

**U.S. Department of the Interior
Bureau of Land Management
Glenwood Springs Energy Office
2425 S. Grand Avenue, Suite 101
Glenwood Springs, CO 81601**

ENVIRONMENTAL ASSESSMENT

NUMBER: CO140-2008-038 EA

CASEFILE NUMBER: Federal Lease COC51146

PROJECT NAME: Application for Permit to Drill four Federal wells from one well pad (18-3) located on BLM surface in the Jolley Mesa area approximately 4 air miles southeast of Silt, Garfield County, Colorado.

LOCATION: SW¼SE¼, section 18, Township 6 South, Range 91 West, 6th Principal Meridian.

LEGAL DESCRIPTIONS:

Table 1. Surface and Bottomhole Locations of Proposed Federal Wells		
<i>Proposed Wells</i>	<i>Surface Locations</i>	<i>Bottomhole Locations</i>
Kokopelli Federal 18-213D	717 feet FSL, 1946 feet FEL Section 18, T6S R91W	900 feet FSL, 1980 feet FWL, Section 18, T6S R91W
Kokopelli Federal 18-215D	703 feet FSL, 1940 feet FEL Section 18, T6S R91W	450 feet FSL, 1980 feet FWL Section 18, T6S R91W
Kokopelli Federal 18-313D	730 feet FSL, 1952 feet FEL Section 18, T6S R91W	900 feet FSL, 1980 feet FEL Section 18, T6S R91W
Kokopelli Federal 18-315D	689 feet FSL, 1934 feet FEL Section 18, T6S R91W	450 feet FSL, 1980 feet FEL Section 18, T6S R91W

APPLICANT: Orion Energy Partners, LLC (Orion)

DESCRIPTION OF THE PROPOSED ACTION AND NO ACTION ALTERNATIVE

Proposed Action

The proposed action is to drill and develop four Federal oil and gas wells from a proposed well pad (18-3) on BLM administered lands (Figure 1). The wells would be directionally drilled from the proposed location into Federal mineral estate.

The proposed project area is located 4 air-miles southeast of Silt, Colorado. Access from the town of Silt is south along 9th Street turning east onto the River Frontage Road, turning south onto Garfield County Road 331 (CR331), turning east onto Garfield County Road 311 (CR311), proceeding east onto Garfield County Road 335 (CR335), turning south onto the Jolley Mesa Road, and proceeding south onto BLM Road 8211 to the location. Because the proposed pad would be located in proximity to BLM Road 8211, the proposed development would qualify as a GAP waiver (BLM 1999a).

The proposed action would incorporate a location used in 2001 to drill a well that was subsequently plugged and the site restored to the original contour and revegetated. The pad would be approximately 325 feet x 200 feet and its construction would disturb approximately 2.5 acres, which would be reduced to approximately 0.5 acres after interim reclamation.

Roads would be designed and maintained to an appropriate standard no higher than necessary to accommodate their intended functions, as described in the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (BLM and USFS, 2006b) and BLM Handbook 9113-*Roads Manual*. Approximately 3,200 feet of the existing road would need upgraded with running surfaces that would be all weather type with an aggregate surface

Approximately 5,883 lineal feet of natural gas and produced water lines are proposed. These pipelines would be buried in the same trench and would run north along the access road to the powerline access road, run east along the powerline access road to the powerline ROW, parallel the powerline ROW to the ridgeline, then along an existing two track road running southeast to the Jolley Mesa road, along the Jolley mesa road to a tie-in location for an existing pipeline in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of section 17 (see Figure 1). The installation of the lines would result in 4 acres of disturbance.

The proposed action would include drilling and completion operations, production of natural gas, pipelines, and intermediate and final reclamation measures. Production equipment (tanks, separators, wellheads, metering, remote monitoring equipment, combustion unit, produced water pump, etc.) would be installed on the pad.

The proposed action would be implemented consistent with Federal oil and gas leases COC51146, Federal regulations (43 CFR 3100), and the operational measures included in the Applications for Permit to Drill (APDs) or attached to the APDs as Conditions of Approval (COAs). The COAs to be applied to this project are presented in Appendices A and B.

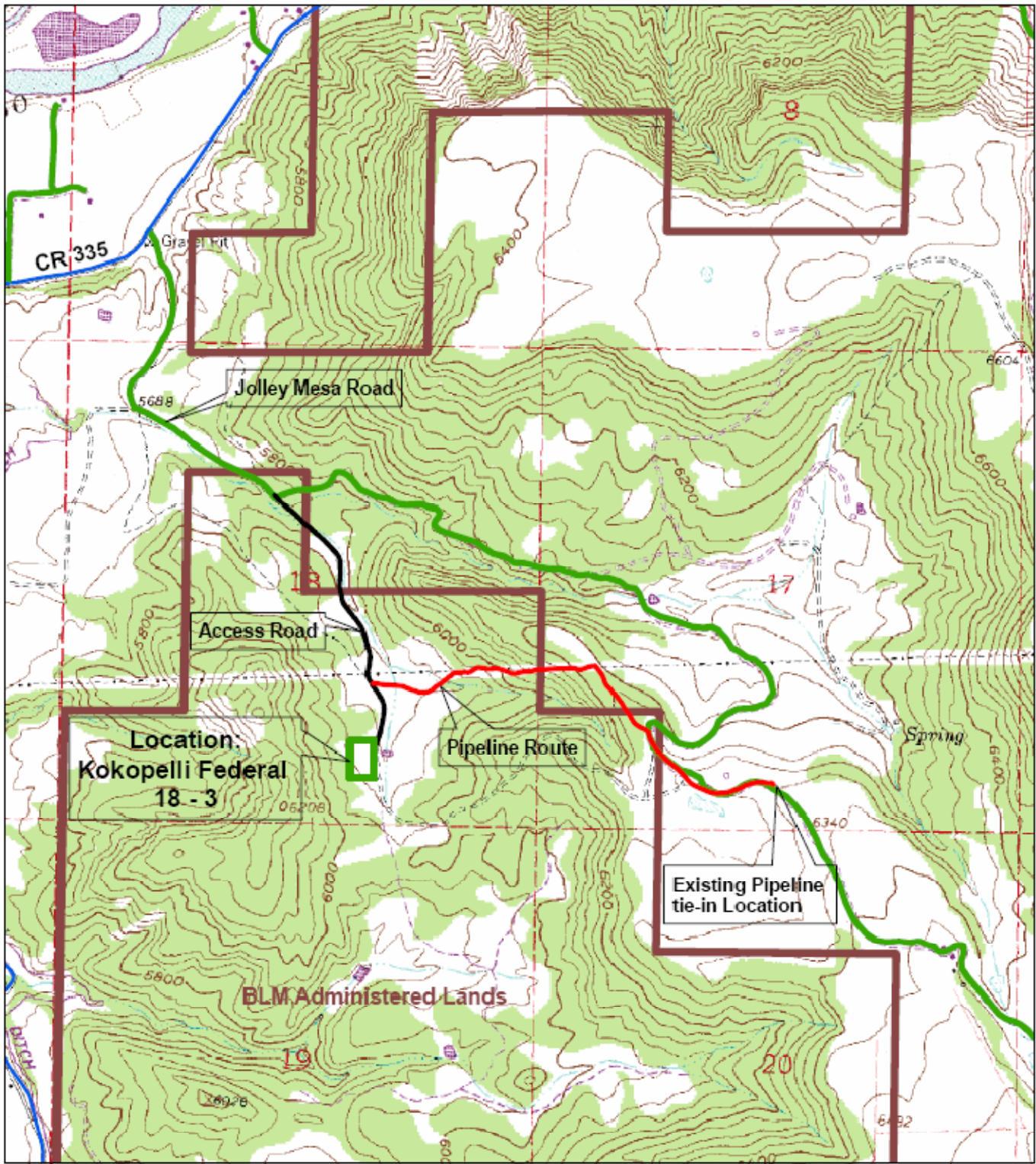
No Action Alternative

The proposed action involves Federal subsurface minerals that are leased. These Federal leases grant the lessee the right to explore and develop the lease. Although BLM cannot deny the right to drill and develop the leasehold, individual APDs can be denied to prevent unnecessary and undue degradation. The no action alternative constitutes denial of the APDs associated with the proposed action.

Under the no action alternative, therefore, none of the proposed developments described in the proposed action would take place.

PURPOSE AND NEED FOR THE ACTION

The purpose of the action is to develop oil and gas resources on Federal Lease COC51146 consistent with existing Federal lease rights. The action is needed to increase the development of oil and gas resources for commercial marketing to the public.



Orion Energy Partners, LLC

Well Pad Location: T6S, R91W, Section 18, 6th PM, Garfield County, Colorado

Surface Owner: BLM

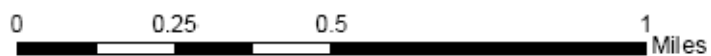


Figure 1. Project Area showing Pad Location, Road and Pipeline Alignments.

SUMMARY OF LEASE STIPULATIONS

Federal Lease COC51146 contains special stipulations applicable to the proposed action (Table 2).

Table 2. Lease Stipulations Applicable to the Proposed Action		
<i>Lease Number</i>	<i>Description of Lands</i>	<i>Lease Stipulations</i>
COC51146	All lands	Timing Limitation: No surface use is allowed during the following time period (1/16 – 4/29). This stipulation does not apply to operation and maintenance of production facilities. For the purpose of: To minimize watershed damage and to protect important seasonal wildlife habitat.

PLAN CONFORMANCE REVIEW

The proposed action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Glenwood Springs Resource Management Plan (BLM 1984).

Date Approved: Amended in November 1991 – Oil and Gas Leasing and Development – Final Supplemental Environmental Impact Statement; amended in March 1999 – Oil and Gas Leasing & Development Final Supplemental Environmental Impact Statement.

Decision Number/Page: Record of Decision, Glenwood Springs Resource Management Plan Amendment, November 1991, page 3.

Decision Language: “697,720 acres of BLM-administrated mineral estate within the Glenwood Springs Resource Area are open to oil and gas leasing and development, subject to lease terms and (as applicable) lease stipulations.” This decision was carried forward unchanged in the 1999 RMP amendment (BLM 1999).

Discussion: The proposed action is in conformance with the 1991 and 1999 Oil and Gas RMP amendments because the Federal mineral estate proposed for development is open for oil and gas leasing and development.

STANDARDS FOR PUBLIC LAND HEALTH

In January 1997, Colorado BLM approved the Standards for Public Land Health. The five standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. The environmental analysis must address whether the proposed action or alternatives being analyzed would result in impacts that would maintain, improve, or deteriorate land health conditions relative to these resources.

These analyses are conducted in relation to baseline conditions described in land health assessments (LHAs) completed by the BLM. The proposed action would be located in an area that is included in the Divide Creek LHA. At this time, the landscape addressed in this EA has not had a formal Land Health Assessment completed. As such, no formal determination on conformance with Standards will be made until a formal Land Health Assessment and Determination Document is completed.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a description of the human and natural environmental resources that could be affected by the proposed action and no action alternative. In addition, the section presents comparative analyses of the direct and indirect consequences on the affected environment stemming from the implementation of the various actions.

A variety of laws, regulations, and policy directives mandate the evaluation of the effects of a proposed action and alternative(s) on certain critical environmental elements. Not all of the critical elements that require inclusion in this EA are present, or if they are present, may not be affected by the proposed action and alternative (Table 3). Only those mandatory critical elements that are present and affected are described in the following narrative.

In addition to the mandatory critical elements are other resources that would be affected by the proposed action and the no action alternative. These are presented under **Other Affected Resources**.

Table 3. Critical Elements of the Human Environment									
<i>Critical Element</i>	<i>Present</i>		<i>Affected</i>		<i>Critical Element</i>	<i>Present</i>		<i>Affected</i>	
	Yes	No	Yes	No		Yes	No	Yes	No
Air Quality	X		X		Prime or Unique Farmlands		X		X
ACECs		X		X	Special Status Species*	X		X	
Cultural Resources		X		X	Wastes, Hazardous or Solid	X		X	
Environmental Justice	X			X	Water Quality, Surface and Ground*	X		X	
Floodplains		X		X	Wetlands and Riparian Zones*		X		X
Invasive, Non-native Species	X		X		Wild and Scenic Rivers		X		X
Migratory Birds	X		X		Wilderness and Wilderness Study Areas		X		X
Native American Religious Concerns		X		X					

* Public Land Health Standard

Critical Elements

Air Quality

Affected Environment

The project area lies within Garfield County which has been described as an attainment area under CAAQS and NAAQS (Colorado Ambient Air Quality Standards and National Ambient Air Quality

Standards). An attainment area is an area where ambient air pollution quantities are below (i.e., better than) NAAQS standards.

Environmental Consequences

Proposed Action

The Roan Plateau RMPA and EIS describe potential effects from oil and gas development (BLM 2006:4-26 - 4-37). Analysis was completed with regard to greenhouse gas emissions, a near-field and far-field analysis for carbon monoxide, particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide, hazardous air pollutants including: benzene, ethylbenzene, formaldehyde, hydrogen sulfide, toluene, and xylenes. Sulfur and nitrogen deposition analysis, acid neutralizing capacity, and visibility screening-level analysis were also completed in the Roan Plateau RMPA and EIS. Findings indicate that no adverse long-term effects would result under that plan. Since the proposed action is within the scope of the reasonable foreseeable development (RFD) scenario analyzed in that document, it is anticipated that the proposed action would be unlikely to have adverse effects on air quality.

Activities described in the proposed action would result in localized short-term increases in vehicle and equipment emissions. Concentrations of emissions would be below applicable ambient air quality standards as analyzed in the Roan Plateau RMPA & EIS. However, it is anticipated that construction and production activities would likely produce high levels of dust in dry conditions without dust abatement. To mitigate dust generated by these activities, the operator would be required to implement dust abatement strategies as needed by watering the access road and construction areas and/or by applying a surfactant approved by the Authorized Officer (Appendix A).

No Action Alternative

Under the no action alternative there would be no dust generation and equipment emissions associated with construction and operational activities.

Cultural Resources

Affected Environment

A Class III cultural resource inventory (GSFO # 5400-3) was conducted of the proposed pad location, access road, and pipeline for the Mesa #18-15 well pad. A second Class III cultural resource inventory (GSFO #1108-7) was performed recently to cover changes in the proposed pipeline route and enlargement of the existing pad. No properties were identified that were considered eligible for listing on the National Register of Historic Places. Therefore, no formal consultation with the Colorado State Historic Preservation Officer (SHPO) was needed and a determination of “**No Historic Properties Affected**” was made in accordance with the National Historic Preservation Act (NRHP), as amended (16 USC 470f), National BLM/SHPO Programmatic Agreement (1997), and Colorado Protocol (1998).

Environmental Consequences

Proposed Action

There would be no direct impacts to cultural resources from the implementation of the proposed action. However, indirect long-term cumulative impacts from increased access and the presence of project personnel could result in a range of impacts to known and undiscovered cultural resources in the vicinity of the location. These impacts could range from illegal collection and excavation to vandalism.

A standard Education/Discovery Condition of Approval (COA) for cultural resource protection would be attached to the APD(s) (Appendix A). The importance of this COA should be stressed to operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered during drilling and development operations.

No Action Alternative

Under this alternative, no ground disturbances would take place and access would not be increased. Therefore, no direct impacts would occur. However, cultural resources in the general area would remain vulnerable to damage from illegal activities.

Invasive Non-native Species

Affected Environment

The project area is located on an historic pad which was closed and reclaimed years ago. The reclaimed area is dominated by fourwing saltbush (*Atriplex canescens*), various native grasses, and a small component of non-native species such as cheatgrass (*Anisantha tectorum*), Russian thistle (*Salsola kali*), and redstem filaree (*Erodium cicutarium*). The historic pad is surrounded by pinyon-juniper woodland (*Pinus edulis-Juniperus osteosperma*) with a fairly native understory. The pipeline will cross through Wyoming big sagebrush (*Artemisia tridentata subsp. wyomingensis*) community with some cheatgrass.

Environmental Consequences

Proposed Action

Surface-disturbing activities provide a niche for the invasion and establishment of invasive non-native species, particularly when these species are already present in the surrounding area. Because these species are present in the project area, the potential for invasion following construction activities is high. Mitigation measures designed to minimize the spread of these species would be attached to well APDs as conditions of approval (see Appendix A).

No Action Alternative

Under the no action alternative, no new construction would take place; therefore, no new infestations of invasive non-native species should occur. However, existing infestations are likely to spread if not treated.

Migratory Birds

Affected Environment

The project area provides cover, forage, and nesting habitat for a variety of migratory birds. A few species found on the U.S. Fish and Wildlife Service's Birds of Conservation Concern (USFWS 2002) may be present. These species are the pinyon jay (*Gymnorhinus cyanocephalus*), gray vireo (*Vireo vicinior*), black-throated gray warbler (*Dendroica nigrescens*), and Virginia's warbler (*Vermivora virginiae*). Other species that are not on the BCC list but associated primarily with this habitat type include year-round residents such as the juniper titmouse (*Baeolophus griseus*) and Townsend's solitaire (*Myadestes townsendi*) and migrants such as the blue-gray gnatcatcher (*Poliophtila caerulea*). The pinyon/juniper habitat provides perching, foraging, and potential nesting sites for several species, including one species on the BCC list, Swainson's hawk (*Buteo swainsoni*).

Surveys conducted in 2008 did not locate raptor nests within 0.25 mile of the proposed well pad or 0.125 mile of the proposed road or pipeline. However, golden eagles (*Aquila chrysaetos*) and red-tailed hawks (*Buteo jamaicensis*) are known to nest in the vicinity. It is likely that these and other raptors forage in the area where the new well pad, road, and pipeline facilities would be developed.

Other raptors potentially using the pinyon-juniper habitat for perching or nesting include the Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*A. striatus*), and two small owls, the western screech-owl (*Otus kennicottii*) and northern pygmy-owl (*Glaucidium gnoma*). All of the raptors and other species listed above are protected by the Migratory Bird Treaty Act.

Environmental Consequences

Proposed Action

The proposed action would result in a direct loss of 2.5 acres of nesting, breeding, roosting, perching, and foraging habitat for migratory birds. Individual birds would be impacted where trees, shrubs, and understory vegetation is removed to accommodate natural gas infrastructure. It is possible that individual nests could be destroyed if the well pad and road are constructed during the spring nesting season. In addition, currently intact habitats would be fragmented. This fragmentation would result in reduced habitat patch size which negatively impacts bird species that require large expanses of intact habitat.

In addition to the physical loss of habitat and fragmentation it is likely that during all construction, drilling, and completion activities, individual birds would be displaced to adjacent habitats due to noise and human activity. Despite the impacts to individual birds, it is unlikely that birds would be impacted at the population level. Raptors should not be negatively affected as upland foraging habitat is plentiful in the area.

The development of a reserve pit on the proposed pad may be expected to attract waterfowl and other migratory birds for the purposes of resting, foraging, or as a source of free water. The extent and nature of the problem is not well-defined, but management measures should be aimed at preventing bird contact with produced water and drilling and completion fluids that may pose a problem (e.g., acute or chronic toxicity, compromised insulation). Mitigation measures designed to limit access to reserve pits are presented in Appendix A.

To minimize impacts to BCC species, a Timing Limitation (TL) is included as a Condition of Approval (COA). Under the TL, all surface-disturbing activities are prohibited from May 1 to June 30. An exception to this COA will be granted if nesting surveys conducted no more than one week prior to surface-disturbing activities indicate that no BCC species are nesting, or otherwise present within or adjacent to the area of surface disturbance (Appendix A).

Raptors are not expected to be negatively affected as no known nests are located within 0.25 mile of the well pad or 0.125 mile of the pipeline and foraging habitat is plentiful in the area. A raptor nesting Condition of Approval would be attached to well permits (Appendix A).

No Action Alternative

Under the no action alternative, the developments described in the proposed action would not occur. Therefore, no impacts to BCC species or other migratory bird species are anticipated.

Native American Religious Concerns

Affected Environment

The Ute Indian Tribes claim this area as part of their ancestral homeland. At present, no Native American concerns are known within the project area and none were identified during the cultural resource records search or inventories. The Ute Tribe of the Uintah and Ouray Bands, the primary Native American tribe in this area of the GSFO, have indicated that they do not wish to be consulted for small projects or projects where no Native American areas of concern have been identified either through survey or past consultations. Therefore, formal consultation was not undertaken. If new data are disclosed, new terms and conditions may have to be negotiated to accommodate their concerns.

Environmental Consequences

Proposed Action

Although there would be no direct impacts from the proposed action, indirect impacts from increased access and personnel in the vicinity of the proposed project could result in impacts to unknown Native American resources ranging from illegal collection to vandalism.

A Standard Education/Discovery Condition of Approval (COA) for the protection of Native American values would be attached to the APDs (Appendix A). The importance of these COAs should be stressed to the operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered.

No Action Alternative

Under this alternative, no ground disturbances would take place and access would not be increased. Therefore, no direct impacts would occur. However, Native American cultural resources in the general area would remain vulnerable to damage from illegal activities.

Special Status Species (includes an analysis of Public Land Health Standard 4)

Affected Environment

Federally Listed, Proposed, or Candidate Plant and Animal Species

According to the current species list available online from the U. S. Fish and Wildlife Service (<http://mountain-prairie.fws.gov/endspp/CountyLists/COLORADO.pdf>), the following Federally listed, proposed, or candidate plant and animal species may occur within or be impacted by actions occurring in Garfield and Mesa Counties: Uinta Basin hookless cactus (*Sclerocactus glaucus*), Parachute beardtongue (*Penstemon debilis*), DeBeque phacelia (*Phacelia submutica*), Ute Ladies'- tresses orchid (*Spiranthes diluvialis*), Canada lynx (*Lynx canadensis*), Mexican spotted owl (*Strix occidentalis*), yellow-billed cuckoo (*Coccyzus americanus*), razorback sucker (*Xyrauchen texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), bonytail chub (*Gila elegans*), and humpback chub (*Gila cypha*). The bald eagle (*Haliaeetus leucocephalus*) was removed from the Federal list of threatened or endangered species in August 2007. The BLM now considers the bald eagle a sensitive species.

Habitat for Federally listed, proposed, or candidate animal species does not occur within or adjacent to the project area. Designated Critical Habitat for the Colorado pikeminnow and razorback sucker is located within the Colorado River and its 100-year floodplain approximately 10 miles west of the project area.

Critical habitat for the humpback chub and bonytail chub begins at Ruby Canyon near the Utah/Colorado state line, approximately 60 river miles from the project area.

BLM Sensitive Plant and Animal Species

BLM sensitive plant and animal species with habitat and/or occurrence records in the area include adobe thistle (*Cirsium perplexans*), DeBeque milkvetch (*Astragalus debequaeus*), Naturita milkvetch (*Astragalus naturitensis*), Roan Cliffs blazing star (*Mentzelia rhizomata*), Piceance bladderpod (*Lesquerella parviflora*), Harrington's penstemon (*Penstemon harringtonii*), bald eagle (*Haliaeetus leucocephalus*), milk snake (*Lampropeltis triangulum taylori*), midget faded rattlesnake (*Crotalus viridis concolor*), and Great Basin spadefoot (*Spea intermontana*). In addition, four BLM sensitive fish species—the flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*), roundtail chub (*Gila robusta*), and Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*)—are known to inhabit the Colorado River.

Environmental Consequences

Proposed Action

Federally Listed, Proposed, or Candidate Plant Species

The results of an April 2008 plant survey indicate that there are no federally listed, proposed, or candidate plant species or suitable habitat for these species in the project area. Therefore, the proposed action would have “**No Effect**” on these species.

Federally Listed, Proposed, or Candidate Animal Species

Because habitat for Federally listed, proposed, or candidate animal species does not occur within or adjacent to the project area, the proposed action would have “**No Effect**” on these species.

Colorado Pikeminnow and Razorback Sucker – Construction activities would increase the potential for soil erosion and sedimentation. Although a minor, temporary increase in sediment transport to the Colorado River may occur, it is not likely that the increase would be detectable above current background levels. In any case, the federally listed, proposed, or candidate fish species associated the Colorado River are adapted to naturally high sediment loads.

Additional potential impacts to the endangered Colorado River fishes would be associated with depletions in flows due to use of water from the Colorado River Basin in drilling, hydrostatic testing of pipelines, and dust abatement of unpaved access roads. Reductions in flows in the Colorado River and major tributaries have resulted from evaporative loss from reservoirs, withdrawals for irrigation, and other consumptive uses. These depletions have affected minimum flows, as well as peak “flushing” flows needed to maintain suitable substrates for spawning.

As part of a Programmatic Biological Opinion (BO) issued in 1994, the USFWS determined that any depletion of flows in the Colorado River Basin represent a “**May Affect, Likely to Adversely Affect**” determination for individual projects. The Programmatic BO, which allows BLM to authorize projects with water depletions of less than 125 acre-feet per year, was written to remain in effect until a total depletion threshold of 2,900 acre-feet per year is reached. An amendment to that BO in 2000 revised the threshold to 3,000 acre-feet per year. The BLM and USFWS are currently nearing completion of a new BO to cover anticipated additional depletions beyond the currently specified threshold. In the meantime,

depletions associated with the current project would be well below the 125 acre-feet threshold for individual projects and within the current BO.

BLM Sensitive Plant Species

The results of an April 2008 inventory indicate no BLM sensitive plant species or their habitats in the vicinity of the proposed action.

BLM Sensitive Animal Species

The Colorado River corridor provides bald eagle nesting and winter foraging and roosting habitat. However, the Colorado River is greater than one mile from the project area, beyond the distance within which impacts to nesting or wintering bald eagles may be expected to occur. In addition to distance, the proposed developments are screened from the Colorado River by topographic features. Therefore, no impacts to bald eagle are expected.

Direct impacts to the BLM sensitive reptile and amphibian species could include injury or mortality as a result of proposed developments and subsequent production and maintenance activities. These effects would be most likely during the active season for these species, which are April to October for the milk snake, March to October for the midget faded rattlesnake, and May through September for the Great Basin spadefoot. Indirect effects to the milk snake and midget faded rattlesnake could include a greater susceptibility to predation if the roads or pads are used to aid in temperature regulation. Overall, however, there is a low likelihood that these species would be measurably affected.

Well pad and road construction would disturb soil and remove vegetation, increasing the potential for erosion and increased sedimentation to the Colorado River. Although Colorado River cutthroat trout are especially sensitive to increased sediment loads that can potentially impair preferred spawning habitats, the Colorado River is not considered spawning habitat. Sediment may reduce aquatic insect productivity that could impact food resources for trout and other wildlife.

The discussion of potential impacts and mitigation measures described above for the endangered Colorado River fishes is also relevant to the nongame fishes listed as sensitive by the BLM. Because mitigation measures would be implemented, it is unlikely that the proposed action would cause sediment loads in nearby streams, including the Colorado River, above current levels. Depletions in flow volumes would also not be of a magnitude that would affect the BLM sensitive fish species. Therefore, no discernible impacts to these species are expected.

No Action Alternative

Under the no action alternative, the developments described in the proposed action would not occur. Therefore, no impacts to special status species are anticipated.

Analysis on the Public Land Health Standard for Special Status Species

A formal Land Health Assessment has not been completed for the project area watershed. The proposed action in conjunction with similar activity occurring in the greater watershed is likely trending the area downward as habitat is lost and fragmented and human use is increased in the area. As no offsite or indirect impacts are anticipated if the COAs are implemented, the proposed action should have no effect on special status species. The proposed action should not result in a failure of the area to achieve Standard 4 for special status species.

The no action alternative would not result in a failure of the area to achieve Standard 4 because the proposed developments would not occur.

Wastes, Hazardous or Solid

Affected Environment

BLM Instruction Memoranda numbers WO-93-344 and CO-97-023 require that all National Environmental Policy Act documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of a proposed project. The Glenwood Springs Resource Area, Oil & Gas Leasing and Development, Draft Supplemental Environmental Impact Statement (June 1998), Appendix L, Hazardous Substance Management Plan, contains a comprehensive list of materials that are commonly used for oil and gas projects. It also includes a description of the common industry practices for use of these materials and disposal of the waste products. These practices are dictated by various Federal and State laws and regulations, and the BLM standard lease terms and stipulations which would accompany any authorization resulting from this analysis. The most pertinent of the Federal laws dealing with hazardous materials contamination are as follows:

- The Oil Pollution Act (Public Law 101-380, August 18, 1990) prohibits discharge of pollutants into waters of the US, which by definition would include any tributary, including any dry wash that eventually connects with the Colorado River.
- The Comprehensive Environmental Response, Compensation, and Liability Act (Public Law 96-510 of 1980) provides for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment. It also provides national, regional, and local contingency plans. Applicable emergency operations plans in place include the National Contingency Plan (40 CFR 300, required by section 105 of CERCLA), the Region VIII Regional Contingency Plan, the Colorado River Sub-Area Contingency Plan (these three are Environmental Protection Agency produced plans), the Mesa County Emergency Operations Plan (developed by the Mesa County Office of Emergency Management), and the BLM Grand Junction Field Office Hazardous Materials Contingency Plan.
- The Resource Conservation and Recovery Act (RCRA) (Public Law 94-580, October 21, 1976) regulates the use of hazardous substances and disposal of hazardous wastes. Note: While oil and gas lessees are exempt from RCRA, right-of-way holders are not. RCRA strictly regulates the management and disposal of hazardous wastes.

Emergency response to hazardous materials or petroleum products on BLM lands are handled through the BLM Grand Junction Field Office contingency plan. BLM would have access to regional resources if justified by the nature of an incident.

Environmental Consequences

Proposed Action

Possible pollutants that could be released during the construction phase of this project would include: diesel fuel, hydraulic fluid, and lubricants. These materials would be used during construction of the road, pad and pipeline and for refueling and maintaining equipment and vehicles. Potentially harmful substances used in the construction and operation would be kept onsite in limited quantities and trucked

to and from the site as required. No hazardous substance, as defined by 40 CFR 355 would be used, produced, stored, transported, or disposed in amounts above threshold quantities.

Surface water or groundwater could be impacted under the proposed action. Pollutants that might be released during the operational phase of the project could include condensate, produced water (if the wells in the area produce water) and glycol (carried to the site and used as antifreeze.) While uncommon, an accident could occur which could result in a release of any of these materials. A release could result in contamination of surface water or soil. Improper casing and cementing procedures could result in the contamination of groundwater resources. In the case of any release, emergency or otherwise, the responsible party would be liable for cleanup and any damages. Depending on the scope of the accident, any of the above referenced contingency plans would be activated to provide emergency response. At a minimum, the BLM Grand Junction Field Office contingency plan would apply.

These laws, regulations, standard lease stipulations, and contingency plans and emergency response resources are expected to adequately mitigate any potential hazardous or solid waste issues associated with the proposed action.

No Action Alternative

The no action alternative would result in no new surface disturbance and would have no effect on soil or hazardous wastes.

Water Quality, Surface and Ground (includes an analysis of Public Land Health Standard 5)

Surface Water

Affected Environment

Proposed activities would be located southeast of the Town of Silt and south of the Colorado River within the 42,317 acre Colorado River above Rifle Creek sub-watershed. There is an unnamed, north-flowing ephemeral drainage located east of the pad location and access road. The existing access road crosses this drainage north of the pad location. The pipeline would cross this drainage and another, west-flowing, ephemeral drainage before reaching the ridge line to the east. A portion of the proposed pipeline route up the second drainage is along a slope that is greater than 30 percent but less than 50 percent. The two drainages are tributary to the Colorado River northeast of the project area and east of the Town of Silt.

According to the *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission [WQCC] Regulation No. 37)(CDPHE 2007), the unnamed ephemeral drainages are within segment 4a that includes all tributaries to the Colorado River from the confluence with the Roaring Fork River to a point immediately below the confluence with Parachute Creek. Following is a brief description of segment 4a.

- Segment 4a – This segment has been classified aquatic life cold 2, recreation 2, water supply, and agriculture. Aquatic life cold 2 indicates that this water course is not capable of sustaining a wide variety of cold or warm water biota due to habitat, flows, or uncorrectable water quality conditions. Recreation class 2 refers to waters that are not suitable or intended to become suitable for primary contact recreation. This segment is, however, suitable or intended to become suitable for potable water supplies and agricultural purposes that include irrigation and livestock use. At this time, there are no water quality data for these unnamed ephemeral drainages.

These drainages are not currently on the State of Colorado's *Stream Classifications and Water Quality Standards* (CDPHE, WQCC Regulation No. 37)(CDPHE 2007), the State of Colorado's *303(d) List of Water Quality Limited Segments Requiring TMDLS* (CDPHE, WQCC Regulation No. 93)(CDPHE 2006a), or the State of Colorado's *Monitoring and Evaluation List* (CDPHE, WQCC Regulation No. 94)(CDPHE 2006b). At this time, no water quality data are available for these drainages.

Environmental Consequences

Proposed Action

Potential impacts to surface water associated with the proposed action include increased erosion and sedimentation of streams due to changes in channel morphology due to road and pipeline crossings, and contamination by drilling fluids, produced water, or condensate.

Surface waters would be most susceptible to sedimentation during construction, drilling, and completion activities, which would collectively last approximately 30 to 45 days. After this period, reclamation activities would substantially reduce surface exposure, decreasing the risk to surface waters over the long term.

Although surface waters would be most susceptible to sedimentation over the short-term, access roads would remain in place over the life of the well (i.e., 20 to 30 years) and would channel runoff during periods of precipitation. Sedimentation and stream channel impacts associated with roads would be reduced through the implementation of Best Management Practices (BMPs) and other preventative measures. As proposed, these measures would include limiting cut slope steepness, step-cutting, limiting road grade to 10%, crowning road surfaces, and installing culverts and drainage systems.

Other elements of the proposed action are designed to mitigate risks to surface waters associated with the release of drilling fluids, produced water, and condensate. The reserve pit used to contain drilling fluids would be lined to prevent infiltration into surrounding soils. Once completion operations are complete, excess liquids would be allowed to evaporate and backfilling of the pit would be performed in a manner that would avoid incorporating the mud into surface soils.

Tanks used to store produced water and condensate would be placed in secondary containment to prevent offsite release. In the event of an accidental release, produced water and condensate would be confined for cleanup in a containment area and would not migrate to surrounding soils or surface waters. Pipelines associated with the transport of these liquids would be pressure tested to detect leakage prior to use.

Refer to Appendix A for standard Conditions of Approval that would mitigate impacts to Surface Water. Through the use of COAs and BMPs associated with construction activities, prompt interim reclamation, and the implementation of the preventative measures associated with the treatment of fluids, impacts to surface waters would be minimized and should be minor.

No Action Alternative

Environmental consequences of the No Action Alternative would be considerably less than consequences of the Proposed Action. The access road would remain but no drainage channels would be crossed with a pipeline under the Proposed Action. There would also be fewer potential impacts to water wells, and surface water quality in general.

Waters of the U.S.

Affected Environment

Section 404 of the Clean Water Act requires a Department of the Army permit from the US Army Corps of Engineers prior to discharging dredged or fill material into waters of the United States as defined by 33 CFR Part 328. A Corps permit is required for both permanent and temporary discharges into waters of the United States. The existing access road parallels an unnamed ephemeral drainage to the east which is tributary to the Colorado River northwest of the project area.

Environmental Consequences

Proposed Action

The proposed activities would not involve any waters of the U.S. directly, but there is slight potential for sediment delivery to the Colorado River from proposed fill slopes and the access road.

No Action Alternative

The no action alternative would not impact waters of the U.S.

Groundwater

Affected Environment

The proposed activities are located within the Division of Water Resources (DWR) Water Division 5, the Colorado River Basin Main Stem. The groundwater in this division is generally found in both alluvial and sedimentary aquifers.

The project area is in the lower Piceance Basin aquifer system. The Piceance Basin contains both alluvial and bedrock aquifers. Unconsolidated alluvial aquifers are the most productive aquifers in the Piceance Basin. The groundwater exists in shallow, unconsolidated alluvium associated with the Colorado River (BLM 2006) and consists of unconsolidated boulders, cobbles, gravel, sand, silt, and clay. The thickness of the alluvium is variable, but tends to be thinner in the upper reaches and thicker in the lower reaches. Generally, alluvial well depths are less than 200 feet and typically water levels range from 50 to 100 feet. The quality of alluvial groundwater in the Colorado River Basin can vary widely, and is affected by return flow quality, mineral weathering and dissolution, cation-anion exchange with alluvial minerals, and organic compound loading from fertilizer and pesticide leaching.

The most important bedrock aquifers are known as the upper and lower Piceance Basin aquifer systems. These consolidated bedrock aquifers occur within and above the large oil shale reserves. The upper and lower aquifers are separated by the Mahogany Zone of the Parachute Creek Member of the Tertiary Green River Formation. The Mahogany Zone is a poorly permeable oil shale, which effectively serves as an aquitard. Both bedrock aquifers overlie the older Cretaceous Mesaverde Group, the target zone of the subject wells. South of the Colorado River, these upper Tertiary-age aquifers have largely been eroded off, exposing the lower Green River and Wasatch Formations. The surface formation of the proposed pad is the Wasatch Formation (including Ft. Union equivalent at base) and Ohio Creek Formation.

Groundwater is recharged from snowmelt in upland areas that receive more precipitation than lower altitude areas. In the Piceance Basin, recharge flows from areas near the margins of the basin to discharge areas near principal stream valleys. The groundwater moves laterally and/or upward discharging directly

into streams, springs, and seeps by upward movement through confining layers and into overlying aquifers or by withdrawal from wells (USGS 2007a). The natural discharge areas generally are found along the Colorado River and its tributaries (USGS 2007b).

According to the Colorado Division of Water Resources (DWR), one fresh-water well is located within a 0.5-mile radius of the proposed activities. The only data available for this well is the permit date, May 1981. Numerous fresh-water wells are located within a 1-mile radius of the proposed well sites. A data check shows that two of the wells are monitoring wells, one was listed as an expired permit, and two had no data listed. Wells that had quantitative data showed well depths less than 300 feet, with water levels of 160 feet or less. Water yields were fair, averaging 15 gallons per minute (gpm). The wells are likely completed in the Wasatch Formation or surface alluvium. The use of the wells is primarily domestic; therefore it can be assumed that the quality of the water is fit for human consumption.

Environmental Consequences

Proposed Action

Potential impacts to groundwater resources from the proposed action would include contamination of the groundwater with produced water, drilling mud, and petroleum constituents. Hydraulic fracturing (fracing) would be incorporated to complete the wells, which would include produced and freshwater mixed with proppants, or propping agents, to stimulate the formation to create fractures that would allow gas to travel more freely from the rock pores where the gas is trapped. Hydrofracturing would be conducted at 5,000 feet or more below ground surface, and would be unlikely to cause impacts to groundwater resources near the surface, such as springs or shallow alluvium. However, isolation of any water bearing zones during installation of the production casing would minimize the effects, as well as cementing the production casing to 200 feet above the top of the Mesaverde Group. It is highly unlikely that any deep groundwater resources would be affected, as the thick impermeable layers of rock at the top of the Williams Fork Formation would prevent water or hydrocarbons from migrating to potable water zones.

No Action Alternative

Under the no action alternative, there would be no impacts to groundwater resources.

Analysis on the Public Land Health Standard for Water Quality

The proposed action and the no action alternative would not likely prevent Standard 5 from being achieved.

Wetlands and Riparian Zones (includes an analysis of Public Land Health Standard 2)

Affected Environment

The existing access road would result in one ephemeral drainage crossing that would not affect floodplains, wetlands, or riparian vegetation. The proposed pipeline would result in cross one ephemeral drainage crossing but would not affect floodplains, wetlands, or riparian vegetation.

Environmental Consequences

Proposed Action

No developed floodplains, wetlands, or riparian vegetation reside within the project area.

No Action Alternative

The no action alternative would not impact wetlands or riparian zones.

Analysis on the Public Land Health Standard for Riparian Systems

The proposed action and the no action alternative would not likely prevent Standard 2 from being achieved.

Other Affected Resources

In addition to the critical elements, the resources presented in Table 4 were considered for impact analysis relative to the proposed action and no action alternative. Resources that would be affected by the proposed action and no action alternative are discussed below.

Table 4. Other Resources Considered in the Analysis			
<i>Resource</i>	<i>NA or Not Present</i>	<i>Present and Not Affected</i>	<i>Present and Affected</i>
Access and Transportation			X
Cadastral Survey	X		
Fire/Fuels Management		X	
Forest Management		X	
Geology and Minerals			X
Law Enforcement	X		
Paleontology			X
Noise			X
Realty Authorizations	X		
Recreation	X		
Socio-Economics			X
Soils			X
Vegetation			X
Visual Resources			X
Wildlife, Aquatic			X
Wildlife, Terrestrial			X

Access and Transportation

Affected Environment

The project area would be located 4 air-miles southeast of Silt, Colorado. Access from the town of Silt is south along 9th Street turning east onto the River Frontage Road, turning south onto Garfield County Road 331 (CR331), turning east onto Garfield County Road 311 (CR311), proceeding east onto Garfield County Road 335 (CR335), turning south onto the Jolley Mesa Road, and proceeding south onto BLM

Road 8211 to the location. Since access to the location is through private lands, public motorized travel is not available to the project area.

Environmental Consequences

Proposed Action

The proposed action would result in a substantial increase in truck traffic. The largest increase would be during rig-up, drilling, and completion activities. Data indicate that approximately 1,160 truck trips over a 30-day period would be required to support the drilling and completion of each well (Table 5). Once the wells are producing, traffic would decrease to occasional visits for monitoring or maintenance activities, and hauling produced water and condensate. Each well may have to be recompleted once per year, requiring three to five truck trips per day for approximately seven days.

Table 5. Traffic Associated with Drilling and Completion Activities		
<i>Vehicle Class</i>	<i>Number of trips per well</i>	<i>Percentage of total</i>
16-wheel tractor trailers	88	7.6%
10-wheel trucks	216	18.6%
6-wheel trucks	452	39.0%
Pickup trucks	404	34.8%
Total	1,160	100.0%
Source: BLM 2006. Note: Trips by different vehicle types are not necessarily distributed evenly during the drilling process. Drilling and completion period is approximately 30 days per well.		

Degradation of field development roads may occur due to heavy equipment travel and fugitive dust and noise would be created. Mitigation measures (Appendix A) would be required as conditions of approval to ensure adequate dust abatement and road maintenance occur.

No Action Alternative

This alternative would not have an impact on access or transportation, because the development activities would not occur.

Geology and Minerals

Affected Environment

The project area is located within the southern Piceance Basin, a broad elongate structural basin located at the eastern edge of the Colorado Plateau. The basin is highly asymmetrical and deepest along its eastern side near the White River Uplift, where more than 20,000 feet of sedimentary rocks are present. It is bounded on the north by the Uinta Mountain uplift, on the east by the Grand Hogback Monocline, which lies along the west flank of the White River Uplift, on the southeast by the Gunnison and Uncompahgre Uplifts, and separated from the Uinta Basin to the northwest by the Douglas Creek Arch. Surface exposures in the Piceance Basin are primarily sedimentary rocks of the Green River and Wasatch Formations.

The target zone is the Mesaverde Group, which lies unconformably below the Wasatch Formation. The Mesaverde can be over 7,000 feet in thickness within the Piceance Basin, but within this area is estimated to be approximately 5,000 feet thick. The Mesaverde Group is often called the Mesaverde “Formation”

and includes informal subdivisions based on gas productivity characteristics including the barren Ohio Creek, the stacked lenticular, fluvial sandstones, sandy shales, carbonaceous shales and coals of the Williams Fork Formation, and the underlying marine sandstones and shales of the Iles Formation.

The proposed drilling project would target sandstone layers within the Williams Fork (including the Cameo Coal and un-named sandstones) between 5,100 and 8,000 feet TVD. The Williams Fork Formation sandstones are considered “tight” because of their low permeability reservoir characteristics. Individual sandstones are stacked and concentrated into 400-500 foot thick potentially productive sequences, and distributed throughout a vertical interval of about 3,000 feet. Studies of the Rulison Gas Field show that these Williams Fork sandstones have limited horizontal extent, based on the lack of pressure communication between existing wells spaced less than 1,000 feet apart (Vargas, 2006).

Environmental Consequences

Proposed Action

Implementation of the proposed action would result in natural gas and associated water being produced from the hydrocarbon-bearing sands within the Mesaverde Group. The amount of natural gas that may be potentially produced from the proposed wells cannot be estimated accurately. However, if the wells become productive, initial production rates would be expected to be highest during the first few years of production, then decline during the remainder of the economic lives of the wells. Natural gas production from the proposed wells would contribute to the draining of hydrocarbon-bearing reservoirs within the Mesaverde Group in this area, an action that would be consistent with BLM objectives for mineral production.

Casing programs have been designed to specifically prevent hydrocarbon migration from gas-producing strata penetrated by the well bore during drilling, initial production and after completion of the well. Identification of potential fresh water bearing zones, aquifers, gas producing zones, and under- and over-pressured formations are incorporated into drilling scenarios for the proposed wells. Estimates of what depth these zones would be encountered are used to determine drilling fluids, fluid densities, surface casing depths, and production planning. The proposed casing and cementing program has been designed to protect and isolate all usable water zones, potentially productive zones, lost circulation zones, and abnormally high-pressure zones.

No Action Alternative

Under the no action alternative, the proposed action would not be approved. There would be no new impacts on the geology and mineral resources as a consequence of selecting this alternative.

Noise

Affected Environment

The proposed action would lie within a rural setting characterized by fairly recent natural gas development activities. Noise levels in the area are presently created by traffic serving existing wells and ongoing drilling and completion activities. The proposed drilling activities would be located approximately $\frac{3}{4}$ mile from residences with the access road lying within a few hundred yards.

Environmental Consequences

Proposed Action

There would be increased levels of noise during the construction, drilling, and completion phases of the proposed action. The noise would be most noticeable along the roads used to haul equipment and at the pad location. Drilling activities are subject to noise abatement procedures as defined in the Colorado Oil and Gas Conservation Commission Rules and Regulations (Aesthetic & Noise Control Regulations), generally a limit of 80 decibels dB(A) during the day and 75 dB(A) during the night, measured at a distance of 350 feet. Operations involving pipeline or gas facility installation or maintenance, the use of a drilling rig, completion rig, workover rig, or stimulation is subject to the maximum permissible noise levels for industrial zones.

Short-term (7 to 14 day) increases in noise levels would characterize road and well pad construction. Based on the Inverse Square Law of Noise Propagation (Harris 1991) and an average construction site noise level of 65 dB(A) at 500 feet (Table 6), construction noise would equal approximately 59 dB(A) at 1,000 feet. At 1,000 feet, noise levels would approximate those of an active commercial area (EPA 1974).

<i>Equipment</i>	<i>Noise Level (dB(A))</i>		
	<i>50 feet</i>	<i>500 feet</i>	<i>1,000 feet</i>
Tractor	80	60	54
Bulldozer	89	69	63
Backhoe	85	65	59
Crane	88	68	62
Air Compressor	82	62	56
Dump Truck	88	68	62
Average (rounded to nearest whole dB(A))	85	65	59
Source: BLM 1999b			

Noise impacts from drilling and completion activities would last approximately 45 to 60 days at each well. Noise would occur continuously, 24 hours per day, during the drilling and completion period. Based on a measured noise level of 68 dB(A) at 500 feet, actions associated with drilling and completion would generate approximately 62 dB(A) at 1,000 feet. This level of noise approximates that associated with light industrial activities (EPA 1974). These increased noise levels would be in addition to levels of noise that are already above background levels due to current oil and gas developments in the area.

Traffic noise levels would also be elevated as a consequence of the proposed action. The greatest increase would be along access roads during the drilling and completion phases. Based on the La Plata County data presented in Table 7, approximately 68 dB(A) of noise (at 500 feet) would be created by each fuel and water truck that travels these roads. Less noise would be created by smaller trucks and passenger vehicles such as pickup trucks and sport utility vehicles. Although the duration of increased

noise from this source would be short, it would occur repeatedly during the drilling and completion phases.

Noise impacts would decrease during the production phase. These levels would be less than during the construction phase, but greater than background noise levels. During maintenance and workovers, noise levels would increase above those associated with routine well production. Traffic noise level would impact residences located along county roads that would provide primary access into the area. While exposure to these noise levels is not likely to be harmful, it is likely to be annoying to residents.

Table 7. Noise Levels Associated with Oil and Gas Production and Development				
<i>Equipment Type</i>	<i>Noise Level at 50 feet (dBA)</i>	<i>Noise Level at 500 feet (dBA)</i>	<i>Noise Level at 1000 feet (dBA)</i>	<i>Noise Level at 2000 feet (dBA)</i>
Crane	88	68	62	56
Backhoe	85	65	59	53
Pan Loader	87	67	61	55
Bulldozer	89	69	63	57
Fuel and Lubrication Truck	88	68	62	56
Water Truck	88	68	62	56
Motor Grader	85	65	59	53
Vibrator/Roller	80	60	54	48
Mechanic Truck	88	68	62	56
Flat Bed Truck	88	68	62	56
Dump Truck	88	68	62	56
Flat Bed Trailer	88	68	62	56
Tractor	80	60	54	48
Concrete Truck	86	66	60	54
Concrete Pump	82	62	56	50
Front End Loader	83	63	57	51
Road Scraper	87	67	61	55
Air Compressor	82	62	56	50
Average Construction Site	85	65	59	53
Source: La Plata County (2002)				

No Action Alternative

Under the no action alternative, there would be no increase in current noise levels because the developments described in the proposed action would not take place.

Paleontology

Affected Environment

The surface formation is the Wasatch Formation, currently classified as a Class 5 unit under the Potential Fossil Yield Classification (PFYC) system. This unit is defined as a highly fossiliferous geologic unit

that predictably produces significant invertebrate or plant fossils. The Wasatch Formation is divided into the early Eocene Shire, and the Paleocene age Molina and Atwell Gulch Members. All members of the Wasatch Formation contain vertebrate fossils in varying abundances (Murphy and Daitch 2007). Rocks of the Wasatch Formation are lithologically very similar to one another throughout the Piceance Creek Basin as heterogeneous continental fluvial deposits with interfingering channel sandstone beds and overbank deposits consisting of variegated claystone, mudstone, and siltstone beds (Franczyk et al. 1990).

Fossils historically identified in the Wasatch are archaic mammals—including marsupials, representatives of two extinct orders of early mammals (pantodonts and creodonts), artiodactyls (deer-like, even-toed ungulates), ancestral horses and other perissodactyls (odd-toed ungulates), carnivores, and primates—as well as birds, lizards, turtles, crocodilians, gars and other fishes, freshwater clams, gastropods (snails), and other invertebrates (BLM, 1999a) .

Environmental Consequences

Proposed Action

Construction activities have the potential to adversely affect scientifically important fossils that may be present in the Wasatch Formation. The greatest potential for impacts is associated with excavation of shallow bedrock that may be unearthed during construction activities. The existing well pad was constructed in June of 2000 for initial well Federal #18-15 drilled by Mesa Hydrocarbons LLC. The surrounding surface area is historical use agriculture. Additional disturbance to the area will not likely uncover additional fossil resources since the native sediments have been displaced through agriculture planting cycles. Well preserved plant and animal remains are more likely to be found within intact native sediments.

An examination of the BLM paleontology database indicates that there are no known fossil localities identified within a 2-mile radius of the proposed well sites. Paleontological resources should not be impacted. In the event that paleontological resources are encountered, a standard paleontological condition of approval would be attached to the APDs (Appendix A).

No Action Alternative

Under this alternative, no impacts to paleontological resources would occur.

Socio-Economics

Affected Environment

The project area is located within Garfield County, Colorado. The population of Garfield County has grown by approximately 2.7 percent per year from 2000 to 2005, resulting in an increase from 44,000 to 51,000 residents (DOLA 2007). Population growth in Garfield County is expected to more than double over the next 20 years from over 50,000 in 2005 to 116,000 in 2025 (DOLA 2007).

In the year 2000, industry groups in Garfield County with the highest percentage of total employment were construction (20.4 percent), tourism (10.7 percent), retail trade (13.7 percent), and education and health (15.4 percent). An estimated 13.3 percent of the population was retired in the year 2000 and did not earn wages. Employment in agriculture, forestry, hunting, and mining accounted for 2.4 percent of total employment.

In 2005, oil and gas assessed valuation in Garfield County amounted to \$984,417,880 or about 55 percent of total assessed value in the county. Total tax revenues from property taxes and special district levies were \$86,678,430. Based on this assessed value, the top five taxpayers in the county in 2005 were mining companies.

Federal mineral royalties are levied on oil and gas production from Federal mineral leases. For oil and gas production in Garfield County in 2003, total Federal royalties collected amounted to \$125,683,586. Half of those royalties of \$62,841,784 was paid to the State of Colorado. The State's share of the revenue was then distributed to a variety of state and local agencies. Counties where oil and gas were produced received 8 percent of total revenues, local towns in those counties received 5 percent, and local school districts received 5 percent. In 2003, the Garfield County share of Federal mineral lease royalties was \$1,332,000.

Environmental Consequences

Proposed Action

The proposed action would result in a minor positive impact on the economy of Garfield County through increases in tax and royalty revenues. Additional job opportunities might also be created and supporting trades and services would benefit to a minor extent.

The proposed action could result in negative social impacts including: 1) reducing scenic quality (see **Visual Resources**), 2) increased dust levels especially during construction (see **Air Quality**), and 3) increasing traffic (see **Access and Transportation**).

No Action Alternative

Under this alternative, minor positive economic impacts and nominal negative social impacts associated with the proposed action would not occur.

Soils (includes an analysis of Public Land Health Standard 1)

Affected Environment

According to the *Soil Survey of Rifle Area, Colorado* (USDA 1985), the proposed activities would be located on the Potts-Ildfonso-Vale soil complex. This complex is found on mesas, alluvial fans, and the sides of valleys at elevations ranging from 5,000 to 6,500 feet and on slopes up to 45 percent. Parent material for this soil complex consists of sandstone, shale, and basalt. Although this clay loam to salty loam is deep, well drained, and has medium surface runoff, erosion hazard is classified as moderate to severe. In the project area, the well pad would be situated on soils of moderate erosion hazard, while the majority of the pipeline route is along a slope of severe erosion hazard. Uses for this soil complex include limited grazing and wildlife habitat.

Environmental Consequences

Proposed Action

In general, the area contains adequate vegetation buffers that would minimize the potential for sediment transport. There would be a slight amount of soil loss, loss of soil productivity, and an increase in sediment available for transport resulting from construction activities. Most of these activities would occur in an area that has relatively flat topography and would occur at some distance from nearby

drainages. However, the proposed pipeline route crosses an area of moderately steep slopes (30 to 50 percent) with severe soil erodibility, with somewhat greater potential for soil loss into the drainage below.

No Action Alternative

The no action alternative would have no impact on soils.

Analysis on the Public Land Health Standard for Upland Soils

The proposed action and the no action alternative would not likely prevent Standard 1 from being achieved.

Vegetation (includes an analysis of Public Land Health Standard 3)

Affected Environment

The project area is located on an historic pad which was closed and reclaimed years ago. The reclaimed area is dominated by fourwing saltbush, various wheatgrasses, galleta grass (*Pleuraphis[Hilaria] jamesii*), and a small component of non-native species. The historic pad is surrounded by pinyon-juniper woodland with a fairly native understory. The proposed pipeline would cross through a Wyoming big sagebrush community.

Environmental Consequences

Proposed Action

Total short-term surface disturbance for the proposed pad and associated access road and pipeline would be 6.7 acres (6.0 acres of BLM land). With implementation of reclamation practices identified in Appendix A, establishment of desirable herbaceous vegetation on the unused portions of the pad, pipeline, and road could be restored within 2 to 3 years. The establishment of mature shrubs could take from 5 to 25 years, and the establishment of trees would take even longer.

Interim reclamation would result in about a 75-percent reduction in surface disturbance of the pad that would remain over the long-term life of the project. Assuming the pad, road and pipeline are reclaimed to the extent possible, total long-term surface disturbance associated with the proposed action would be approximately 2.5 acres (2.1 acres of BLM land).

No Action Alternative

Under the no action alternative, no construction or development activities would take place. Therefore, vegetation would not be affected.

Analysis on the Public Land Health Standard for Plant and Animal Communities (partial, see also **Wildlife, Aquatic and Wildlife, Terrestrial**)

At this time, the landscape addressed in this EA has not had a formal Land Health Assessment completed. As such, no formal determination on conformance with Standard 3 for healthy, productive plant communities will be made until a formal Land Health Assessment and Determination Document is completed. The surface disturbance associated with the proposed action has the potential to encourage expansion and dominance of the site by non-native invasive weeds. Appendix A includes provisions to revegetate the disturbances with native vegetation and to control noxious weeds.

The proposed action would likely contribute, albeit in a minor way, to the further deterioration of vegetation communities and would move the area further from achieving conformance with the standard.

The no action alternative would not contribute to the further deterioration of vegetative communities and would not move the area further away from achieving conformance with Standard 3 because the proposed developments would not occur.

Visual Resources

Affected Environment

The proposed well pad is located in an area that received a *Visual Resource Management (VRM) Class III* designation in the 1984 Glenwood Springs Resource Management Plan. The objective of this class is to partially retain the existing character of the landscape. The level of change in the characteristic landscape should be moderate. Changes may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The extent of VRM classes, landscape character, and scenic quality on public and private lands in the high natural gas production area of Garfield County are discussed on pages 3-41 through 3-45 of the 1999 – Oil and Gas Leasing & Development Final Supplemental Environmental Impact Statement (FSEIS). The impacts of development are discussed on pages 4-49 through 4-54 of the FSEIS. The Proposed Action would not affect any of the key viewing areas or viewsheds described therein. In particular, the Proposed Action would not be seen from the key viewing areas of the 1-70 corridor or the town of Rifle.

Environmental Consequences

Proposed Action

The proposed action would result in short-term visual impacts from construction, drilling, and completion activities. The existing landscape would be changed by the introduction of new elements of line, color, form, and texture. There would be an increase in the presence of drilling rigs, heavy equipment (e.g., dozers, graders, etc.), and vehicular traffic, with an associated increase in dust, light pollution, and well flaring.

The construction of new pads, supporting infrastructure and improved access roads will create long-term contrasts within the existing landscape by removing the existing vegetation and exposing bare ground. The visibility of new areas of surface disturbance and production equipment would increase the visual contrasts associated with human modifications in color, line, form and texture. However, interim reclamation of the well pad would reduce some of the contrast after two to three growing seasons, and the use of natural colors on production equipment would mitigate long-term impacts (Appendix A).

Construction activities would occur over a 2- to 4-week period. Drilling and completion activities would occur 24 hours per day for a 30- to 60-day period. Consequently, the drill rig, other large equipment, lights, and well flaring would be visible in the night sky for up to two months at each well location.

No Action Alternative

Under the no action alternative, none of the development described under the proposed action would be authorized, and no new surface disturbance would occur. Visual resources would remain unchanged from present conditions.

Wildlife, Aquatic (includes an analysis of Public Land Health Standard 3)

Affected Environment

The well pad is to be placed adjacent to a small ephemeral drainage that feeds the Colorado River approximately 1.5 mile to the north. In addition to a variety of fish species, the Colorado River contains a variety of aquatic invertebrates.

Proposed Action

Environmental Consequences

Proposed Action

The project activities would increase the potential for soil erosion and sedimentation into the ephemeral drainage east of the project area, which could cause a temporary increase in sediment transport to the Colorado River. However, these activities would occur in an area that has relatively flat topography and would occur at some distance from nearby drainages. In addition, the area contains adequate vegetation buffers that would minimize the potential for sediment transport. It is unlikely, therefore, that the proposed action would cause a sediment load increase in the Colorado River that would be detectable above current background levels and aquatic species are unlikely to be impacted. Mitigation measures presented in Appendix A would be implemented to minimize potential impacts from erosion and sedimentation.

No Action Alternative

Environmental Consequences Under the no action alternative, no construction or development activities would take place; therefore, aquatic wildlife would not be affected.

Analysis on the Public Land Health Standard 3 for Plant and Animal Communities (partial, see also **Vegetation and Wildlife, Terrestrial**)

Although the proposed action has the potential to increase sediment, the anticipated increase would not increase sediment loads above normal levels. Therefore, the proposed action should have minimal impact on aquatic wildlife and is not expected to affect Standard 3 land health indicators.

The no action alternative would not negatively affect Standard 3 because energy development would not occur.

Wildlife, Terrestrial (includes an analysis of Public Land Health Standard 3)

Affected Environment

The project area provides habitats for various species of big game, small game, and non-game mammals and birds that are found in low- to mid-elevation habitats of west-central Colorado. The area is mapped as overall range for mule deer (*Odocoileus hemionus*), Rocky Mountain elk (*Cervus elaphus nelsoni*), black bear (*Ursus americanus*), and mountain lion (*Felis concolor*).

The Federal lease COC51146 contains a big game winter timing limitation stipulation that prohibits construction, drilling, and completion activities from January 16 through April 29.

Environmental Consequences

Proposed Action

Direct impacts to terrestrial wildlife from the proposed action may include mortality, disturbance, nest abandonment/nesting attempt failure, or site avoidance/displacement from otherwise suitable habitats. These effects may be the result of approximately 6.7 acres of habitat loss or modification, increased noise from vehicles and operation of equipment, increased human presence, and collisions between wildlife and vehicles. Impacts would be more substantial during critical seasons, such as winter or during reproduction. Mule deer and elk are often restricted to smaller areas during the winter months and may expend high amounts of energy to move through snow, locate food and maintain body temperature. Increased human use in the area, particularly during construction, drilling and completion activities, would likely displace some animals away from preferred habitats, potentially depleting much-needed energy reserves that may lead to decreased over-winter survival.

Additional, indirect habitat loss may occur if increased human activity (e.g., traffic, noise) associated with infrastructure cause mule deer and elk to be displaced or alter their habitat use patterns. Indirect habitat loss generally includes habitat within an eighth of a mile of a road or well pad (e.g., BLM 1999b). Because federal lease COC51146 contains a stipulation for protecting wintering wildlife, impacts during the critical wintering season would be avoided. The TL would not apply to operations and maintenance activities. Under certain conditions, exceptions could be granted at the discretion of the Authorized Officer.

No Action Alternative

Because new development activity would not take place under the no action alternative, terrestrial wildlife would not be affected.

Analysis on the Public Land Health Standard for Plant and Animal Communities (partial, see also **Vegetation and Wildlife, Aquatic**)

At this time, the landscape addressed in this EA has not had a formal Land Health Assessment completed. As such, no formal determination on conformance with Standard 3 for healthy, productive plant communities will be made until a formal Land Health Assessment and Determination Document is completed. The surface disturbance associated with the proposed action has the potential to impact the site fragmentation and disturbance of habitat and through the spread of noxious weeds. The no action alternative would not affect Standard 3 because energy development would not occur.

SUMMARY OF CUMULATIVE IMPACTS

The *Glenwood Springs Oil and Gas Leasing and Development Final Supplemental EIS* (FSEIS) (BLM 1999) analyzed three alternatives for oil and gas development in the Glenwood Springs Resource Area (GSRA). The assessment included an analysis of impacts of past, present, and reasonable foreseeable future actions, including predicted future oil and gas development, on both public and private lands. Since the FSEIS presents the most current analysis of cumulative impacts in the project area, it is incorporated by reference.

Until relatively recently, modifications of the region have been characteristic of agricultural and ranching lands, with localized industrial impacts associated with the railroad and I-70 highway corridors. More recently, these changes are cumulative to the growth of residential and commercial uses, utility corridors, oil and gas developments, and other rural industrial uses. These increasing activity levels have

accelerated the accumulation of impacts in the area. These impacts have included: (1) direct habitat losses; (2) habitat fragmentation and losses in habitat effectiveness; (3) elevated potential for runoff, erosion, and sedimentation; (4) expansion of noxious weeds and other invasive species; and (5) increased noise and traffic and reductions in the scenic quality of the area (BLM 1999: 4-1 to 4-68).

Although none of the cumulative impacts described in the FSEIS was characterized as significant, and while new technologies and regulatory requirements have reduced the impacts of some land uses, it is nonetheless clear that past, present, and reasonably foreseeable future actions has had and would continue to have adverse affects on various elements of the human environment. The anticipated impact levels for existing and future actions range from negligible to locally major, and primarily negative, for specific resources. The primary reasons for this assessment are twofold: (1) the rate of development, particularly oil and gas development, is increasing in the area, resulting in an accelerated accumulation of individually nominal effects; and (2) the majority of residential and commercial expansion, as well as oil and gas development, have occurred, and is likely to continue to occur, on private holdings where mitigation measures designed to protect and conserve resources are not in effect.

It is clear that the proposed action would contribute to the collective adverse impact for some resources. Although the contribution would be very minor, the proposed action would contribute incrementally to the collective impact to air quality, vegetation, migratory birds, terrestrial wildlife, and other resources.

PERSONS AND AGENCIES CONSULTED

Orion Energy Partners

INTERDISCIPLINARY REVIEW

<i>Name</i>	<i>Title</i>	<i>Responsibility</i>
Rick Haskins	Natural Resource Specialist	Team Leader, Access and Transportation, Visual Resources, Solid and Hazardous Wastes, Socio-Economics
Beth Brenneman	Ecologist	Plants, Special Status Species (Plants), Invasive Non-native Species
Jeff Cook	Wildlife Biologist	Special Status Species (Wildlife and Fish), Birds of Conservation Concern, Terrestrial Wildlife
Karen Conrath	Geologist	Groundwater, Paleontology, Geology and Minerals
John Brogan	Archaeologist	Cultural Resources and Native American Concerns
Noel Ludwig	Hydrologist	Soil, Air, Surface Water, US Waters, Noise, Prime Farmland, Wetlands
Marty O'Mara	Petroleum Engineer	Downhole COAs,

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FONSI
CO140-2008-038 EA

The environmental assessment analyzing the environmental effects of the proposed action has been reviewed. The approved mitigation measures result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

DECISION RECORD

DECISION: It is my decision to approve the Applications for Permit to Drill (APDs) for the 4 directionally drilled wells from the 18-3 pad location, along with construction/reconstruction of associated roads and pipelines. This decision will provide for the orderly, economical, and environmentally sound exploration and development of oil and gas resources on valid oil and gas leases.

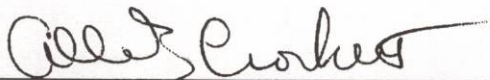
RATIONALE:

1. Approval of the proposed action is validating the rights granted with the Federal oil and gas leases to develop the leasehold to provide commercial commodities of oil and gas.
2. The environmental impacts have been mitigated with measures included in the attached Conditions of Approval.

MITIGATION MEASURES: Mitigation measures presented in Appendices A and B will be incorporated as Conditions of Approval for both surface and drilling operations.

NAME OF PREPARER: Rick Haskins, Natural Resource Specialist

SIGNATURE OF AUTHORIZED OFFICIAL:



Supervisory Natural Resource Specialist

Date Signed: 6-17-08

APPENDIX A

SURFACE USE CONDITIONS OF APPROVAL

SURFACE USE CONDITIONS OF APPROVAL

The following standard surface use COAs are in addition to all stipulations attached to the respective Federal leases and to any site-specific COAs for individual well pads. Wording and numbering of these COAs may differ from those included in the EA. In cases of discrepancies, the following COAs supersede earlier versions.

1. Administrative Notification. The operator shall notify the BLM representative at least 48 hours prior to initiation of construction on access roads, well pads, or pipelines.
2. Road Construction and Maintenance. Roads shall be crowned, ditched, surfaced, drained with culverts and/or water dips, and constructed to BLM Gold Book standards. Initial gravel application shall be a minimum of 4 inches. The operator shall provide timely year-round road maintenance and cleanup on the access roads. A regular schedule for maintenance shall include, but not be limited to, blading, ditch and culvert cleaning, road surface replacement, and dust abatement. When rutting within the traveled way becomes greater than 6 inches, blading, and/or gravelling shall be conducted as approved by the authorized officer.
3. Dust Abatement. The operator shall implement dust abatement measures as needed or directed by the BLM authorized officer. The level and type of treatment (watering or application of various dust agents, surfactants, and road surfacing material) may be changed in intensity and must be approved by the BLM authorized officer.
4. Drainage Crossings and Culverts. Construction activities at perennial, intermittent, and ephemeral drainage crossings (e.g. burying pipelines, installing culverts) shall be timed to avoid high flow conditions and shall consist of either a piped stream diversion or the use of a coffer dam and pump to divert flow around the disturbed area.

Culverts at drainage crossings shall be designed and installed to pass a 25-year or greater storm event. On perennial and intermittent streams, culverts shall be designed to allow for passage of aquatic biota. The minimum culvert diameter in any installation for a drainage crossing or road drainage shall be 18 inches. Contact Noel Ludwig, Glenwood Springs Energy Office Hydrologist, at 970-947-5215 or Noel_Ludwig@blm.gov. Crossings of drainages deemed to be jurisdictional waters of the U.S. pursuant to Section 404 of the Clean Water Act may require additional culvert design capacity. Due to the flashy nature of area drainages and anticipated culvert maintenance, the U.S. Army Corps of Engineers recommends designing drainage crossings for the 100-year event. Contact Sue Nall at 970-243-1199 x16 or susan.nall@usace.army.mil.

Pipelines installed beneath stream crossings shall be buried at a minimum depth of 4 feet below the channel substrate to avoid exposure by channel scour and degradation. Following burial, the channel grade and substrate composition shall be returned to pre-construction conditions.

5. Jurisdictional Waters of the U.S. The operator shall obtain appropriate permits from the U.S. Army Corps of Engineers prior to discharging fill material into waters of the U.S. in accordance with Section 404 of the Clean Water Act. Waters of the U.S. are defined in 33 CFR Section 328.3 and may include wetlands as well as perennial, intermittent, and ephemeral streams. Permanent impacts to waters of the U.S. may require mitigation. Contact Sue Nall, Regulatory Specialist, Colorado/Gunnison Basin Regulatory Office, U.S. Army Corps of Engineers, at 970-243-1199 x16 or susan.nall@usace.army.mil.

6. Wetlands and Riparian Zones. The operator shall restore temporarily disturbed wetlands or riparian areas. The operator shall consult with the BLM Glenwood Springs Energy Office to determine appropriate mitigation, including verification of native plant species to be used in restoration. Contact Noel Ludwig, Glenwood Springs Energy Office Hydrologist, at 970-947-5215 or Noel_Ludwig@blm.gov.
7. Reclamation. The goals, objectives, timelines, measures, and monitoring methods for final reclamation of oil and gas disturbances are described in Appendix I (Surface Reclamation) of the 1998 Draft Supplemental EIS (DSEIS). Specific measures to follow during interim and temporary (pre-interim) reclamation are described below.

- a. Deadline for Temporary Seeding and Interim Reclamation. Topsoil storage piles, stormwater control features, and cut-and-fill slopes shall undergo temporary seeding to stabilize the material and minimize weed infestations within 30 days following completion of pad construction. Interim reclamation to reduce a well pad to the maximum size needed for production shall be completed within 6 months following completion of the last well planned for the pad.

Both of these deadlines are subject to being extended upon approval of the authorized officer based on season, timing limitations, or other constraints on a case-by-case basis.

- b. Topsoil Stripping, Storage, and Replacement. Topsoil shall be stripped following removal of vegetation during construction of well pads, pipelines, roads, or other surface facilities. This shall include, at a minimum, the upper 6 inches of soil. Any additional topsoil present at a site, such as indicated by color or texture, shall also be stripped. The authorized officer may specify a stripping depth during the onsite visit. The stripped topsoil shall be stored separately from subsoil or other excavated material and replaced prior to final seedbed preparation.
- c. Seedbed Preparation. For cut-and-fill slopes, initial seedbed preparation shall consist of backfilling and recontouring to achieve the configuration specified in the reclamation plan. For compacted areas, initial seedbed preparation shall include ripping to a minimum depth of 18 inches, with a maximum furrow spacing of 2 feet. Where practicable, ripping shall be conducted in two passes at perpendicular directions. Following final contouring, the backfilled or ripped surfaces shall be covered evenly with topsoil.

Final seedbed preparation shall consist of scarifying (raking or harrowing) the spread topsoil prior to seeding. If more than one season has elapsed between final seedbed preparation and seeding, and if the area is to be broadcast-seeded or hydroseeded, this step shall be repeated no more than 1 day prior to seeding to break up any crust that has formed.

Seedbed preparation is not required for topsoil storage piles or other areas of temporary seeding.

Requests for use of soil amendments, including basic product information, shall be submitted to the BLM for approval.

- d. Seed Mixes. A seed mix consistent with BLM standards in terms of species and seeding rate for the specific habitat type shall be used on all BLM lands affected by the project (see Attachments 1 and 2 of the letter provided to operators dated May 1, 2008). Note that temporary seeding allows use of a seed mix containing sterile hybrid non-native species in addition to native perennial species.

For private surfaces, the menu-based seed mixes are recommended, but the surface landowner has ultimate authority over the seed mix to be used in reclamation. The seed shall contain no noxious, prohibited, or restricted weed seeds and shall contain no more than 0.5 percent by weight of other weed seeds. Seed may contain up to 2.0 percent of “other crop” seed by weight, including the seed of other agronomic crops and native plants; however, a lower percentage of other crop seed is recommended. Seed tags or other official documentation shall be supplied to the BLM Glenwood Springs Energy Office Ecologist (Beth Brenneman, 970-947-5232 or beth_brenneman@blm.gov) at least 14 days before the date of proposed seeding for acceptance. Seed that does not meet the above criteria shall not be applied to public lands.

- e. Seeding Procedures. Seeding shall be conducted no more than 24 hours following completion of final seedbed preparation.

Where practicable, seed shall be installed by drill-seeding to a depth of 0.25 to 0.5 inch. Where drill-seeding is impracticable, seed may be installed by broadcast-seeding at twice the drill-seeding rate, followed by raking or harrowing to provide 0.25 to 0.5 inch of soil cover. Hydroseeding and hydromulching may be used in temporary seeding or in areas where drill-seeding or broadcast-seeding/raking are impracticable. Hydroseeding and hydromulching must be conducted in two separate applications to ensure adequate contact of seeds with the soil.

If interim revegetation is unsuccessful, the operator shall implement subsequent reseeding until interim reclamation standards are met. Requirements for reseeding of unsuccessful temporary seeding will be considered on a case-by-case basis.

- f. Mulch. Mulch shall be applied within 24 hours following completion of seeding. In areas of interim reclamation that used drill-seeding or broadcast-seeding/raking, mulch shall consist of crimping certified weed-free straw or certified weed-free native grass hay into the soil. Hydromulching may be used in areas of interim reclamation where crimping is impracticable, in areas of interim reclamation that were hydroseeded, and in areas of temporary seeding regardless of seeding method.

NOTE: Mulch is not required in areas where erosion potential mandates use of a biodegradable erosion-control blanket (straw matting).

- g. Erosion Control. Cut-and-fill slopes shall be protected against erosion with the use of water bars, lateral furrows, or other measures approved by the authorized officer. Biodegradable straw matting, bales or wattles of weed-free straw or weed-free native grass hay, or well-anchored fabric silt fence shall be used on cut-and-fill slopes and along drainages to protect against soil erosion. Additional BMPs shall be employed as necessary to reduce erosion and offsite transport of sediment.
- h. Site Protection. The pad shall be fenced to BLM standards to exclude livestock grazing for the first two growing seasons or until seeded species are firmly established, whichever comes later. The seeded species will be considered firmly established when at least 50 percent of the new plants are producing seed. The authorized officer will approve the type of fencing.
- i. Monitoring. The operator shall conduct annual monitoring surveys of reclaimed areas and shall submit an annual monitoring report to the authorized officer by **December 31** of each year. The monitoring program shall use the four Reclamation Categories defined in Appendix I of the 1998 DSEIS to assess progress toward reclamation objectives. The annual report shall document whether attainment of reclamation objectives appears likely. If one or more objectives appear

unlikely to be achieved, the report shall identify appropriate corrective actions. Upon review and approval of the report by the BLM, the operator shall be responsible for implementing the corrective actions or other measures specified by the authorized officer.

8. Weed Control. The operator shall regularly monitor and promptly control noxious weeds or other undesirable plant species as set forth in the Glenwood Springs Energy Office *Noxious and Invasive Weed Management Plan for Oil and Gas Operators*, dated March 2007. A Pesticide Use Proposal (PUP) must be approved by the BLM prior to the use of herbicides. Annual weed monitoring reports shall be submitted by **December 31**. Contact Beth Brenneman, Glenwood Springs Energy Office Ecologist, at 970-947-5232 or beth_brenneman@blm.gov.
9. Big Game Winter Range Timing Limitation. To minimize impacts to wintering big game, no construction, drilling or completion activities shall occur during a Timing Limitation (TL) period from **January 16 through April 30** annually. To reduce impacts to wintering big game, remote sensing should be used for production monitoring, and unavoidable monitoring or maintenance activities should be conducted between 9 a.m. and 3 p.m., to the extent practicable. These additional recommendations apply to the period from December 1 to April 30. Contact Jeff Cook, Glenwood Springs Energy Office Wildlife Biologist, at 970-947-5231 or jeffrey_cook@blm.gov.
10. Raptor Nesting. Raptor nest surveys conducted in 2008 for the 18-3 well pad and associated pipeline did not result in location of raptor nest structures within 0.25 mile of the well pad or 0.125 mile the pipeline. Therefore, a Raptor Nesting Timing Limitation COA is not attached to this APD. Although BLM considers surveys conducted for a NEPA Environmental Assessment to be valid for 5 years, new nests may be built and occupied between the initial surveys and project implementation. To ensure compliance with the Migratory Bird Treaty Act, the operator should schedule construction or drilling activities to begin outside the raptor nesting season (February 1 to August 15) if practicable. If initiation of construction or drilling during these dates cannot be avoided, the operator is responsible for complying with the Migratory Bird Treaty Act, which prohibits the “take” of birds or active nests (those containing eggs or young), including nest failure caused by noise and human activity. Contact Jeff Cook, Glenwood Springs Energy Office Wildlife Biologist, at 970-947-5231 or jeffrey_cook@blm.gov.
11. Migratory Birds. It shall be the responsibility of the operator to comply with the Migratory Bird Treaty Act (MBTA) with respect to “take” of migratory bird species. Under the MBTA, “take” means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The operator shall prevent use by migratory birds of any pit containing fluids associated with oil or gas operations—including but not limited to reserve pits, produced water pits, frac-water pits, cuttings trenches (if covered by water/fluid), and evaporation pits. Fluids in these pits may pose a risk to migratory birds (e.g., waterfowl, shorebirds, wading birds, songbirds, and raptors) as a result of ingestion, absorption through the skin, or interference with buoyancy and temperature regulation. Several established methods to prevent bird access are known to be effective, such as netting or bird-balls. However, the use of flagging has proven ineffective in deterring birds from using ponds or pits and provides no assurance of compliance with the MBTA. Regardless of the method used, it should be employed as soon as practicable after the pit has begun receiving liquids. At a minimum, the method shall be in place within 24 hours following the placement of fluids into a pit. Because of high toxicity to birds, oil slicks and oil sheens should immediately be skimmed off the surface of any pit that is not netted. The most effective way to eliminate risk to migratory birds is prompt drainage, closure, and reclamation of pits, which is strongly encouraged. All mortality or injury to species protected by the MBTA shall be reported immediately to the BLM project lead and to the U.S. Fish and Wildlife Service. For further assistance, contact Creed Clayton, USFWS Biologist assigned to

the Glenwood Springs Energy Office, at 970-947-5219 or creed_clayton@fws.gov, and visit <http://www.fws.gov/mountain-prairie/contaminants/oilpits.htm>.

12. Birds of Conservation Concern: Pursuant to BLM Instruction Memorandum 2008-050, all surface-disturbing activities are prohibited from May 1 to June 30 to reduce impacts to Birds of Conservation Concern (BCC). An exception to this COA will be granted if nesting surveys conducted no more than one week prior to surface-disturbing activities indicate that no BCC species are nesting or otherwise present within 10 meters of the area to be disturbed. Nesting surveys shall include an auidial survey for diagnostic vocalizations in conjunction with a visual survey for adults and nests. Surveys shall be conducted by a qualified breeding bird surveyor between sunrise and 10:00 AM under favorable conditions for detecting and identifying a BCC species. Contact Jeff Cook, Glenwood Springs Energy Office Wildlife Biologist, at 970-947-5231 or jeffrey_cook@blm.gov).
13. Range Management. Range improvements (fences, gates, reservoirs, pipelines, etc) shall be avoided during development of natural gas resources to the maximum extent possible. If range improvements are damaged during exploration and development, the operator will be responsible for repairing or replacing the damaged range improvements. If a new or improved access road bisects an existing livestock fence, steel frame gate(s) or a cattleguard with associated bypass gate shall be installed across the roadway to control grazing livestock.
14. Ips Beetle. To avoid mortality of pinyon pines due to infestations of the *Ips* beetle, any pinyon trees damaged during road, pad, or pipeline construction shall be chipped after being severed from the stump or grubbed from the ground, buried in the toe of fill slopes (if feasible), or cut and removed from the site within 24 hours to a location approved by the Colorado State Forest Service.
15. Paleontological Resources. All persons associated with operations under this authorization shall be informed that any objects or sites of paleontological or scientific value, such as vertebrate or scientifically important invertebrate fossils, shall not be damaged, destroyed, removed, moved, or disturbed. If in connection with operations under this authorization any of the above resources are encountered the operator shall immediately suspend all activities in the immediate vicinity of the discovery that might further disturb such materials and notify the BLM authorized officer of the findings. The discovery must be protected until notified to proceed by the BLM authorized officer.

Where feasible, the operator shall suspend ground-disturbing activities at the discovery site and immediately notify the BLM authorized officer of any finds. The BLM authorized officer will, as soon as feasible, have a BLM-permitted paleontologist check out the find and record and collect it if warranted. If ground-disturbing activities cannot be immediately suspended, the operator shall work around or set the discovery aside in a safe place to be accessed by the BLM-permitted paleontologist.

16. Cultural Education/Discovery. All persons in the area who are associated with this project shall be informed that if anyone is found disturbing historic, archaeological, or scientific resources, including collecting artifacts, the person or persons will be subject to prosecution.

Pursuant to 43 CFR 10.4(g), the BLM authorized officer shall be notified by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4 (c) and (d), activities shall stop in the vicinity of the discovery, and the discovery shall be protected for 30 days or until notified by the BLM authorized officer to proceed.

If in connection with operations under this contract, the operator, its contractors, their subcontractors, or the employees of any of them discovers, encounters, or becomes aware of any objects or sites of

cultural value or scientific interest such as historic ruins or prehistoric ruins, graves or grave markers, fossils, or artifacts, the operator shall immediately suspend all operations in the vicinity of the cultural resource and shall notify the BLM authorized officer of the findings (16 USC 470h-3, 36 CFR 800.112). Operations may resume at the discovery site upon receipt of written instructions and authorization by the BLM authorized officer. Approval to proceed will be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the BLM authorized officer from a Federal agency insofar as practicable. When not practicable, the operator shall bear the cost of the services of a non-Federal professional.

Within five working days, the BLM authorized officer will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places
- what mitigation measures the holder will likely have to undertake before the site can be used (assuming that *in-situ* preservation is not necessary)
- the timeframe for the BLM authorized officer to complete an expedited review under 36 CFR 800.11, or any agreements in lieu thereof, to confirm through the SHPO State Historic Preservation Officer that the findings of the BLM authorized officer are correct and that mitigation is appropriate

The operator may relocate activities to avoid the expense of mitigation and delays associated with this process, as long as the new area has been appropriately cleared of resources and the exposed materials are recorded and stabilized. Otherwise, the operator shall be responsible for mitigation costs. The BLM authorized officer will provide technical and procedural guidelines for relocation and/or to conduct mitigation. Upon verification from the BLM authorized officer that the required mitigation has been completed, the operator will be allowed to resume construction.

Antiquities, historic ruins, prehistoric ruins, and other cultural or paleontological objects of scientific interest that are outside the authorization boundaries but potentially affected, either directly or indirectly, by the proposed action shall also be included in this evaluation or mitigation. Impacts that occur to such resources as a result of the authorized activities shall be mitigated at the operator's cost, including the cost of consultation with Native American groups.

Any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item, or archaeological resources on public lands is subject to arrest and penalty of law (16 USC 433, 16 USC 470, 18 USC 641, 18 USC 1170, and 18 USC 1361).

17. Visual Resources. Production facilities shall be placed to avoid or minimize visibility from travel corridors, residential areas, and other sensitive observation points—unless directed otherwise by the authorized officer due to other resource concerns—and shall be placed to maximize reshaping of cut-and-fill slopes and interim reclamation of the pad.

To the extent practicable, existing vegetation shall be preserved when clearing and grading for pads, roads, and pipelines. The authorized officer may direct that cleared trees and rocks be salvaged and redistributed over reshaped cut-and-fill slopes or along linear features.

Above-ground facilities shall be painted Shale Green (Munsell 5Y4/2) to blend with the existing landscape.

18. Reserve Pit. A minimum of 2 feet of freeboard shall be maintained in the reserve pit. Freeboard is measured from the highest level of drilling fluids and cuttings in the reserve pit to the lowest surface elevation of ground at the reserve pit perimeter.

19. Soils. Cuts and fills shall be minimized when working on erosive soils and slopes in excess of 30 percent. Cut-and-fill slopes shall be stabilized through revegetation practices with an approved seed mix shortly following construction activities to minimize the potential for slope failures and excessive erosion. Fill slopes adjacent to drainages shall be protected with well-anchored silt fences, straw wattles, or other acceptable BMPs designed to minimize the potential for sediment transport. On slopes greater than 50 percent, BLM personnel may request a professional geotechnical analysis prior to construction.

APPENDIX B

DOWNHOLE CONDITIONS OF APPROVAL

DOWNHOLE CONDITIONS OF APPROVAL
APPLICATION FOR PERMIT TO DRILL

Company/Operator: **Orion Energy Partners, LLC**

Surface Hole Location: SWSE Sec 18 T06S, R91W			
Well Name	Well No.	Bottom Hole Location	Lease
Kokopelli Fed	18-213D	SESW, Sec 18, T06S, R91W	COC51146
Kokopelli Fed	18-215D	SESW, Sec 18, T06S, R91W	COC51146
Kokopelli Fed	18-313D	SWSE, Sec 18, T06S, R91W	COC51146
Kokopelli Fed	18-315D	SWSE, Sec 18, T06S, R91W	COC51146

NOTIFICATION REQUIREMENTS

- Location Construction - at least forty-eight (48) hours prior to construction of location and access roads.
- Spud Notice - at least twenty-four (24) hours prior to spudding the well.
- Casing String and Cementing - at least twenty-four (24) hours prior to running casing and cementing all casing strings.
- BOP and Related Equipment Tests - at least twenty-four (24) hours prior to initiating pressure tests.
- First Production Notice - within five (5) business days after new well begins, or production resumes after well has been off production for more than ninety (90) days.
- Reclamation - At least (24) hours prior to re-shaping the well pad.

For more specific details on notification requirements, please check the Conditions of Approval for Notice to Drill and Surface Use Program.

APD approval is valid for a period of two (2) year from the signature date. An extension period may be granted, if requested, prior to the expiration of the original approval period.

Please contact Steve Ficklin (970) 947-5213 of the Glenwood Springs Energy Office at least 24 hours prior to and after spud.

Please contact **Steve Ficklin (970) 947-5213, Julie King (970) 947-5239 or Todd Sieber (970) 947-5220 of the Glenwood Springs Energy Office** at least 24 hours prior to running the surface and production casing and conducting the BOP test.

DOWNHOLE CONDITIONS OF APPROVAL FOR NOTICE TO DRILL

1. The MINIMUM TOC for the production casing needs to be **at least** 200 feet above the top of the Mesa Verde formation either during the primary cement job or through remedial cementing.
2. A cement bond log (CBL) will be run from the production casing shoe to **TOC** and shall be utilized to determine the bond quality for the production casing.
3. Any usable water zones encountered below the surface casing shall be isolated and or protected by cementing across the zone. The minimum requirement is to cement from 50 feet above to 50 feet below each usable water zone encountered. Contact BLM – Glenwood Springs, CO upon encountering any usable water zones.
4. In addition to the Onshore Order No. 2 BOP testing requirements, for safety concerns, please test BOP to 250 psi for 5 minutes.
5. In accordance with 43-CFR 3162.4(b) submit a complete set of electrical/mechanical logs in **.LAS** format with standard Form 3160-4, Well Completion or Recompletion Report and Log. Please contact Karen Conrath, (970) 947-5235 (karen_conrath@blm.gov), for further clarification.

REGULATORY REMINDERS

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

All drilling operations, unless otherwise specifically approved in the APD, must be conducted in accordance with Onshore Oil and Gas Order No. 2.

All lease and/or unit operations will be conducted in such a manner that full compliance is made with applicable laws, regulations (43 CFR 3100), Onshore Oil and Gas Orders, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors.

A copy of the approved application for permit to drill (APD), including the conditions of approval and accompanying surface use plan will be furnished to the field representative by the operator to insure compliance and will be available to authorized personnel at the drillsite whenever active construction or drilling operations are underway.

Be aware fire restrictions may be in effect when location is being constructed and/or when well is being drilled. Contact the appropriate Surface Management Agency for information.

Section 102(b)(3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1(c), requires that "not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed."

If you fail to comply with this requirement in the manner and time allowed, you shall be liable for a civil penalty of up to \$10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109(c)(3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3162.4-1(b)(5)(ii).

In the event after-hours approval or notification is necessary, please contact one of the following individuals:

Marty O'Mara Petroleum Engineer	C: 970-319-5837 W: 970-947-5221
Todd Sieber Petroleum Engineering Tech-	W: 970-947-5220
Julie King Petroleum Engineering Tech-	W: 970-947-5239
Steve Ficklin Lead Petroleum Eng Tech-	W: 970-947-5213 C: 970-319-2509
BLM Fax: 970-947-5267	

EPA'S LIST OF NONEXEMPT EXPLORATION AND PRODUCTION WASTES

While the following wastes are nonexempt, they are not necessarily hazardous.

- Unused fracturing fluids or acids
- Gas plant cooling tower cleaning wastes
- Painting wastes
- Oil and gas service company wastes, such as empty drums, drum rinsate, vacuum truck rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids
- Vacuum truck and drum rinsate from trucks and drums, transporting or containing nonexempt waste
- Refinery wastes
- Liquid and solid wastes generated by crude oil and tank bottom reclaimers
- Used equipment lubrication oils
- Waste compressor oil, filters, and blowdown
- Used hydraulic fluids
- Waste solvents
- Waste in transportation pipeline-related pits
- Caustic or acid cleaners
- Boiler cleaning wastes
- Boiler refractory bricks
- Incinerator ash
- Laboratory wastes
- Sanitary wastes
- Pesticide wastes
- Radioactive tracer wastes
- Drums, insulation, and miscellaneous solids