location

1.1.3. Name and Location of Preparing Office:

Lead Office - Worland FO

1.1.4. Lease, Serial, or Case file number:

Lease Number – WYC-079430

1.1.5. Applicant Name:

Phoenix Production Co.

1.2. Purpose and Need for Action:

This drilling operation would allow the lessee to exercise their legal right to drill, explore, and produce hydrocarbons from the lease under regulations and policy derived from the Mineral Leasing Act. The Secretary of the Interior has entered into a lease agreement with the proponent that gives them the "exclusive right to drill for, mine, extract, remove and dispose of the oil and gas resources within the lease area." The applicant has submitted a proposed action to the BLM to at least partially exercise their rights under this agreement, in accordance with 43 CFR 3162.3-1 and Onshore Oil and Gas Order No. 1.

1.2.1. Decisions To Be Made

The Authorized Officer (AO) must determine whether or not to approve the APD and the associated facilities. The AO could decide not to issue the permit if it would cause unnecessary or undue degradation to the public lands, or if it would threaten to violate another Federal law.

If it is decided to issue the permit, the AO must decide what Conditions of Approval would apply. Conditions of Approval could include specification of construction, drilling, production and abandonment activities for the proposed project area.

Finally, the AO must determine whether or not the proposed action could result in significant impact to the human environment. If not, this determination would be documented in a Finding of No Significant Impact (FONSI). If the impacts could be significant, an environmental impact statement would be necessary.

1.3. Conformance with Land Use Plan

Name of Plan: Grass Creek Management Plan Date Approved: September 1998

Remarks:

This plan has been reviewed to determine if the proposed action conforms to the land use plan as required by 43 CFR 1610.5. The Grass Creek RMP provides that the entire planning area (about 1,171,000 acres of BLM-administered mineral estate) is open to oil and gas leasing consideration. About 20,200 acres of BLM-administered mineral estate are open to leasing consideration with a "no surface occupancy" stipulation. The rest of the Planning area is subject to standard lease terms and conditions, and seasonal or other requirements. It is the decision of the Grass Creek Resource Management Plan that "surface disturbing and disruptive activities associated with all types of minerals exploration and development and with geophysical exploration will be subject to appropriate mitigation developed through use of the mitigation guidelines described in Appendix 3". (Record of Decision and Approved Resource Management Plan for the Grass Creek Planning Area, pg 15.)

Alternatives 1 and 2 would be in conformance with these plan decisions and objectives. Alternative 3 (No Action) would not be in conformance, and would require an amendment of the plan.

1.4. Scoping, Public Involvement and Issues:

The Application for Permit to Drill was received by the Worland Field Office March 29, 2010. In accordance with 43 CFR 3162.3-1 (g), the notice was made available to the public for comment for 30 days ending April 27, 2010. There were no issues raised by the public during this review. It was determined that the nature of the action is routine and that a public notice session would not be necessary. Staff specialists reviewed the proposal and identified impacts and appropriate mitigation measures. The application was considered complete on April 8, 2010.

Chapter 2. Proposed Action and Alternatives

2.1. Alternative 1 (Description of the Proposed Action):

The proposed action involves drilling and testing the oil of the Phosphoria and Tensleep formation(s). If productive, casing would be run and the well completed. If dry, the well would be plugged and abandoned as per BLM and State of Wyoming requirements. The operator would reclaim disturbed areas not needed for day-to-day operations if the well is completed for production, and all remaining disturbance upon final abandonment. The location and access have been surveyed and designed by a professional engineer and land surveyor.

This EA incorporates the Application for Permit to Drill, and the associated flowline, for the proposed action of drilling an oil well, as associated with Oil & Gas lease WYC-079430. Legal descriptions are as detailed in Chapter 1 of this document.

2.1.1. Pre-construction Planning and Site Layout

The APD is on file in the Worland Field Office Branch of Minerals and Lands, and is considered an integral part of this Environmental Assessment (EA) by reference. The operator's drilling and surface use plans are considered part of the proposed action. These documents include site-specific plans describing the proposed development (i.e., drilling plans with casing/cementing program; surface use plans with road and drill pad construction details; site-specific reclamation plans, etc.) Approval of all planned operations would be obtained in accordance with authority prescribed in Onshore Oil and Gas Order No. 1 (Approval of Operations on Onshore Federal and Indian Oil and Gas Leases)

The proposed location has been surveyed and staked by P.E. Grosch Construction, Inc. An onsite of the location was conducted on April 8, 2010.

2.1.1.1. Associated Rights-of-Way Actions

No rights-of-way actions would be necessary for the proposed action.

2.1.2. Construction and Drilling

The following is a general discussion of proposed construction techniques to be used in the proposed action. Roads and flowlines constructed in association with this project may require BLM right-of-way (ROW) authorizations and/or Sundry Notices and could include additional mitigation to minimize environmental impacts.

2.1.2.1. Access Road (Existing and New Construction)

To access the proposed location, turn west off State Highway 120 onto State Highway 290 at Meeteetse, Wyoming. Proceed 6.6 miles west, then turn south onto Park County Road 4DT. Proceed south approximately 5 miles then turn south onto Park County Road 4CP for 1.7 miles, then turn south on an existing field access road for 0.6 miles to the well location.

No new road construction would be necessary for the proposed action.

2.1.2.2. Well Pad Design and Construction

The existing Matlock #4 well pad would be utilized to accommodate the new well. The well pad would be prepared by leveling an area approximately 250' x 110'. The well location would be cleared of vegetation and topsoil (up to six inches), which would be stockpiled for future use in reclamation. The pad would be leveled using standard cut-and-fill construction techniques. Construction would not commence during times when soils are saturated or when damage to adjacent water sheds could occur. Construction would not use frozen materials for fill.

No reserve pit would be constructed for the proposed action. The operator would drill using a closed loop system. The mud would be hauled off to the May #24 location and buried in that reserve pit.

2.1.2.3. Drilling Operations and Well Completion

Drilling of the well would utilize a conventional drilling rig. Additional equipment and material needed for drilling operations would be trucked to the well site. The proposed depth is approximately 4483'. It is estimated that total depth of the well would be reached within approximately 20 days from the spud date. An additional estimated 15-20 days would be needed for well completion operations.

All produced fluids from completion operations would be trucked to and disposed of at permitted facilities. A blowout preventer would be used throughout the drilling operation. Hydrogen Sulfide gas (H_2S) may be encountered during drilling operations. An H_2S Contingency plan would be implemented if encountered.

2.1.2.4. Location of Water Supply

All water for drilling would be obtained by having it hauled to location by a contract water hauler. Since all water sources are administered by the State of Wyoming, it is the responsibility of the contract water hauler to comply with all state requirements and obtain the necessary permits. The haul routes would follow existing roadways.

2.1.3. Production Operations and Well Completion

2.1.3.1. Well Production Facilities

A standard pump-jack would be installed on location to recover oil. No new production equipment would be necessary for the proposed action. All produced fluids would be transported to the State 27 Battery via existing flowlines.

2.1.3.2. Power Generation

Power would be supplied by the same line that supplies the Matlock #4 well. No new lines or poles would be needed.

2.1.3.3. Flowlines

One 30' flowline would be installed on site to a tie-in point at the Matlock #4 well, located on existing disturbance. This flowline would be buried approximately 3'-6' below ground.

There would be one gas line removed from the new disturbed area.

2.1.4. Operations and Maintenance

All operations would be conducted in accordance with industry standards for safe and efficient operation. The access road and the well would be inspected periodically by the operator and the BLM and maintained by the operator to minimize any resource damage or loss and ensure safe operating conditions.

2.1.5. Ancillary Facilities

No ancillary facilities are planned for this project. Permanent living facilities are not planned.

2.1.6. Summary of Estimated Disturbances

Implementation of the proposed action would result in surface disturbance. The area of the well site is within the proposed catch lines, and does include the areas used for temporary storage of topsoil and waste material. The proposed action would utilize existing access roads, power generation, and existing disturbance for flowline installation.

Table 2.1. Surface Disturbance Calculations

Well #	Well Pad (Ac) Short Term
Matlock #9	.13 acres

Short-term disturbance would be those areas needed for drilling operations that would be reclaimed within six months to one year from well completion operations; disturbance could be visible for 5–10 years while vegetation establishes.

2.1.7. Workforce and Traffic

The drilling and completion operation would require approximately ten to fifteen people at a time; including personnel for logging and cementing activities. Subsequent to drilling and completion activity, this project would require the use of less vehicle traffic for day-to-day operations. Lighter traffic would include the use of field vehicles to visit the well daily. Heavy truck traffic would be associated with occasional work-over activities.

2.1.8. Waste Disposal

Drilling Fluids – The well would be drilled with a closed loop mud system. All fluids would be disposed into the May #24 reserve pit.

Cuttings – the cuttings would be stored and dried in a bermed area on the SE corner of the existing well pad. Once dried they would be spread across the location.

Produced Fluids – Any oil produced during drilling and completion operations would be transported to the State 27 Battery.

Sewage – A portable, self-contained chemical toilet would be provided for human waste disposal. Upon completion of operations, or as required, all sewage would be removed to an approved treatment facility.

Trash – All garbage and non-flammable waste materials would be contained in a self contained, portable dumpster or trash cage. Upon completion of operations, or as needed, the accumulated trash would be hauled off-site to an approved disposal facility.

Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage would be cleaned up and removed from the well location.

2.1.9. Reclamation and Abandonment

The operator's APD includes a reclamation plan within the Surface Use Plan of Operations. This plan must meet the interim and final reclamation objectives of Onshore Order No.1, the Wyoming Reclamation Policy, and Chapter 6 of The Gold Book, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Fourth Edition.

2.1.9.1. Pit Closure

No pit would be constructed for the proposed action.

2.1.9.2. Plans for Surface Reclamation

2.1.9.2.1. Interim Reclamation

Backfilling, leveling and re-contouring would be conducted as soon as the cuttings have dried. All wasted materials would be disposed of upon termination of drilling and completion activities. If production is established, the unneeded areas of the location would be reclaimed as soon as the cuttings have dried. For production, the cut slopes would be reduced from a 1.5:1 slope to a 3:1 slope, and the fill slopes would be reduced from a 2:1 slope to a 3:1 slope.

Upon completion of backfilling, leveling and recontouring, all unnecessary disturbed surfaces would be scarified and the stockpiled topsoil would be evenly spread over the reclaimed area. The seedbed would be prepared by disking on the contour to an approximate depth of four to six inches, leaving no depressions that would trap water or form ponds.

2.1.9.2.1.1. Final Reclamation

Final reclamation of the well pad would occur after the plugging and abandonment of the well. The following would be conducted:

- The flowline to the well would be cut, flushed with fresh water and capped at both ends.
- All rig anchors would be removed, along with any facilities on the location.
- The surface would be recontoured to near original conditions utilizing existing spoil and pad material. The remaining topsoil would be evenly spread across the reclaimed area.
- The seedbed would be prepared by disking on the contour to an approximate depth of four to six inches, leaving no depressions that would trap water or form ponds

2.2. Alternative 2 (Proposed Action with Mitigation)

Based on BLM staff specialists input and the observations made at the joint field inspection, it was felt that certain conditions of approval were necessary and proper to provide adequate protection of the surface and subsurface. These mitigation measures are discussed in Chapter 4 of this document.

2.3. Alternative 3 (No Action)

No action implies that existing development and activities would be allowed to continue in the area, but the proposed action would be disallowed. Additional APD's and ROW actions would be considered by the BLM on a case-by-case basis.

2.4. Alternatives Considered but not Analyzed in Detail

The surface location of the proposed action could be situated at different locations within the lease. Different surface locations may result in a deviation of effects from the proposed alternative, and may result in a net positive or net negative change in potential effects.

During the onsite inspection for the well, alternative surface locations of the well pads, and access roads were examined. It was determined that the proposed location is the best feasible location to minimize potential direct effects upon protected resources. This left no unresolved resource conflicts and no identified needs to consider additional alternatives.

Chapter 3. Affected Environment:

Resources and features not present, and not discussed in this EA, include: Environmental Justice, Prime or Unique Farmlands, Flood Plains, Native American Religious Concerns, riparian areas, Class I visual management areas, Class I Airsheds, Wild and Scenic Rivers, Wetlands, Wilderness Values or Inventoried Lands with Wilderness Characteristics. Other than livestock grazing, oil and gas production, and wildlife use, there are no known land uses, or proposals for use, that occur in the area such as special recreation areas that would be affected by, or have the potential for cumulative impacts with this proposed action.

3.1. Location and Land Ownership

The proposed well is located in Park County, Wyoming, and 6th principal meridian. The proposed well would be located on lands privately owned with mineral rights managed by the BLM. The lease associated with the well was issued in 1949 (WYC-079430). The primary surface use in the vicinity of the proposed wells is oil and gas development, wildlife habitat and livestock grazing. There are no occupied dwellings within a 1-mile radius of the location.

3.2. Geology and Paleontological Resources

The surface formation is Mowry and Thermopolis Shale which has a PFYC (Potential Fossil Yield Classification) rating of 3 or moderate. This means the formation has a moderate sensitivity for paleontological resources. No known significant localities are within this formation.

3.3. Hydrology

The proposed location is located in the Lower Wood River Watershed as defined by the United States Geological Survey (USGS) level #6 sub-watershed (HUC# 100800090204). There is an unnamed ephemeral tributary that flows in a northwestern direction near an existing road to where it confluences with the Wood River approximately 1.2 miles to the northwest of the location. There is a historic USGS gauging station on the Wood River (site 06275000) that contains water quality data and flow records from 1945-1992. There are also a few shallow wells at locations along the Wood River and Larsen Spring located 1/4 mile to the southeast on private land. The proposed location is located in the upper elevations of the watershed with high gradients and steep slopes.

No crossings or encroachments of waters of the U.S., as defined by the U.S. Army Corps of Engineers (COE), would occur with this project.

Potential water bearing zones could be found in the Dakota, Morrison, Sundance, Gypsum Springs, Chugwater, Tensleep and Phosphoria formations.

3.4. Climate and Air Quality

The mean annual precipitation for this area is 10-14 inches, with most precipitation occurring in the spring and fall months in the form of rainfall. Much of the moisture that falls in the latter part of the summer is lost by evaporation and much of the moisture that falls during the winter is lost by sublimation. Average snowfall exceeds 20 inches annually. Temperatures show a wide range between summer and winter and between daily maximums and minimums, due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. The mean annual temperature is 46.2°F. The average frost-free period is 74-149 days.

The air quality of the area is generally very good. There is no Class I Airshed in the project area. In general, oil and gas fields produce air pollutants such as hydrogen sulfide (H2S), sulfur dioxide (SO2), and airborne dust from construction activities and the use of haul roads. Operators are responsible for monitoring well-site concentrations in accordance with permit conditions and reporting these levels to the Wyoming DEQ.

3.5. Soils

The soils reflect the mountain-foothill environment and the sedimentary rock over which they formed. They are characterized by having a mollic epipedon and an argillic horizon. They are deep and well drained. Slopes are 20 percent. The surface layer is very dark grayish brown with a loam texture. Clay loam textures typify the subsurface. Soil reaction is neutral to mildly alkaline (pH 7.2 – 7.6). Soils at this location have a good reclamation potential due

to the thick, well developed mollic epipedon. The climate is also favorable to reclamation. The upper 10 inches of the soil profile provide excellent reclamation material that is high in organic matter. The lower part of the soil profile from 10 to 21 inches, though lacking in organic matter, could provide an intermediate cover for reclamation activities. When the native vegetation is intact, these soils are not prone to runoff and erosion. Based on calculations generated by the U.S. Forest Service web-based Water Erosion Prediction Project (WEPP), Disturbed WEPP model, runoff and erosion averages only 0.01 tons per acre per year when the native vegetation has not been disturbed.

Soil Series	Soil Depth (Inches)	Surface/Subsoil Textures	Ecological Sites	Limiting Features	Salvage Depth (Inches)
Forelle (similar)	>60	loam/clay loam	Loamy 10 to 14 in. pz.	none	0–10 inches

3.6. Vegetation

3.6.1. Native Vegetation

Loamy 10-14 in. pz. R032XY322WY -- The historic climax plant community consists of 75% grasses or grass-like plants, 10% forbs, and 15% woody plants. The major grasses include Griffiths and bluebunch wheatgrasses, rhizomatous wheatgrasses, needleandthread, and Indian ricegrass. Other grasses occurring in this site include bottlebrush squirreltail, prairie junegrass, and Sandberg bluegrass. Big sagebrush is a conspicuous element of this ecological site and occurs in a mosaic pattern. Big sagebrush makes up approximately 5-15% of the annual production. The current state of the vegetative community at the proposed well-site represents the historic climax plant community for ecological conditions identified.

3.6.2. Invasive Species

The proposed well site is on private lands, no weeds inventory is currently conducted by the BLM on private lands. No noxious or invasive species were noted on the proposed location during the onsite.

3.6.3. Threatened, Endangered, or BLM Sensitive Species

There are no known Threatened and Endangered or BLM Sensitive plant species within the project area. Therefore, no further analysis is warranted within this document.

3.7. Range

The location of the Proposed Project is not located within a grazing allotment therefore no further discussion of the project and/or its potential environmental consequences as it pertains to the rangeland grazing management of public lands will be discussed within this document.

3.8. Wildlife

The wildlife habitat within the proposed project area consists of mountain foothills with ridges and mesas with the predominant vegetative community of Mountain sagebrush, perennial grasses and various forbs. The project area is characterized by a moderate amount of surface disturbance because of past development and current oil and gas production activity associated with the North Sunshine Oil Field. The main access road into the project area is the improved gravel Park County Road, with secondary access via additional gravel oil field roads. Although the designation is not crucial, the proposed project area does provide winter range for elk, where large concentrations could be expected. Mule deer and antelope are year long residents with most use of the area occurring in the spring, summer and fall.

3.8.1. Threatened, Endangered, or BLM Sensitive Species

The project area is approximately 2.25 miles from the nearest sage-grouse lek to the east. Habitats near the project site are known late brood rearing sites for sage-grouse, but do not contain adequate amounts of sagebrush to provide suitable wintering, nesting or early brood rearing habitat. Occasional occurrence of both the Grizzly bear and Grey wolf could be anticipated, the Grizzly bear most likely in the spring and fall, and the wolf most likely during winter, attracted to the area by wintering elk herds. The area also provides habitat for black bear, mountain lion, bobcat and coyote. Numerous other small mammals, predators, passerines, and raptors also inhabit and/or utilize the area, some all year long. Other than the Grizzly bear and grey wolf there are no other known threatened or endangered species, or their habitats, within the proposed project area, but the sage-grouse is now a candidate for listing as threatened, and is also on the Wyoming BLM Sensitive Species List.

3.9. Recreation and Visual Resources

Recreation

The project area is located on private surface ownership in the foothills of the Absaroka Mountain foothills. BLM-administered public lands within the area are managed as an ERMA, where recreation management addresses public health and safety, use and user conflicts, and resource protection. Recreational opportunities within this immediate area is limited due to the small amount of legally accessible public land. The surrounding area, most notably along the Wood River Road, is very popular for recreational visitors accessing the Shoshone National Forest. The outstanding settings and recreational resources present in Absaroka Mountain foothills create many recreational opportunities such as hiking, hunting, driving for pleasure, cross country skiing, rock climbing, camping, fishing, and general dispersed recreational activities. The immediate project area does not contain the recreational environment suitable for dispersed recreation due to the present level of mineral extraction activities, and the lack of public lands. Park County Road 4 CP runs through the project area, which provides for access to Wyoming State Land parcels, and to other gas fields east of the project area. Current Travel and Transportation Management prescribes the BLM administered public lands within the project area as limited to existing roads and trails. An interdisciplinary inventory of the Worland Field Office to identify multiple use lands with wilderness characteristics was completed, and the project area was identified as not containing wilderness characteristics.

Visual Resource Management

The project area is located within a Scenic Quality Rating Unit (SQRU) managed for VRM Class IV objectives. The immediate project location is made up of rolling forms, curvy and angular lines, tan, yellow, and green colors, and smooth to stippled texture. The Wood River riparian zone in the foreground and the dominant forms of Absaroka Mountains in the background is present from the key observation points along Wood River Road, which elevates the scenic quality rating. However, the contrasting elements created from the mineral extraction activities lowers the scenic quality and sensitivity levels. Class IV objectives are to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

3.10. Cultural and Historical Resources

A Class III Cultural Inventory was not necessary on the well site and associated facilities. It was determined that human activity within the last 50 years has created a new land surface to such an extent as to eradicate traces of cultural properties.

3.11. Socioeconomics

In compliance with the Mineral Leasing Act, the lessee has the right to explore, drill, and extract hydrocarbons from their lease. The oil and gas sector plays an important role, generating tax revenues and vendor/employment incomes. Oil and gas exploration and development in the region has been part of the economic base for Park County since the early 1900's.

3.12. Hazardous Materials, Health and Safety

As with any drilling operations, there is a risk to public health and safety. These risks may include increased traffic to the well locations, blowouts, etc. Hydrogen Sulfide gas (H2S) may be encountered.

Throughout the life of the well there is a potential for the operator to use chemicals that could be classified as hazardous. Should hazardous materials be used in an improper manner, there could be environmental impacts resulting from an accidental spill or an inappropriate discharge. This could result in impacts to the soil, water, air, wildlife, and cultural resources, in addition to impacts to human health and safety. Proper containment of fuels, oil and other hazardous materials in appropriately designed and maintained storage facilities and an immediate response in the event of a release would greatly reduce any potential impacts.

Chapter 4. Environmental Effects:

4.1. Land Use

4.1.1. Alternative 1 (Proposed Action)

The dominant land use for the proposed well site is oil exploration, grazing, and wildlife habitat. The operator has submitted the required documentation of a surface use agreement with the private land owner.

The proposed well would share a pad with the Matlock #4 well, which was drilled in 1978. The disturbance necessary to construct the well pad would commit an additional .13 acres of private lands to the project in the short term.

4.1.2. Alternative 2 (Proposed Action with Mitigation)

Adoption of the Recommended BLM conditions of approval, and the adoption of the Operators 12 point surface plan and 9 point-drilling plan, would reduce the area of surface disturbance.

Interim well site reclamation consists of minimizing the footprint of disturbance by reclaiming all portions of the well site not needed for production. The portions of the cleared well site not needed for operational and safety purposes are to be recontoured to blend with the surrounding topography as much as possible. This portion would be as much as 50% of the initial disturbance. The disturbed areas would be scarified, topsoil spread evenly over areas not needed for all-weather operations, and the area seeded with a certified noxious weed free, BLM approved, seed mix of native species appropriate for the site. Any topsoil and spoil piles not used for interim reclamation would also be seeded to prevent erosion and to help maintain its biological viability (The Gold Book 2006). In addition, all rat and mouse holes (temporary storage of drill pipe) would be backfilled and compacted immediately after well completion and the reserve pit would be dried and backfilled. Interim road reclamation consists of reclaiming portions of the road not needed for vehicle travel. Final reclamation occurs when the operator plugs the well due to a commercially inviable well site or the end of production.

Conditions would be added that interim reclamation would be initiated upon completion of operations but no later than 6 months after the date of completion. This condition would reduce the size of the well pad and increase the potential wildlife and livestock habitat. If the well is a producer the operator would be required to complete interim reclamation which would reduce the amount of disturbance to approximately 50% of the proposed pad for the remaining life of the well. Complete reclamation would be initiated within 6 months from final abandonment.

To achieve final reclamation of a recently drilled dry hole, the disturbed site would be returned to the original contour or a contour that blends with the surrounding landform, stockpiled topsoil redistributed, and the site revegetated as stated above. To achieve final reclamation of a formerly producing well, all topsoil and vegetation must be stripped from all portions of the initial disturbance that were not previously reshaped to blend with the surrounding contour and seeded as stated above. Gravel and similar materials must be removed from the well location or buried deep in the recontoured cut. The entire location would be fenced following seeding until rehabilitation has been completed. Final road reclamation includes recontouring the road back to the original contour, seeding, and any other techniques that would be helpful to improving reclamation success (The Gold Book 2006). Any weeds resulting from disturbance associated with the proposed project would be controlled in accordance with guidelines established by the EPA, BLM, or appropriate authorities.

4.1.3. Alternative 3 (No Action)

Under the No Action Alternative, the development of the Proposed Action would not occur. No effects on additional land resources would be expected to occur beyond the existing situation.

4.2. Geology and Paleontological Resources

4.2.1. Alternative 1 (Proposed Action)

Long-term impacts may include permanent loss by production of oil reserves. No other direct or indirect impacts are expected on geology from this project.

The surface formation is Mowry and Thermopolis Shales which has a PFYC (Potential Fossil Yield Classification) rating of 3 or moderate. This means the formation has a moderate sensitivity for paleontological resources. Heavy previous surface disturbance has removed the potential for intact paleontological localities.

4.2.2. Alternative 2 (Proposed Action with Mitigation)

No additional consequences would be expected under this alternative. The project authorization is recommended with standard stipulations included in the conditions of approval.

4.2.3. Alternative 3 (No Action)

Under the No Action Alternative, utilization of any potential oil resources would not be permitted at this time. The nation's demand for this resource likely would result in exploration and development elsewhere in the project area.

4.3. Hydrology

4.3.1. Alternative 1 (Proposed Action)

The hydrologic disturbance associated with this proposal is expected to be minimal due to a previously existing pad and access road.

As in any drilling operation, there would be a potential for contamination of aquifers through commingling in the well bore. There would be a potential for contamination of ground waters from the pit fluids if the pit is located in a sand strata, and not adequately protected with a pit liner.

4.3.2. Alternative 2 (Proposed Action with Mitigation)

Any potential impacts would be mitigated and added in COA's that would protect water resources.

Adoption of the Recommended BLM conditions of approval, and the adoption of the Operators 12 point surface plan and 9 point drilling plan, would reduce the area of surface disturbance and the effects of erosion. Impacts due to increased erosion from devegetated surfaces would be minimized over the life of the site through partial seeding of the pad and associated disturbances. These would help control surface runoff and any associated sedimentation. Additional culverts may be required to meet BLM standards.

A BLM petroleum engineer has reviewed the operator's 9-point-drilling plan program to ensure conformance with BLM Onshore Oil and Gas Order No. 2. Well completion methods isolate aquifers with surface and production casing to protect any fresh water or mineral bearing zones encountered. The setting depths of the casing and the cementing of the strings were compared with known subsurface geologic information, for protection of fresh water aquifers. The rated working pressure of the blowout preventer stack and choke manifold is adequate to handle anticipated bottom-hole pressures; and the drilling mud density is calculated to be sufficiently high to contain wellbore pressures, but not so high as to exceed the fracture gradient of formations to be encountered. Where necessary, conditions of approval would be added to the approved APD to correct deficiencies in the requirements listed above.

If the well is completed as a producer, certain technical operations may be performed in the wellbore over its service life. Acid may be injected into carbonate formations, or formations fractured under pressure, in order to stimulate production. These generally cause little impact if prudent engineering practices are followed. Casing which develops leaks would be repaired by injecting cement under pressure, running a casing liner, or replacing the casing itself. These proposals would be analyzed by a BLM petroleum engineer against much the same criteria as the original casing string. The well may be recompleted in a different zone if the first completion "waters out." In this case, the operator would be required to properly plug the old casing perforations to prevent commingling of fluids in the wellbore.

Whether the well is completed as a producer or is determined a dry hole, it would eventually be plugged and abandoned. The operator's proposed plugging procedure would be analyzed to ensure that cement plugs are used to isolate all oil or gas horizons, fresh water zones, lost circulation zones, casing stubs, and casing shoes. Surface plugs would be placed in all casing, which extends to the surface, including any annular space.

4.3.3. Alternative 3 (No Action)

No effect on water resources would be expected to occur beyond the current situation.

4.4. Climate and Air Quality

4.4.1. Alternative 1 (Proposed Action)

Air quality could deteriorate due to emissions from rig engines and emissions and dust from vehicular traffic and construction of the locations. Emissions would result from heavy equipment use, drilling, and completion activities. These emissions are temporary. Loose dust could also cause some temporary effects on air quality in the project area. Dust would be dispersed locally by prevailing winds. Impacts to air quality and vegetation through increased dust are unknown and unquantified at this time.

Well operators are responsible for monitoring well-site concentrations in accordance with permit conditions and reporting these levels to the Wyoming DEQ.

4.4.2. Alternative 2 (Proposed Action with Mitigation)

Dust control would be implemented, such as road watering, to reduce dust if conditions dictate. The effects on air quality through increased particulates would be minimized through the application of dust abatement practices. It is anticipated that air quality would be restored to pre-drilling levels when drilling operations are completed.

4.4.3. Alternative 3 (No Action)

Potential climate and air quality impacts would be less than those described under the Proposed Action, with impacts from existing field emissions sources remaining at the current levels.

4.5. Soils

4.5.1. Alternative 1 (Proposed Action)

The soils will be prone to runoff and erosion during the time that they are bare. Based on WEPP calculations, soil erosion on the steep cut banks could average 4.5 tons/acre/year during this time. In the unlikely event of a 50-year storm event, soil erosion could approach 33 tons/acre/year. Erosion on the well pad would average only 0.14 tons per acre per year and in the event of a 50-year storm event erosion could be as high as 0.76 tons per acre per year; this would be a long term impact. Given the reclamation potential of the soils and the favorable climate, reclamation efforts should be successful. Following successful reclamation, runoff and erosion rates in disturbed areas should return to background levels within 5–10 years.

4.5.2. Alternative 2 (Proposed Action with Mitigation)

With the increased emphasis on interim reclamation, soil erosion on reclaimed areas will be greatly reduced, averaging only to 1.9 tons/acre/year. A 50-year storm event during this interim period could cause up to 14.6 tons/acre/year of soil loss; again this is an extremely unlikely event. During the time that the soil is bare, runoff and erosion raters would be similar to those discussed under the proposed action, averaging 4.5 tons per acre per year with the potential to be as high as 33 tons/acre/year following a 50-year storm event. Erosion on the well pad would average 0.14 tons per acre per year and in the event of a 50-year storm event, it could be as high as 0.76 tons per acre per year; this would be a long term impact.

4.5.3. Alternative 3 (No Action)

No changes to runoff and erosion are anticipated under the No Action alternative. Natural runoff and erosion rates on undisturbed areas are minimal with erosion averaging only 0.01 tons per acres per year. No change is anticipated to runoff and erosion on the existing well pad where erosion averages 0.14 tons per acre per year.

4.6. Vegetation & T&E Plant Species

4.6.1. Alternative 1 (Proposed Action)

The proposed well would increase the existing well pad by approximately .13 acres of new disturbance. Vegetation would be removed from the location. The operator would complete interim reclamation upon completion of operations and final reclamation would be completed upon well abandonment to aid in establishing a self-perpetuating stand of native vegetation.

Noxious and invasive weeds can occur both directly and indirectly from energy development as well as other development activities that cause disturbance. Weeds and weed seed can be transported and spread with road surfacing and other construction related events including reclamation activities. Weeds and weed seed can be attached to equipment and vehicles thus having the potential to be spread over large areas. Physical disturbance of the soil from pipelines, well locations, road development and other construction, as well as soil moisture and chemical alterations from produced water discharge, and stream flow/storage will also create opportunities for the introduction, infestation and spread of noxious and invasive weeds.

4.6.2. Alternative 2 (Proposed Action with Mitigation)

With the implementation of the COA's the location would be properly reclaimed and invasive vegetative species would be monitored and appropriately treated, thus increasing the available forage for livestock and wildlife and decreasing the potential for erosion to occur.

Interim reclamation would commence upon release of the completion rig. Once the well is plugged, complete reclamation would be initiated.

A regular weed treatment program would be developed and followed for the life of the well. This program is to be in accordance with BLM and State weed guidelines. Use of pesticides would comply with the applicable Federal and state laws. Pesticides would be used only in accordance with their registered uses and within limitations imposed by the Secretary of Interior. Prior to the use of pesticides, the holder would obtain from the authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer prior to such use.

Surface disturbances would be reclaimed within one year, unless otherwise directed by the BLM. Successful interim and full reclamation of this site could take up to 5-6 years for vegetation to establish. Reclamation would be enhanced by the use of native species.

Table 4.1. Recommended Seed Mix

Species	Pounds PLS/Acre
Bluebunch wheatgrass	4.0
Needleandthread	1.0
Indian ricegrass	1.0
Sandberg bluegrass	.50
Wyoming big sagebrush	.25

4.6.3. Alternative 3 (No Action)

Under the No Action Alternative, the development of the proposed Action would not occur. No resulting effects on vegetation resources would be expected to occur beyond the current situation.

4.7. Wildlife & T&E Species

4.7.1. Alternative 1 (Proposed Action)

Because the proposed well location is within an existing oil field with neighboring roads and producing wells that are accessed all year long, and the proposed location is not within any crucial big game winter range designation, no seasonal stipulations for wintering big game or late brood rearing sage-grouse protections are recommended. There potentially could be some degree of additional disturbance from the proposed drilling process to the local big game or sage-grouse populations, but this additional disturbance should not result in any additional wildlife displacement above and beyond what the existing unstipulated disturbance might already be causing. There will be habitat removal from the proposed disturbance at the well pad location, and this will likely be long term, 30 or more years, without any proposed reclamation efforts. Potential grizzly bear human interactions could occur, particularly during spring and fall periods when Grizzly bears are more likely to be in the area, and when the bears could be attracted to the drilling site because of attractants like pet food, beverages, garbage, cooking grease, and other odorous substances possibly associated with the drilling activities.

4.7.2. Alternative 2 (Proposed Action with Mitigation)

Because the proposed well location is within an existing oil field with neighboring roads and producing wells that are accessed all year long, and the proposed location is not within any crucial big game winter range designation, no seasonal stipulations for wintering big game or late brood rearing sage-grouse protections are recommended. There potentially could be some degree of additional disturbance from the proposed drilling process to the local big game or late brood rearing sage-grouse populations, but this additional disturbance should not result in any additional wildlife displacement above and beyond what the existing unstipulated disturbance might already be causing. There will also be a loss of habitat at the well pad location, but with proposed interim-reclamation efforts, this loss is expected to be short term, approximately 5 to 10 years.

To avoid potential grizzly bear human interactions, particularly during spring and fall periods (3/1–6/15 & 9/15–12/1), the following stipulation is recommended for all drilling activities: .All human and prepared livestock and pet food, beverages, garbage, cooking grease, and other odorous substances must be stored, handled and disposed of in such a manner as to make it totally unavailable to bears at night and during the day when unattended. Unavailable means stored in a bear-resistant container or stored in a closed vehicle constructed of solid non-pliable material.

4.7.3. Alternative 3 (No Action)

Under the No Action Alternative, the development of the proposed Action would not occur. No resulting effects on wildlife would be expected to occur beyond the current situation.

4.8. Recreation and Visual Resources

4.8.1. Alternative 1 (Proposed Action)

Recreation

The proposed action will not impact recreational resources that would negatively impact recreational opportunities, activities, experiences, and beneficial outcomes. The project will not introduce new elements which will further degrade the settings within the immediate project area, nor displace visitors to alternative areas. Short term impacts may be an increase of oil and gas development traffic observed on Wood River Road. The traffic would consist of heavy machinery and large rigs, which may potentially create a hazard with recreational visitors touring the area who may not be attentive to the work related traffic. Fugitive dust, and other particulate matter may be observed

during the project and from other activities related to the oil and gas activities. Long term impacts to recreation will be negligible. The area surrounding the project area had been inventoried for wilderness characteristics and found that the area contains none of the characteristics, so, impacts to wilderness characteristics are negligible. Impacts to Travel and Transportation management are negligible. The access routes leading to the project site will experience more heavy use traffic during the construction phases, and no new access routes are planned to be constructed, which would not change the current route network.

Visual Resource Management

Impacts to VRM from the proposed project will be negligible due to the existing infrastructure (mineral related facilities, existing roads, etc), and may not even be noticed by the casual observer. Temporary contrasting elements of form, line, color, and texture may be observed during drilling operations, and other times during the project where additional temporary facilities or related work-over rigs are needed. The project is within VRM Class IV objectives.

4.8.2. Alternative 2 (Proposed Action with Mitigation)

Recreation

The impacts to recreation from alternative 2 will be the same as the proposed alternative (alternative 1).

Visual Resource Management

Impacts to VRM from alternative 2 will be the same as Alternative 1, with the exception of the contrasting elements of form, line, color, and texture being more subordinate against the surrounding elements due to the adherence of the additional COAs. To adequately minimize the contrasting elements of color, the facilities are to be painted Covert Green (18–0617 TPX).

4.8.3. Alternative 3 (No Action)

Recreation

Under the No Action Alternative, the development of the proposed Action would not occur. No adverse impacts to recreation would be expected beyond the current situation.

Visual Resource Management

Under the No Action Alternative, the development of the proposed Action would not occur. No adverse impacts to Visual Resource Management would be expected beyond the current situation.

4.9. Cultural and Historical Resources

4.9.1. Alternative 1 (Proposed Action)

Heavy previous surface disturbance has removed the potential for intact cultural properties. No additional consequences would be expected under this alternative.

4.9.2. Alternative 2 (Proposed Action with Mitigation)

No additional consequences would be expected under this alternative. The project authorization is recommended with standard stipulations included in the conditions of approval.

4.9.3. Alternative 3 (No Action)

Under the No Action Alternative, the development of the proposed Action would not occur. No resulting effects on cultural resources would be expected to occur beyond the current situation.

4.10. Socioeconomics

4.10.1. Alternative 1 (Proposed Action)

The relatively small, short-term drilling and field development workforce would not generate noticeable population effects or demand for temporary housing or local government services. The Proposed Action would involve capital investment. Development and operation of the well would require goods and services from a variety of local and regional contractors and vendors, from oil and gas service industry and from other industries. Expenditures by the proponent for these goods and services, coupled with increased employee and contractor spending, would generate increased economic effects for the private landowner, Park County, the Big Horn Basin, and Wyoming. Federal mineral royalties would potentially be gained from this Proposed Action.

4.10.2. Alternative 2 (Proposed Action with Mitigation)

No additional consequences would be expected under this alternative.

4.10.3. Alternative 3 (No Action)

Under the No Action Alternative, the development of the proposed Action would not occur. No resulting effects on socioeconomics would be expected to occur beyond the current situation.

4.11. Hazardous Materials, Health and Safety

4.11.1. Alternative 1 (Proposed Action)

Throughout the life of the well there is a potential for the operator to use chemicals that could be classified as hazardous. Should hazardous materials be used in an improper manner, there could be environmental impacts resulting from an accidental spill or an inappropriate discharge. This could result in impacts to the soil, water, air, wildlife, and cultural resources, in addition to impacts on human health and safety.

4.11.2. Alternative 2 (Proposed Action with Mitigation)

Proper containment of fuels, oil and other hazardous materials in appropriately designed and maintained storage facilities and an immediate response in the event of a release would greatly reduce any potential impacts. Mitigation would be added to require the Operator and their contractors to comply with all applicable federal and state laws and regulations as they relate to hazardous materials. Hazardous materials being those chemicals listed in Title III List of Lists, EPA's Consolidated List of Chemicals Subject to Emergency Planning and the Community Right to Know Act (EPCRA) and Section 112(r) of the Clean Air Act, as amended, or the 40CFR 302.4 Table-List of Hazardous Substances and Reportable Quantities, as amended. In the event any hazardous materials are used, they would be handled in an appropriate manner to prevent environmental contamination. Any release of hazardous materials of reportable quantities, would be reported both to the National Response Center (NRC), as required in the National Oil and Hazardous Materials Contingency Plan (40 CFR 300), and the Worland Field Office, as per the Hazardous Materials Contingency Plan, and NTL 3–A.

4.11.3. Alternative 3 (No Action)

Under the No Action Alternative, the development of the proposed Action would not occur. No resulting effects on public health or safety would be expected to occur beyond the current situation.

4.12. Cumulative Effects

There are currently eleven active wells within one mile radius of the proposed Matlock #9 well. Each well pad consumes an average of .75 acres. The operator presently has two additional wells planned within this geographic boundary; outside BLM authorizing authority.

Vegetation would be disturbed on an additional .13 acres for the proposed location for short-term development. Short-term development is considered those areas needed for drilling purposes; with interim reclamation being initiated within 6 months of completion of operations and could be visible for up to 5–10 years until vegetation re-establishes. The disturbance is expected to be reduced by up to 50% once interim reclamation objectives have been met. Long-term disturbance would be those areas needed for day-to-day operations throughout the life of the well, on average up to 30 years. This well utilized the existing disturbance from the Matlock #4 well, long-term disturbance would not be increased beyond the current situation.

Should the proposed well be successful, the operator may pursue future development plans that may include drilling additional wells within the N. Sunshine oil field, disturbing further surface resources.

Implementation of reclamation upon final abandonment would mitigate the long term effects on surface resources; stabilizing soils, increasing available forage for wildlife and livestock use and improving the visual landscape.

4.13. Residual Impacts

If the well is a producer, an irretrievable commitment of surface resources, such as vegetation and habitat, would be made.

The potential for fires, blowouts, and spills or leaks of hydrocarbons, drilling fluids, or produced water would exist. A leak, spill or blowout could pollute any nearby drainage.

There would be a potential for subsurface damage to fresh water aquifers.

The aesthetics of the area could be affected during drilling operations.

Chapter 5. Tribes, Individuals, Organizations, or Agencies Consulted:

Table 5.1. List of Persons, Agencies and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination
Sam May	Private Land Owner

Chapter 6. List of Preparers

The following Worland Field Office personnel reviewed or have been contacted with regard to this EA.

Table 6.1. List of Prepares

Name	Title	Responsible for the Following Section(s) of this Document
John Elliott	Range Management Specialist	Range
Marit Bovee	Archaeologist	Cultural Resources/ Paleontological Resources
Gary Peterman	Petroleum Engineer	Human Health and Safety
Marilyn Wegweiser	Geologist	Geology
Tim Stephens	Wildlife Biologist	Wildlife/T&E Wildlife
Paul Rau	Recreation Specialist	Recreation/VRM/ Wilderness/ACECs
Wade Wittkop	Civil Engineer	Lands and Location
Carol Sheaff	Realty Specialist	Lands
Karen Hepp	Range Management Specialist	T&E Plants
Steve Kiracofe	Soil Scientist	Soils
Jared Dalebout	Hydrologist	Hydrology
CJ Grimes	NRS	Invasive Species

Appendix A. Affected Resource Form

Proposed project Name Matlock #9 APD

A.1. Project Information

NEPA (ePlanning) Number	DOI-BLM-WY-R010-2010-0001-EA
Project Name	Matlock #9 APD
Project Lead/Manager	Holly Elliott
Project/Activity Type	APD
Case File Number	WYC-079430
Applicant/Proponent	Phoenix Production Co.
General Location	N. Sunshine Oil Field
Legal Description	Sec. 27, T. 47N, R 101W; SENW 1594'FNL, 1669'FWL
Map (7.5–mintue USGS topo map)	Iron Creek
Amount of new disturbance (acres)	0.13
Amount of previous disturbance (acres)	2.46
Amount of TOTAL disturbance (acres)	2.59

Description: Phoenix Production Co. has requested to drill the Matlock #9 well in the North Sunshine Oil Field.

DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA

Table A.1. Affected Resources Form

Determination	Resource	Rationale for Determination	Digital check off
PI	Air Quality	Potential for fugitive dust from construction of location.	Holly Elliott
NP	Areas of Critical Environmental Concern		Paul Rau
NP	BLM Natural Areas		Paul Rau

NP	Cultural Resources	To comply with Section 106 of the National Historic Preservation Act (NHPS), efforts to evaluate cultural resources were conducted according to 36 CFR 800.4.	Marit Bovee
NI	Greenhouse Gas Emissions	Not expected to contribute more than 25000 tons/yr.	Holly Elliott
NP	Environmental Justice		Holly Elliott
NP	Farmlands (Prime or Unique)		Holly Elliott
PI	Fish and Wildlife Excluding Federally Listed Species	Wildlife species inhabit the area. These species could be temporarily displaced as lands are disturbed within the project area.	Tim Stephens
NP	Floodplains		Jared Dalebout
PI	Geology /Mineral Resources/Energy Production	Extraction of oil proposed.	Holly Elliott/Merilyn Wegweiser/Gary Peterman
PI	Hydrologic Conditions	Surface disturbing activities proposed.	Jared Dalebout
PI	Invasive Species/ Noxious Weeds	Surface disturbing activities proposed.	CJ Grimes
NP	Lands/Access	Occurs on private lands, land owner agreement in place for existing oil field activities.	Holly Elliott
NP	Livestock Grazing	Occurs on private lands not part of allotment.	John Elliott
NP	Migratory Birds		Tim Stephens
NP	Paleontology		Marit Bovee
NP	Rangeland Health Standards	Occurs on private lands not part of allotment.	John Elliott
PI	Recreation	Temporary drilling activities might displace recreation. Occurs on private lands, recreation is limited to landowner approval.	Paul Rau

PI	Socio-Economics	Small socio-economic impact may be generated from proposed activity, in connection with mineral royalties and landowner fees. Not expected to generate large revenues or create workforce demands beyond current local economic situations.	Holly Elliott
PI	Soils	Surface disturbing activities proposed.	Steve Kiracofe
NP	Threatened, Endangered or Candidate Plant Species		Karen Hepp
PI	Threatened, Endangered or Candidate Animal Species	Grizzly Bear and Wolf may occur in project area.	Tim Stephens
PI	Wastes (hazardous or solid)	There is potential to use/create wastes including those considered hazardous throughout the life of the project.	Holly Elliott/Gary Peterman
PI	Water Resources/ Quality (drinking/ surface/ground)	Potential to encounter water bearing zones.	Jared Dalebout
NP	Wetlands/Riparian Zones		Jared Dalebout
NP	Wild and Scenic Rivers		Paul Rau
NP	Wilderness/WSA		Paul Rau
NP	Woodland / Forestry		Holly Elliott
PI	Vegetation Excluding Federally Listed Species	Surface disturbing activities proposed.	Holly Elliott
PI	Visual Resources	The proposed action is in a Class IV	Paul Rau
NP	Wild Horses and Burros		Holly Elliott
NP	Areas with Wilderness Characteristics		Paul Rau