

**U.S. Department of the Interior
Bureau of Land Management
Little Snake Field Office
455 Emerson Street
Craig, CO 81625-1129**

ENVIRONMENTAL ASSESSMENT

EA-NUMBER: CO-100-2008-048 EA

CASEFILE/PROJECT NUMBER/LEASE NUMBER: COC 72933

PROJECT NAME: Quicksilver Resources 9 Mile 3D Seismic Project

LEGAL DESCRIPTION: T9N R94W, Sec. 5, S $\frac{1}{2}$; Sec. 6, W $\frac{1}{2}$; Sec. 7, W $\frac{1}{2}$; Sec. 9, E $\frac{1}{2}$; Sec. 18, SE $\frac{1}{4}$, W $\frac{1}{2}$; Sec. 19, N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$, SE $\frac{1}{4}$ SE $\frac{1}{4}$; Sec. 20, all. T9N R95W, Sec 12 all; Sec. 13 all; Sec. 24, N $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$, 6th PM, Moffat County, CO.

APPLICANT: Quicksilver Resources, Inc.

PLAN CONFORMANCE REVIEW: The proposed action is subject to the following plan:

Name of Plan: Little Snake Resource Management Plan and Record of Decision (ROD) approved on April 26, 1989; and the Colorado Oil and Gas Leasing & Development EIS and the ROD signed on November 5, 1991.

Remarks: The proposed 9 Mile 3D seismic survey is located primarily within two BLM-designated Resource Management Units (MUs): MU 2, "Northern Central," and MU 3, "Little Snake River." MU 3 management objectives are to improve soil and watershed values, increase forage production, and enhance livestock grazing. MU 2 has the highest or high intermediate favorability for the occurrence of oil and gas. MU 2 management objectives include provisions for the development of oil and gas resources. The boundary line for a portion of MU 7, "Scattered Sands", lies on T9N R94W, Sec. 6, within the proposed action. MU 7 Scattered Sands management objectives are to 1) provide for the development of locatable minerals and leasable minerals other than coal, oil, gas, and geothermal resources, and 2) make areas available to supply demand for sand, gravel, and other salable mineral materials.

The proposed action has been reviewed for conformance with this plan (43 CFR 1610.5, BLM 1617.3). The proposed action is in conformance with the objectives for this management unit.

NEED FOR PROPOSED ACTION: The BLM's need for the project is to respond to the

proponent's application. The BLM is considering approval of the proposed 9 Mile 3D seismic project because the activity is an integral part of BLM's oil and gas program under authority of the Mineral Leasing Act of 1920, as amended; the Federal Land Policy and Management Act of 1976, as amended; and the Federal Onshore Oil and Gas Leasing Reform Act of 1987, as amended. Additionally, 3D seismic activity is recognized as an appropriate use of BLM-administered public lands in the Little Snake Resource Management Plan (1989).

The proponent's need is to further locate and identify oil and natural gas reservoirs that may be present in geologic formations beneath the surface of the project area. A 3D seismic survey provides information about underground geology by utilizing a 3D seismograph data collection system to analyze and three-dimensionally image subsurface geologic structures and stratigraphy. The prospect overlies an area of high oil and gas potential, as identified by the Little Snake RMP.

PUBLIC SCOPING PROCESS: The Notice of Intent is posted in the Little Snake Field Office for a 30-day public review period and may be viewed during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays. The project is posted on the 2008 NEPA log on the Little Snake Field Office web site.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES: Quicksilver Resources is proposing to conduct an exploratory, three-dimensional (3D), geophysical seismic survey of the 9 Mile 3D seismic survey project area (Attachment 1). The prospect area will cover 16 sections located in Moffat County, Colorado. To initiate the permitting process on Federal lands in the project area, Quicksilver Resources submitted on March 17th, 2008 a Notice of Intent (NOI) to conduct oil and gas geophysical exploration operations to the Bureau of Land Management (BLM), Little Snake Field Office. The proposed project area includes approximately 61.5 linear miles of proposed receiver line and 23.75 linear miles of proposed source lines. The seismic data collection lines are to be placed within approximately 10,240 acres lying within about 24 square miles of land that occupies Federal, state, and private lands within portions of T9N R94W and T9N R95W of Moffat County, Colorado (Attachment 1). The proposed seismic survey would facilitate development of a 3D image of the geologic structures and stratigraphy underlying the project area. Pending project approval, the proposed seismic survey would begin immediately.

The 9 Mile 3D project area is approximately 4 miles wide (East to West) by 3 miles long (North to South). A total of 23.75 linear miles of vibrator travel routes along source lines are planned in this area. Approximately 4,760 acres of the proposed project area is comprised of federally administered lands. Actual surface use by the proposed project would be restricted to 100-foot corridors along the seismic lines and staging and survey base station areas, both of which encompass only a percentage of the total project area. Approximately 5,480 acres of the proposed project area would occur on State and private lands not currently administered by the Federal government.

Legal descriptions of lands affected by the proposed project regardless of surface ownership are

included in Table 1:

Table 1. Lands Affected by the Proposed Project	
Township & Range	Sections
T9N R94W	4-9, 16-21
T9N R95W	1, 12, 13, and 24

The exploratory seismic survey would involve four phases:

Phase 1: Planning Surveys and Pre-Approval Actions. The area would be surveyed and source and receiver lines would be laid.

Phase 2: Source generation. Vibroseis techniques would be used to create seismic (sound) waves that would be reflected from various sub-surface features back to the surface.

Phase 3: Data acquisition. These reflected seismic (sound) waves and patterns arising from the different underground geologic strata would be recorded for subsequent processing and evaluation.

Phase 4: Demobilization. Subsequent project clean up and reclamation activities would be performed.

Phase 1: Planning Surveys and Pre-Approval Actions: Planning surveys for the proposed seismic exploration project have commenced and are expected to be completed by June, 2008. Due to the time lag between surveying and actual initiation of source generation activities, it may become necessary to re-flag some of the receiver and source lines prior to the start of the actual geophysical survey. To accurately define the extent and location of project activities, a survey crew would locate and place temporary markers (including lathe, pin flags, flagging and/or spray paint as appropriate) at receiver and source points using a high-accuracy global positioning system (GPS). The survey crew would establish and flag the receiver and source point locations and travel routes between them. This work would be completed both on foot, in trucks, and/or using ATVs from existing roads and trails including off-road travel as necessary or required. The survey crew would be responsible for positioning source point stations such that they avoid all known and apparent cultural, natural, and existing land use features of importance.

Identified sites/areas of potential concern for cultural resources would be flagged for avoidance according to BLM-approved criteria. Those locales within the overall project area where the formation crops out at the surface and that could potentially be affected by disturbance from seismic survey activities (overland access routes for vehicles) would also be inventoried for the presence of fossilized vertebrate remains by a qualified paleontologist.

Phase 2: Source generation: Vibroseis buggies would be used as the method of source generation and would be utilized to the greatest extent possible in all accessible areas. These buggies are well suited for use on the flat terrain and roads within the project area. No source generation would occur along the banks or in the bottoms of existing drainages. Source lines would be oriented North-South on 1,760 ft line spacing with a 330 ft source interval. There would be a total of approximately 816 source points in the project area. Receiver lines are oriented in an

East-West direction and are spaced 660 ft apart. There are approximately 3,225 receiver points within the project area, spaced 165 ft apart. Locations have been positioned to avoid rough terrain, existing facilities, or other areas of concern such as drainages, wetland areas, archaeological and paleontological sites, or biological sites. Two sets of two vibrators working in separate areas would travel staggered formation and in a zig-sag path to prevent trail marking, overlapping wheel paths and stopping to vibrate at each surveyed source point in sequence. Vibroseis buggies would proceed from one source location to the next with a single pass per source line and buggies would follow GPS and flagged travel routes. A vibrator scout on an ATV may be utilized to assist the vibrators in acquiring the source lines and to ensure that the vibrator buggies stay on the selected source routes. After testing has been completed, it may be necessary to utilize four vibrators on each source point instead of two to get the appropriate amount of energy in the ground. If this becomes the case, the four vibrators would travel bumper to bumper stopping to vibrate at each surveyed source point.

For safety reasons, the routes would be pre-scouted during the daylight hours prior to source generation activities using ATVs. During the daylight hours, the vibroseis buggies would be expected to travel between source points at speeds ranging between seven and ten miles per hour. No additional clearing or grading of the existing roads and trails are proposed. Buggy vibrators would only be refueled at designated staging areas and on existing roads/trails or source line/road intersections during seismic survey operations.

To generate ground vibration waves, a buggy vibrator would lower a rectangular 26.9 feet-squared (2.5 m^2) metal pad onto the ground surface at a pressure of 62,000 pounds of peak force. The buggy vibrator would then cause the pad to pulse or shake thereby generating a series of ground vibrations. Modern vibrator electronics provide force control on the metal pad resulting in consistent ground contact and minimizing surface disturbance and compaction. Duration and frequency of buggy vibrator shaking would be 8 sweeps times 12 seconds long, at 6 to 96 hz start/end frequency pulse.

The Vibroseis buggies are AHV IV buggies and would weigh about 60,000 pounds and would be equipped with standard flotation tires approximately 43 inches in width and are low impact tires. Surface contact pressures on the ground surface would be approximately 12 psi for each tire. No additional clearing or grading of the existing roads and trails are proposed. Buggy vibrators would only be refueled at the designated staging areas and on existing roads/trails or source line/road intersections during seismic survey operations.

Phase 3: Data acquisition:

Crew members would drive along receiver lines in a one-ton pickup, prepare the radio-telemetric station, and manually connect cables and geophones. Tracking along receiver lines will be minimized by using a single pass layout, single pass pickup with the line trucks, using a zig-zag path to prevent making a visible trail. Survey and troubleshooting will be done off of light ATV's using a zig-zag path to prevent trail making. Seismic cable and attached geophones would be laid out around each station in a pre-determined pattern. The geophones mounted on a four-inch spike would be placed into the soil using foot pressure. The crewmember would then

proceed to the second bag and repeat the set up of the first station (receiver location) and its network of cable and geophones. Stations, cable, and geophones would be laid out in this manner at each station across the project area. Quicksilver Resources would use a recording system that involves a continuous cable that connects all receiver stations and receiver lines to each other and to the recording truck where the data is collected.

Phase 4: Demobilization: The demobilization task would proceed concurrently with data acquisition. All pin flags, flagging, lathe and other “trash” would be gathered daily as the field groups and crew members complete data-acquisition portions of the project. ATVs would be utilized to clean up flagging on/along the source lines and all “trash” would be collected at points on roads or trails and transported by vehicle to staging areas where personnel would organize materials, handle equipment, and dispose of used/unusable materials. A follow up or “trash” crew would make a complete sweep of the project area to ensure that no trash or equipment has been left behind upon completion of data acquisition and prior to a filing of a completion report. This task would be completed within about 5 days subsequent to the conclusion of data acquisition.

NO ACTION ALTERNATIVE: Implementation of the No Action Alternative would likely result in the continuation of current land uses and the maintenance of resource development trends on BLM-administered lands in the project area. The BLM has leased a majority of the Federal minerals, including oil and gas, within the boundaries of the project area. These Federal leases grant to the lessee the right to explore, drill, and remove the leased resource in the leasehold. Although selection of this alternative would preclude implementation of the proposed geophysical seismic exploration project, this alternative would not preclude other oil and gas exploration or development on BLM-administered lands based on future analyses and approval of specific proposals. In addition, oil and gas exploration activities could still occur on state and private lands in the project area.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES/MITIGATION MEASURES

SURFACE DISTURBANCE ESTIMATES

Proposed Action:

Surface disturbance as a direct result of the seismic survey operations including buggy passage to source locations would total approximately 123 total acres (1.2 percent) of the estimated 10,240 acre total project area.

Surface disturbance from each vibroseis buggy would typically consist of two, 3-foot wide tracks (total disturbance of six feet per vibroseis buggy) from the floatation tire-equipped, 11.5-foot wide vibroseis buggies. Total surface disturbance from a single vibroseis buggy was multiplied by a factor of two to account for tortuosity of travel corridors, double passes, and travel between lines. On upland areas, four vibroseis buggies would travel abreast in a box formation and the single vibroseis buggy disturbance is multiplied by an additional factor of two.

Actual surface disturbance resulting from buggy vibrator travel would typically consist of two, 36 inch wide tracks (total disturbance of approximately six feet per buggy) from the buggies. The use of flotation tires on the buggies with surface contact pressures ranging between 9 and 15 psi would minimize the direct and/or indirect impacts to biological and physical resources encountered on/along the route with these impacts primarily limited to:

- Crushing of grass/shrub stems encountered on cross-country routes;
- Some visible soil disturbance from vehicle passage due primarily to the lugs (cleats) on the flotation tires - particularly in areas devoid of or with sparse vegetative cover; and
- Minor rutting may occur in loose soils devoid of vegetative cover or in those cases where sudden precipitation events overtake source generation activities and equipment must be moved back to existing roads/staging areas until soil conditions are more favorable.

The crushing of grass/shrub stems and “visible” tracks are expected in conjunction with routine seismic survey activities. These impacts are expected to be apparent immediately following seismic survey activities, but would diminish through time (TRC 2007). Minor rutting as defined above is possible, particularly in areas devoid of vegetation or where loose soils are encountered, but would not be expected to be commonplace or widespread in nature. Major rutting (ruts in excess of two inches) would be avoided to the greatest extent possible, but is possible under certain meteorological conditions as outlined above. Quicksilver Resources would take every precaution to ensure that surface disturbances resulting from off-road activities are limited to the crushing of vegetation and minor soil disturbances related to tire configurations. In cases where soil conditions (wet and/or saturated soils) are such that rutting may occur, operations would be suspended and the equipment would be moved back to existing roads or staging areas until such time as cross-country operations could proceed with a minimal amount of surface disturbance.

Any surface disturbance resulting from project-related activities including, but not necessarily limited to, repeated vehicle use of staging areas, inadvertent rutting along source lines, etc. would be repaired and re-seeded with a seed mixture appropriate for the area as recommended by the AO. Repair of existing disturbances would involve leveling of ruts and limited leveling of other irregularities where necessary (including access routes, staging areas and shot points) as approved by the AO. Repairs would be conducted using hand tools or small, motorized pieces of equipment (such as a bobcat or skid steer) with AO approval.

No Action Alternative:

Under the No Action Alternative, the 9 Mile 3D Project would not be conducted and therefore there would be no surface disturbance associated with the project.

CRITICAL RESOURCES

AIR QUALITY

Affected Environment: There are no special designation air sheds or non-attainment areas nearby that would be affected by the proposed action.

Environmental Consequences, Proposed Action: Short term, local impacts to air quality resulting from combustible engine exhaust and dust from surface disturbing operations would result during operations. The emissions from these activities consist of both gaseous and particulate fractions. Gaseous constituents from diesel engine exhaust include carbon dioxide, carbon monoxide, nitric oxide, nitric dioxide, oxides of sulfur and hydrocarbons. Fine particulates of soot from diesel exhaust and fugitive dust from soils would be localized to the project area. The health effects of these emissions are largely from long-term and occupational exposure. The proposed action would not adversely affect the regional air quality. Vehicle traffic would loosen the soil surface in the short term and this would only be a problem in areas having a short or sparse brush canopy where wind erosion could occur and localized dust could be generated in the short term. Once the soil surface receives some amount of moisture physical or biological crusts will likely ameliorate this impact.

Environmental Consequences, No Action: Under the No Action Alternative, the 9 Mile 3D Project would not be conducted and therefore air quality would not be affected.

Mitigative Measures: None.

Name of specialist and date: Ole Olsen 4/17/08

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC)

Affected Environment: Not Present.

Environmental Consequences, both alternatives: Not applicable.

Mitigative Measures: Not applicable.

Name of specialist and date: Rob Schmitzer 4/18/08

CULTURAL RESOURCES

Affected Environment: Cultural resources, in this region of Colorado, range from late Paleo-Indian to Historic. For a general understanding of the cultural resources in this area of Colorado, see *An Overview of Prehistoric Cultural Resources, Little Snake Resource Area, Northwestern Colorado*, Bureau of Land Management Colorado, Cultural Resources Series, Number 20, *An Isolated Empire, A History of Northwestern Colorado*, Bureau of Land Management Colorado, Cultural Resource Series, Number 2 and *Colorado Prehistory: A Context for the Northern Colorado River Basin*, Colorado

Council of Professional Archaeologists.

Environmental Consequences, Proposed Action: The proposed project(s), Ninemile Seismic Project, has undergone a Class III cultural resource survey:

Witt, Thomas and Scott Phillips

2008 Class III Cultural Resource Inventory for the Ninemile 3-D Geophysical Exploration Project, Moffat County, Colorado (BLM#127.1.08)

Phillips, Scott

2008 Addendum to the Class III Cultural Resource Inventory for the Ninemile 3-D Geophysical Exploration Project, Moffat County, Colorado (BLM#127.1.08)

The survey identified no eligible to the National Register of Historic Places cultural resources. The proposed project may proceed as described in this EA with the following mitigative measures in place.

Due to this being a non-routine undertaking under the Colorado Protocol, the State Historic Preservation Office was consulted with prior to this input. The State Historic Preservation Office gave concurrence with the work on this project on July 16, 2008.

Environmental Consequences, No Action: Under the No Action Alternative, the 9 Mile 3D Project would not be conducted and therefore cultural resources would not be affected.

Mitigative Measures: The following standard stipulations apply for this project:

1. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the authorized officer (AO) at (970) 826-5000. Within five working days, the AO will inform the operator as to:

- Whether the materials appear eligible for the National Register of Historic Places;
- The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again; and
- Pursuant to 43 CFR 10.4(g) (Federal Register Notice, Monday, December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by telephone at (970) 826-5000, and 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), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

2. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

Name of specialist and date: Robyn Watkins Morris 7/16/08

ENVIRONMENTAL JUSTICE

Affected Environment: The proposed action is located in an area of isolated dwellings. Ranching, farming and oil/gas development are the primary economic activities.

Environmental Consequences, both alternatives: The project area is relatively isolated from population centers, so no populations would be affected by physical or socioeconomic impacts of either alternative. Neither alternative would directly affect the social, cultural or economic well-being and health of Native American, minority or low-income populations.

Mitigative Measures: None.

Name of specialist and date: Mike Andrews 4/17/08

FLOOD PLAINS

Affected Environment: Small ephemeral and wetland draws are present in the affected area. These are primarily headwater stream segments draining ridges and hill slopes. No large floodplain areas occur.

Environmental Consequences, Proposed Action: If the ephemeral draws are wet from snowmelt or storm runoff at the time operations commence they could be deeply rutted by vehicles crossing the drainage.

Environmental Consequences, No Action: Under the No Action Alternative, the 9 Mile 3D Project would not be conducted and no impacts to floodplains would occur.

Mitigative Measures: None.

Name of specialist and date: Ole Olsen 4/18/07

INVASIVE, NONNATIVE SPECIES

Affected Environment: Invasive and noxious weeds are present in the affected area. Invasive annuals such as downy brome (cheatgrass), halogeton, blue mustard and yellow alyssum commonly occur in the affected area and are occupying disturbed areas caused by oil and gas development and recently disturbed pipeline corridors. Invasive annual weeds are typically established in disturbed and high traffic areas, whereas, biennial and perennial noxious weeds are less common in occurrence. Downy brome and halogeton are on the Colorado List C of noxious weeds. Colorado List B noxious weeds that are present within the West Great Divide Allotment include Canada thistle and bull thistle. Other Colorado List B noxious weeds that are present in the vicinity and could potentially become established within the affected area include Russian knapweed, hoary cress (whitetop), houndstongue, dalmation toadflax and other biennial thistles.

Environmental Consequences, Proposed Action: Existing roads and rangeland will be traversed by vehicles that may have noxious weed seeds caught on the vehicles or in dried mud adhered to vehicles. Vehicles moving through brush can easily dislodge any seed that may be carried into the project area. Any establishment of biennial and/or perennial weeds that may result from these operations would likely not be identified for a few years following operations.

Environmental Consequences, No Action: Operations would not be conducted and no invasive or noxious weeds would be introduced.

Mitigative Measures: Prior to commencing operations, all surface vehicles used to perform the proposed activity must be washed, especially the under-carriage, to remove mud and weed seed. The operator will be responsible for treating any noxious or poisonous weeds introduced as a result of the geophysical project. The BLM will monitor the area for 3 years after project completion and will notify the operator if noxious weeds develop. If noxious weed infestations develop during the monitoring period, the operator will be required to obtain a pesticide use permit and have a licensed applicator treat the affected areas.

Name of specialist and date: Ole Olsen 5/1/08

MIGRATORY BIRDS

Affected Environment: The project area contains potential nesting and/or foraging habitat for the following USFWS 2002 Birds of Conservation Concern: Brewer's sparrow, sage sparrow, ferruginous hawk, golden eagle, northern harrier, Swainson's hawk, Wilson's phalarope, and loggerhead shrike. Although several of these species are known to nest in the area, GIS data for specific nest locations are currently unavailable.

Environmental Consequences, Proposed Action: Granting the operator's request would result in disturbance of 123 acres of big sagebrush shrubland, Wyoming big sagebrush, saltbush fans and flats, and juniper habitat. Since migratory birds in this region conclude breeding and nesting by August, and the project would occur during late summer and fall, impacts would be limited to short-term habitat degradation. Although no vegetation would be removed as a result of this action, other impacts may occur including crushing and killing of vegetation; introduction and spread of weeds; and soil erosion, rutting, and compaction. Activities associated with the seismic survey could lead to nest destruction or abandonment. Timing restrictions in place to protect nesting sage grouse will help ensure nesting Brewers sparrows and sage sparrows are not disturbed by construction activities. A portion of these species nesting season is not covered by this timing restriction. Take may occur if construction is conducted during this time period.

Environmental Consequences, No Action: Project-related impacts to migratory birds and their habitats would not occur under the No Action Alternative.

Mitigative Measures: None.

Name of specialist and date: Gail Martinez 7/14/08

NATIVE AMERICAN RELIGIOUS CONCERNS

A letter was sent to the Uinta and Ouray Tribal Council, Southern Ute Tribal Council, Ute Mountain Ute Tribal Council on May 5, 2008. The letter listed the FY08 and FY09 projects that the BLM would notify them on and projects that would not require notification. A follow up phone call was performed on June 16, 2008. No comments were received (Letter on file at the Little Snake Field Office). This project requires no additional notification.

Name of specialist and date: Robyn Watkins Morris 7/16/08

PRIME & UNIQUE FARMLANDS

Affected Environment: Not Present.

Environmental Consequences, both alternatives: None.

Mitigative Measures: None.

Name of specialist and date: Ole Olsen 4/17/08

T&E AND SENSITIVE ANIMALS

Affected Environment: There are no federally listed threatened or endangered animal

species in the vicinity of the Proposed Action.

Environmental Consequences, both alternatives: None.

Mitigative Measures: None.

Name of specialist and date: Gail Martinez 7/14/08

T&E AND SENSITIVE PLANTS

Affected Environment: There are no federally listed threatened or endangered or BLM sensitive plant species within the proposed project area.

Environmental Consequences, both alternatives: None.

Mitigative Measures: None.

Name of specialist and date: Hunter Seim 4/21/08

WASTES, HAZARDOUS OR SOLID

Affected Environment: If a release does occur then the environment affected would be dependent on the nature and volume of material released. If there are no releases then there would be no affect on the environment

Environmental Consequences, Proposed Action: Consequences would be dependent on the volume and nature of the material released. In most every situation involving hazardous materials, there are ways to remediate the area that has been contaminated. Short term consequences would occur, but they can be remedied, and long term impacts will be minimal.

Environmental Consequences, No Action: No project-related releases would occur.

Mitigative Measures: None.

Name of specialist and date: Marilyn D. Wegweiser, 4/4/08

WATER QUALITY - GROUND

Affected Environment: The project area is within the Little Snake River watershed and is supported by a sandstone aquifer of the Colorado Plateaus Aquifers (USGS, 2002). The depth to the aquifer, as well as the water quality, varies in the area.

No source holes would be drilled and no explosives would be detonated in the 9 Mile 3D

seismic study.

Environmental Consequences, both alternatives: None.

Mitigative Measures: None.

Name of specialist and date: Marilyn Wegweiser, 4/4/08

WATER QUALITY - SURFACE

Affected Environment: Small ephemeral and wetland tributaries to Greasewood Gulch are present in the affected area on BLM lands. Greasewood Gulch is an ephemeral tributary to the Little Snake River, which is a perennial tributary to the Yampa River. The water quality of these stream segments is presently supporting the classified uses designated for each.

Environmental Consequences, Proposed Action: Activities along the source and receiver lines with Vibroseis buggies and other vehicle traffic could result in minor surface disturbance but this would not be expected to cause any appreciable increase of sediments to surface water. Any increase of soil erosion and sediment delivery to stream drainages would be short term. Mitigation of impacts has been discussed under soils, surface hydrology and riparian resource sections. Mitigation has been recommended which would minimize surface rutting of upland soils, avoid stream crossings if wet soils are present, avoid riparian areas with all vehicle use and terminate operations under adverse conditions. These mitigative measures would be considered Best Management Practices that would reduce surface disturbance to an acceptable level.

Environmental Consequences, No Action: Project-related impacts to surface water quality would not occur under the No Action Alternative.

Mitigative Measures: Same as for soils, surface hydrology and riparian resources.

Name of specialist and date: Ole Olsen 6/13/08

WETLANDS/RIPARIAN ZONES

Affected Environment: A wetland draw is present in T9N R94W, section 9, E1/2E1/2 on the eastern end of the project area. It is associated with BLM Spring No. 048-08 located in the SESE quarter of section 9. The riparian system was last assessed in August 2000 as functioning at risk.

Environmental Consequences, Proposed Action: The source lines for the proposed geophysical activities would roughly parallel the wetland draw, but one proposed source line crosses the draw on the north end. Receiver lines would cross the draw in several

locations. Crossing wet or moist soils in riparian areas would cause rutting and or compaction that could lead to damaged vegetation, reduced vegetative growth, and/or accelerated erosion. An existing road crossing occurs less than 0.25 miles north of where the source line is proposed to cross and could be utilized for the vibroseis buggies. Receiver lines would need to be hand carried across the wetland draw.

No additional riparian areas have been identified, but some potential exists for isolated areas to be encountered; if present these would be associated with spring and seep areas.

Environmental Consequences, No Action: Project-related impacts to riparian resources would not occur under the No Action Alternative.

Mitigative Measures: Vibroseis buggies, ATV's and all other vehicle use will avoid crossing the wetland draw for its entire length on BLM lands in T9N R94W, section 9, E1/2E1/2. Surveying equipment and materials and receiver lines will be hand carried across the draw. All riparian and wetland sites will be avoided in this manner.

Name of specialist and date: Ole Olsen 6/13/08

WILD & SCENIC RIVERS

Affected Environment: Not Present.

Environmental Consequences, both alternatives: Not Applicable.

Mitigative Measures: Not Applicable.

Name of specialist and date: Rob Schmitzer 4/18/08

WILDERNESS, WSAs

Affected Environment: Not Present.

Environmental Consequences, both alternatives: Not Applicable.

Mitigative Measures: Not Applicable.

Name of specialist and date: Rob Schmitzer 4/18/08

NON-CRITICAL ELEMENTS

SOILS

Affected Environment: The soils that are mapped on BLM lands within the proposed 9

Mile 3D seismic survey area are the Maysprings coarse sandy loam, 3 to 12 percent slopes; Rock River sandy loam, 3 to 12 percent slopes; Maysprings-Gretdivid loamy coarse sands, 10 to 20 percent slopes; and the Ryark-Powderwash complex, 2 to 15 percent slopes. Upland soils in the project area are generally well covered by vegetation, exhibit moderate soil properties for permeability and runoff except for the Powderwash soils which have very slow permeability and high runoff. The soils are rated as also having a moderate soil rutting hazard.

Environmental Consequences, Proposed Action: Ruts can form in saturated soils because of low strength behavior of the soil. Ruts can form at moderate moisture levels, but would be attributed more to compaction. Ruts can intercept surface overland flow and concentrate runoff water causing accelerated erosion which increases with slope. Mitigating actions to eliminate ruts caused by off road travel may cause additional surface disturbance, subject to erosion or weed infestations. Minor surface ruts on level to slight slopes which have some vegetation can disappear with time as natural processes begin to heal the surface, but excessive rutting could lead to long term erosion and gully formation.

Environmental Consequences, No Action: Project-related impacts to the soil resource would not occur under the No Action Alternative.

Mitigative Measures: Operations will be suspended on upland sites if continuous ruts by truck or buggy tires are developing in excess of 2 inches on 85% of a source line on any upland soil. Operations will be suspended on upland sites if intermittent rutting on 15% of any line exceeds 4 inches on slopes less than 20 percent and in excess of 2 inches on slopes greater than 20 percent.

Name of specialist and date: Ole Olsen 6/13/08

SURFACE WATER

Affected Environment: Small ephemeral and wetland draws are present in the affected area. These are primarily headwater stream segments draining ridges and hill slopes. BLM Spring No. 048-08 located in T9N R94W, section 9, SESE provides a water source for the wetland draw downstream.

Environmental Consequences, Proposed Action: Seismic operations conducted with vehicles can cause rutting within stream drainages if soils are wet from recent runoff events. Although operations may commence on upland sites with minimal rutting shortly after a rainstorm, wet and/or moist soils could still be encountered within drainages. Ruts left in the stream drainages could cause runoff water to scour and enlarge the disturbance. Rutting that parallels the stream drainage would have the greatest potential to cause

adverse impacts. Stream drainages that are still wet from recent runoff events should be avoided, but some inadvertent rutting may still occur. Ruts that are created within stream drainages will need to be corrected to ensure that they are stable.

Environmental Consequences, No Action: Project-related impacts to surface water would not occur under the No Action Alternative.

Mitigative Measures: Operations shall be done in a manner which prevents damage, interference, or disruption of water flows and improvements associated with all springs, wells or improvements. It is the operator's responsibility to enact the precautions necessary to prevent damage interference or disruptions. However, in no instance will vibrating occur within 300 feet of springs, wells or impoundments unless specifically approved by the Authorized Officer.

Seismic vehicles will not be authorized to cross stream drainages with saturated soil conditions. Ruts that are created within stream drainages will need to be corrected to ensure that they are stable.

Name of specialist and date: Ole Olsen 6/13/08

RANGE MANAGEMENT

Affected Environment: The proposed project would occur in portions of four grazing allotments utilized by three different livestock operators. All of the lands within the project are managed for livestock grazing by sheep, cattle and horses. The combination of seasons on these allotments allows for livestock to be present throughout the year. Numerous fences and developed water sources are located throughout the proposed project area. Fence crossings should be identified by the proponent.

Environmental Consequences, Proposed Action: Proposed seismic survey operations may adversely impact livestock utilizing these allotments during the period of survey activities. Vibroseis buggy, helicopter, and ATV activity may cause livestock to scatter, potentially move out of individual allotments, or to trespass onto adjacent allotments. Although seismic survey activity in these allotments could impact livestock and their management, the impacts would be short term and minimal. The proponent has committed to working with the affected livestock operators and is committed to maintaining and restoring range improvements that may be affected by seismic activities as described in the Proposed Action.

Environmental Consequences, No Action: No impacts to livestock operations would occur.

Mitigative Measures: None.

Name of specialist and date: Christina Rhyne 4/29/07

REALTY AUTHORIZATIONS

Affected Environment: The proposed project area contains three existing realty authorizations: COC18423, Rocky Mountain Natural Gas Company pipeline, COC52705, Colorado Interstate Gas pipeline and COD053725, Amoco pipeline.

Environmental Consequences, Proposed Action: Existing pipelines could be accidentally damaged during project activities, unless avoided. Impacts would be temporary until any damage is repaired.

Environmental Consequences, No Action: None.

Mitigative Measures: Potential damage to existing rights-of-way would be minimized by:

- Avoid existing rights-of-way during the project.
- Utilize the “One Call” system to locate and stake the centerline and limits of all underground facilities in the area prior to project initiation.
- Provide 48-hour notice to the owner/operator of all facilities prior to performing any work near existing rights-of-way.

Name of specialist and date: Mike Andrews 4/21/08

VEGETATION

Affected Environment: Within the proposed project area there are two primary ecological sites – Sandy and Rolling Loam. The majority of the uplands are dominated by sagebrush shrublands within these communities. Vegetation within these communities consists of Wyoming big sagebrush, antelope bitterbrush, needle-and-thread grass, Indian ricegrass, western wheatgrass, prairie junegrass, bluebunch wheatgrass and bottlebrush squirreltail, as well as other perennial forbs, grasses and shrubs.

Environmental Consequences, Proposed Action: Operation of vibroseis buggies would result in temporary (less than one year) to short term effects (one to three years) on vegetation. This project would occur after the completion of the growing season when the grasses would be dormant and impacts to those species would be negligible. The proposed time frame of this project would also likely occur prior to the cool season grasses initiating fall growth again resulting in minimal impacts. Although no vegetation would be removed, compression of plants and breakage of limbs on woody shrubs would occur. The direct impact area of the tires on the vibroseis buggies includes 75 ac of the 10,240 ac project area (0.7%). The allowed actual surface use of the impacted area includes approximately 1033 acres (10%) along the seismic lines. Although compression

and possible breakage of woody parts and some plant species would occur, BLM monitoring of post-survey conditions for several previous projects has determined that off-road buggy travel over vegetation causes minimal impacts and vegetation usually recovers within days or weeks. As such, impacts to vegetation due to seismic exploration activities are expected to be temporary and minimally invasive.

Environmental Consequences, No Action: No changed impacts to vegetation would occur under this alternative as no seismic survey would be conducted within the proposed project area

Mitigative Measures: None.

Name of specialist and date: Christina Rhyne 5/1/08

WILDLIFE, AQUATIC

Affected Environment: Greasewood Gulch is an intermittent, lotic stream (i.e., contain perennial reaches) that provides habitat for a variety of insects, amphibians, and reptiles. This waterway is not known to support fish populations.

Environmental Consequences, Proposed Action: Minor sedimentation, habitat structure modification, and general site degradation may occur as a result of this action. Such effects would be minimized by applying the following mitigation.

Environmental Consequences, No Action: No impacts to aquatic wildlife would occur at this time as no seismic survey would be conducted within the proposed project area.

Mitigative Measures: A buffer of 330 feet will be maintained between vehicles and wetlands, springs, and riparian zones unless on existing roads. No wetland/riparian vegetation will be removed during the placement of geophones. Any intermittent drainage crossings will be designed to minimize sedimentation, soil erosion, and compaction. All bank cuts and sloughs caused by project activities shall be constructed to their original contour and will be reclaimed according to standards of the appropriate surface management agency. A qualified biologist will be present at all times to monitor and ensure compliance with this stipulation.

Name of specialist and date: Gail Martinez 7/14/08

WILDLIFE, TERRESTRIAL

Affected Environment:

Common Species

Various rodents, rabbits, snakes, bats, and other species such as foxes, coyotes, and bobcats inhabit the region.

Big Game

The entire area serves as severe winter range for elk.

Raptors

The entire area occurs within bald eagle (sensitive species) winter range. Bald eagles likely forage in the project area. No other raptor nests have been recorded in the vicinity. Species of interest which may occur here include golden eagle, bald eagle, red-tailed hawk, northern harrier, and Swainson's hawk.

Grouse

Greater sage grouse utilize the area for winter range, breeding, nesting, and brood-rearing. Three active leks occur within the immediate project area. Depending on proximity to display grounds and site-specific characteristics, the majority of the project area provides potential sage grouse nesting habitat. Confirmed brood-rearing habitat occurs along the southern and northeastern periphery of the project area.

Environmental Consequences, Proposed Action:

Common Species

General impacts for common species include short-term habitat degradation and loss; individual displacement; and reduced fitness. Such impacts are more significant during critical seasons, such as winter or reproduction. Wildlife using the area is likely to be temporarily displaced during project activities and may find the area temporarily unsuitable once the project is complete. Most small mammals using the project area would be capable of avoiding project activities and should not be directly harmed, although some burrowing animals may be killed by seismic vehicles or equipment. Given the scale and timing of disturbance, the proposed action would be unlikely to have measurable impacts to common wildlife.

Big Game

Potential impacts for big game include short-term habitat degradation; individual displacement; and reduced fitness. Such impacts are more significant during critical seasons, such as winter or reproduction. Wildlife using the area is likely to be temporarily displaced during project activities and may find the area temporarily unsuitable once the project is complete. Provided the following mitigation is applied, impacts on large game would likely be limited to short-term modification of habitat and temporary displacement of animals. Given the scale and timing of disturbance, the proposed action would be unlikely to have measurable impacts to big game populations.

Raptors

Impacts on raptors may include minor modification of prey base/foraging habitat, temporary displacement, and reduced fitness. Since proposed activities would occur late summer and fall, no breeding or nesting birds would be disturbed.

Grouse

Potential impacts on sage grouse include habitat degradation; individual displacement; and reduced fitness. Such impacts are more significant during critical seasons, such as winter or reproduction. Individuals using the area are likely to be temporarily displaced during project activities and may find the area temporarily unsuitable once the project is complete. Most individuals using the area would be capable of avoiding project activities and should not be directly harmed. Provided the following mitigation is applied, and given the timing and scale of disturbance, the proposed action would be unlikely to have measurable impacts to sage grouse populations.

Environmental Consequences, No Action: Project-related impacts to wildlife populations and habitats would not occur under the No Action Alternative.

Mitigative Measures:

Big Game

To protect elk, no surface disturbing activities will occur between December 1 and April 30 within severe winter range. Under mild winter conditions, the last 60 days of the time limitation period may be suspended by a BLM biologist. The decision to grant an exception would be based on winter severity and related factors. A qualified biologist will be present at all times to monitor and ensure compliance with this stipulation.

Raptors

Although current GIS records indicate no raptor nests in the project area, a few undiscovered nests potentially occur here (see potential species list, this section under “affected environment”). Since project activities would occur during late summer and fall, breeding and nesting raptors would not be disturbed. If project timing is modified, a BLM biologist must be notified so that he/she can ensure nesting birds are not negatively impacted. Furthermore, seismic lines and other activities may be adjusted if any new nests are discovered prior to or during the project; no surface occupancy (NSO) stipulations may be imposed at that time. A qualified biological will be present at all times to monitor and ensure no unknown nests occur in the area. If a nest is discovered which occurs within the species-specific NSO buffer, operations will cease and a BLM biologist will be notified immediately. The biological monitor will also be responsible for ensuring that no vegetation is cut or removed.

Grouse

To protect the greater sage grouse, all activities will adhere to the following stipulations:

- 1) No surface occupancy will occur within ¼ mile radius of leks. The NSO area may be modified by a BLM biologist depending on activity status and presence of topographical or vegetative barriers.
- 2) No surface disturbing activities will occur between March 1 and June 30 within a 2 mile radius of leks within suitable nesting habitat (projected timeframe for seismic exploration is late summer and fall). No exceptions will be granted for this restriction.

Name of specialist and date: Gail Martinez 7/14/08

OTHER NON-CRITICAL ELEMENTS: For the following elements, those brought forward for analysis will be formatted as shown above.

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Fluid Minerals		MDW 04/04/08	
Forest Management	MDW 04/04/08		
Hydrology/Ground		MDW 04/04/08	
Hydrology/Surface			OO 6/13/08
Paleontology		MDW 04/04/08	
Range Management			CR 4/29/07
Realty Authorizations			MAA 4/21/08
Recreation/Travel Mgmt		RS 4/18/08	
Socio-Economics		MAA 04/17/08	
Solid Minerals		JAM 04/21/08	
Visual Resources		RS 4/18/08	
Wild Horse & Burro Mgmt	JC 05/05/08		

CUMULATIVE IMPACTS SUMMARY:

The following sections assess the cumulative impacts of the alternatives in combination with past, present/current, and reasonably foreseeable future actions. Pursuant to NEPA, the BLM must consider the cumulative effects of the proposed action in conjunction with other activities. Cumulative impact is the impact on the environment which results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The following reasonably foreseeable development analysis identifies other actions that have, are, or would cumulatively affect the resources of concern that are addressed in this EA.

The direct and indirect effects from oil and gas development projects are dramatically different from effects of seismic exploration, primarily in that oil and gas development results in long-term disturbance from placement of well pads, pipelines, and access roads, whereas seismic exploration is mostly temporary to short-term in nature and does not involve any permanent structures or activities. Therefore, cumulative impacts from implementation of a seismic survey project such as the proposed 9 Mile 3D Seismic Survey Project last only for the duration of the seismic survey or until the next growing season for most resources.

The BLM projects that somewhere between five to ten additional geophysical surveys will be proposed on public lands within the Little Snake Field Office Planning Area within the next five years. Should Quicksilver Resources' proposed project or any other reasonably foreseeable seismic project identify areas with a high probability of oil and gas reserves, it is likely that proposals would be made to recover those resources. Any future geophysical activities or oil and gas development on public or State lands would be subject to site-specific analysis (e.g., NEPA analysis) by the responsible Surface Managing Agency.

Any land disturbing activity that impacts native vegetation affects soil functions and subsequently leads to some level of erosion, and potentially, sediment yield to stream systems. Based on reasonably foreseeable actions, vegetation disturbance, and subsequent erosion and sediment yield to drainages within the Little Snake FO Planning Area is likely to continue to increase due to surface disturbance associated with oil and gas activities, seismic exploration, livestock grazing/management, and recreational activities reasonably certain to occur. As discussed in the previous sections, erosion and sediment yield impacts from the Proposed Action is not expected to have long-term adverse effects on project area floodplains and riparian corridors. Thus, the Proposed Action would cause only negligible cumulative impacts on wetlands, floodplains and riparian corridors.

Based on reasonably foreseeable actions, vegetation disturbance within the Little Snake FO Planning Area is likely to continue to increase due to surface disturbance associated with oil and gas activities, seismic exploration, livestock grazing/management, and recreational activities reasonably certain to occur. As discussed in the previous sections, the Proposed Action is not expected to have long-term adverse effects on project area vegetation. Thus, the Proposed Action would cause only negligible cumulative impacts on these resources.

The Proposed Action could cumulatively add to short-term, small-scale losses of hunting/foraging habitats, breeding/nesting areas, and/or hiding/thermal cover; temporary displacement from habitats; and direct mortality occurring from past, present and future projects in the Little Snake FO Planning Area. Realistically, Quicksilver Resources' compliance with protective Federal stipulations regarding timing of project operations, implementation of Applicant-committed Environmental Protection Measures, and the short-term nature of their project would result in the Proposed Action only causing minimal cumulative impacts throughout the Little Snake FO Planning Area.

Although all impacts (i.e., loss of AUMs, displacement, etc.) to livestock grazing associated with

the Proposed Action would be short-term, these activities would cumulatively add to those occurring from past, present and future projects in the Little Snake FO Planning Area. Realistically, Quicksilver Resources' compliance with protective Federal stipulations regarding timing of project operations, implementation of Applicant-committed Environmental Protection Measures, and the short-term nature of the project would result in the Proposed Action only causing minimal cumulative impacts throughout the Little Snake FO Planning Area and having negligible impacts on special status wildlife species.

References:

TRC Environmental Corporation (TRC). 2007. *Sellers Draw 3-D Seismic Project Impact Evaluation, Park, Hot Springs and Washakie Counties, Wyoming*. Unpublished report. Laramie, Wyoming. 29 pp.

U.S. Geological Survey (USGS). 2006. *Ouray National Wildlife Refuge Vegetation Mapping Project*. Black Greasewood (*Sarcobatus vermiculatus*)/Saltgrass Shrubland (*Distichlis spicata* Shrubland). pp.130-132. Website Available: <http://biology.usgs.gov/npsveg/oura/descript/bs.pdf>. Accessed Online: October 2, 2006.

STANDARDS

PLANT AND ANIMAL COMMUNITY (animal) STANDARD: Wildlife using the area is likely to be temporarily displaced during project activities and may find sites unsuitable once activities are complete. Severe winter range for elk and raptors occur here. The Little Snake River Landscape was meeting this standard when assessed in 1998. The proposed action would not preclude this landscape from meeting this standard. Proper reclamation and compliance with wildlife timing stipulations and other mitigation should help to continue meeting this standard for wildlife.

Name of specialist and date: Gail Martinez 7/14/08

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (animal) STANDARD: The project area provides winter range for the bald eagle. The proposed action may result in a minimal, short-term loss of habitat or displacement of individuals but would not appreciably impact the stability or growth of special status species' populations. When assessed in 1998, the Little Snake River Landscape was marginally meeting the standard for healthy, stable, and increasing populations of sensitive and protected species. The proposed action would not preclude this landscape from meeting this standard.

Name of specialist and date: Gail Martinez 7/14/08

PLANT AND ANIMAL COMMUNITY (plant) STANDARD: No vegetation would be removed as a result of the Proposed Action and noxious and invasive weeds would be monitored and treated as appropriate. The Proposed Action would meet this standard.

The No action Alternative would meet this standard as no disturbances to the plant community would occur.

Name of specialist and date: Christina Rhyne 4/29/08

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (plant)

STANDARD: There are no federally listed threatened or endangered or BLM sensitive plant species within the proposed project area. For plants, this standard does not apply.

Name of specialist and date: Hunter Seim 4/21/08

RIPARIAN SYSTEMS STANDARD: The proposed action with mitigation provided in this Environmental Assessment will meet the riparian standard for healthy rangelands. The lentic riparian system was last assessed as functioning at risk. No vehicle crossing of the riparian system will be authorized. Avoiding the wetland draw by excluding vehicle traffic will prevent soil compaction and ruts from forming.

Name of specialist and date: Ole Olsen 6/13/08

WATER QUALITY STANDARD: The water quality standard for healthy rangelands is currently met and the proposed geophysical operations will not affect water quality. Mitigation incorporated into the proposed action or developed in this Environmental Assessment, as well as the Standard Terms and Conditions of a geophysical permit contain several Best Management Practices that will maintain the water quality of the affected stream segments.

Name of specialist and date: Ole Olsen 6/13/08

UPLAND SOILS STANDARD: The proposed action with mitigation provided in this Environmental Assessment will meet the upland soils standard for healthy rangelands. Potential impacts to upland soils have been reduced with rutting depth standards. Moderate slopes will have restrictions to avoid excessive rutting and disturbance. Decreased soil cover resulting from disturbances to vegetation is expected to be short term.

Name of specialist and date: Ole Olsen 6/13/08

PERSONS/AGENCIES CONSULTED: Uintah and Ouray Tribal Council, Colorado Native American Commission, Colorado State Historic Preservation Office.

FONSI

The environmental assessment, analyzing the environmental effects of the proposed action, has been reviewed. With the implementation of the attached mitigation measures there is 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.

1. Beneficial, adverse, direct, indirect, and cumulative environmental impacts have been disclosed in the EA. Analysis indicated no significant impacts on society as a whole, the affected region, the affected interests or the locality. The physical and biological effects are limited to the Little Snake Resource Area and adjacent land.
2. Public health and safety would not be adversely impacted. There are no known or anticipated concerns with project waste or hazardous materials.
3. There would be no adverse impacts to regional or local air quality, prime or unique farmlands, known paleontological resources on public land within the area, wetlands, floodplain, areas with unique characteristics, ecologically critical areas or designated Areas of Critical Environmental Concern.
4. There are no highly controversial effects on the environment.
5. There are no effects that are highly uncertain or involve unique or unknown risk. Sufficient information on risk is available based on information in the EA and other past actions of a similar nature.
6. This alternative does not set a precedent for other actions that may be implemented in the future to meet the goals and objectives of adopted Federal, State or local natural resource related plans, policies or programs.
7. No cumulative impacts related to other actions that would have a significant adverse impact were identified or are anticipated.
8. Based on previous and ongoing cultural surveys, and through mitigation by avoidance, no adverse impacts to cultural resources were identified or anticipated. There are no known American Indian religious concerns or persons or groups who might be disproportionately and adversely affected as anticipated by the Environmental Justice Policy.
9. No adverse impacts to any threatened or endangered species or their habitat that was determined to be critical under the Endangered Species Act were identified. If, at a future time, there could be the potential for adverse impacts, treatments would be modified or mitigated not to have an adverse effect or new analysis would be conducted.
10. This alternative is in compliance with relevant Federal, State, and local laws, regulations, and requirements for the protection of the environment.

DECISION AND RATIONALE:

I have determined that conducting this 3D seismic geophysical exploration project is in conformance with the approved land use plan. It is my decision to implement the project with the mitigation measures provided below. The project will be monitored as stated in the Compliance Plan outlined below.

To comply with established geophysical project oversight procedures (COGLD FEIS, p. D-1) and facilitate monitoring, the following mitigation measures and stipulations will be applied:

MITIGATION MEASURES:

- 1) The operator shall report progress to the BLM on a weekly basis until completion. Potential problems should be discussed. This progress report is to be made by calling Marilyn Wegweiser at (970) 826-5000 each Thursday, and leaving a detailed voice mail message if he is not available.
- 2) Operator is responsible for all cultural resources that are present within the immediate project area during the operation, and clean up of the 3D seismic lines.

The following standard stipulations apply for this project:

- a. The operator is responsible for informing all persons who are associated with the operation that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the authorized officer (AO) at (970) 826-5000. Within five working days, the AO will inform the operator as to:
 - Whether the materials appear eligible for the National Register of Historic Places;
 - The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again; and
 - Pursuant to 43 CFR 10.4(g) (Federal Register Notice, Monday, December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by telephone at (970) 826-5000, and 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), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

b. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

3) Prior to commencing operations, all surface vehicles used to perform the proposed activity must be washed, especially the under-carriage, to remove mud and weed seed. The operator will be responsible for treating any noxious or poisonous weeds introduced as a result of the geophysical project. The BLM will monitor the area for 3 years after project completion and will notify the operator if noxious weeds develop. If noxious weed infestations develop during the monitoring period, the operator will be required to obtain a pesticide use permit and have a licensed applicator treat the affected areas.

4) Vibroseis buggies, ATV's and all other vehicle use will avoid crossing the wetland draw for its entire length on BLM lands in T9N R94W, section 9, E1/2E1/2. Surveying equipment and materials and receiver lines will be hand carried across the draw. All riparian and wetland sites will be avoided in this manner.

5) No off-road vehicle travel shall be permitted within 330 feet of surface water or riparian areas. No source points shall be located in drainages within the project area, and equipment shall not be permitted to travel in any area that exhibits saturated soil conditions in or adjacent to drainages. Seismic operations shall remain at least 330 feet from all springs, stock ponds, and impoundments. The proponent shall clean up all oil, fuel or other spills, including contaminated soils. All spill-related material shall be hauled to a Colorado DEQ approved disposal site.

6) A buffer of 330 feet shall be maintained between vehicles and wetlands, springs, and riparian zones unless on existing roads. No wetland/riparian vegetation will be removed during the placement of geophones. Any intermittent drainage crossings will be designed to minimize sedimentation, soil erosion, and compaction. All bank cuts and sloughs caused by project activities shall be constructed to their original contour and will be reclaimed according to standards of the appropriate surface management agency. A qualified biologist will be present at all times to monitor and ensure compliance with this stipulation.

7) Operations will be suspended on upland sites if continuous ruts by truck or buggy tires are developing in excess of 2 inches on 85% of a source line on any upland soil. Operations will be suspended on upland sites if intermittent rutting on 15% of any line exceeds 4 inches on slopes less than 20 percent and in excess of 2 inches on slopes greater than 20 percent.

8) Potential damage to existing rights-of-way would be minimized by:

- Avoid existing rights-of-way during the project.
- Utilize the “One Call” system to locate and stake the centerline and limits of all underground facilities in the area prior to project initiation.
- Provide 48-hour notice to the owner/operator of all facilities prior to performing any work near existing rights-of-way.

9) To protect elk, no surface disturbing activities will occur between December 1 and April 30 within severe winter range. Under mild winter conditions, the last 60 days of the time limitation period may be suspended by a BLM biologist. The decision to grant an exception would be based on winter severity and related factors. A qualified biologist will be present at all times to monitor and ensure compliance with this stipulation.

10) To protect the greater sage grouse, all activities will adhere to the following stipulations:

- a. No surface occupancy will occur within ¼ mile radius of leks. The NSO area may be modified by a BLM biologist depending on activity status and presence of topographical or vegetative barriers.
- b. No surface disturbing activities will occur between March 1 and June 30 within a 2 mile radius of leks within suitable nesting habitat (projected timeframe for seismic exploration is November). No exceptions will be granted for this restriction.

11) All debris, such as paper, cans, wire, flagging, or other trash, shall be removed and taken to a State-approved disposal site upon project completion. No oil or lubricants shall be drained onto the ground (per COGLD FEIS, p. D-3). If a spill and/or release does occur, the operator must report it to this office immediately at 970-826-5000.

12) If cultural or paleontological resources are discovered during exploration operations under this license, the licensee shall immediately notify the Field Office Manager and shall not disturb such discovered resources until the Field Office Manager issues specific instructions.

- a. Within 5 working days after notification, the Field Office Manager shall evaluate any cultural resources discovered and shall determine whether any action may be required to protect or to preserve such discoveries.
- b. The cost of data recovery for cultural resources discovered during exploration operations shall be borne by the licensee, if the licensee is ordered to take any protective measures. Ownership of cultural resources discovered shall be determined in accordance with applicable law.

STANDARD STIPULATIONS:

The following standard stipulations apply for this project:

Pursuant to 43 CFR 10.4(g) (Federal Register Notice: Monday December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by telephone (970) 826-5087, 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), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the Authorized Officer.

COMPLIANCE PLAN(S):

Compliance Schedule

Compliance will be conducted during the operations phase to insure that all terms and conditions specified in the authorization letter including the mitigation measures are followed. Periodic inspections as identified through will be conducted. Final inspections will include a site inspection to determine if all requirements have been met.

Monitoring Plan

None

Assignment of Responsibility

Responsibility for implementation of the compliance schedule and monitoring plan will be assigned to the Fluid Minerals staff in the Little Snake Field Office. Primary inspectors will be the Petroleum Engineering Technician, but the Petroleum Engineer, Environmental Scientist, Realty Specialist, and Legal Instruments Examiner will also be involved.

SIGNATURE OF PREPARER:

DATE SIGNED:

SIGNATURE OF ENVIRONMENTAL REVIEWER:

DATE SIGNED:

SIGNATURE OF AUTHORIZED OFFICIAL:

DATE SIGNED