Bureau of Land Management

Final Environmental Assessment

Robbers Roost #1 Application for Permit to Drill Oil and Gas Exploration and Development

DOI-BLM-NV-L010-2015-0018-EA

June 14, 2017

Prepared by:

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

Bristlecone Field Office
Ely, Nevada

BLM

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Chapter 1. Introduction

1.1. Identifying Information

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

Robbers Roost #1
DOI-BLM-NV-L010-2015-0018-EA
Application for Permit to Drill (APD) Oil and Gas Well

1.1.2. Location of Proposed Action

Butte Valley
White Pine County, Nevada
Township 21 North, Range 61 East; Mount Diablo Meridian (MDM) NW NE SW Section 10
Location map attached – Appendix C

1.1.3. Name and Location of Preparing Office

Bureau of Land Management
Bristlecone Field Office
702 N. Industrial Way
Ely, Nevada 89301 NVL0600

1.1.4. Identify the subject function code, lease, serial or case file number

Robbers' Roost #1 Application for Permit to Drill (APD) Case file number: NVN-82576

1.1.5. Applicant Name:

Nevada Wildcat, LLC

1.2. Background Information

An oil and gas lease, NVN-82576, was issued by the Bureau of Land Management (BLM) on October 12, 2006. The lessee is Petro Hunt LLC, and Nevada Wildcat LLC has provided a copy of its agreement with Petro Hunt. The agreement allows Nevada Wildcat to drill within the lease.

The oil and gas lease was terminated in February 2013 and reinstated in March 2013. A lease bond of $10,000 was accepted by the BLM on June 29, 2015. On January 28, 2016, a Suspension of Operations and Production was granted with an effective date of September 1, 2015. The Suspension of Operations and Production was subsequently extended. The suspension would end with an approval of the APD and Environmental Assessment (EA).

A Notice of Staking site visit was conducted on May 8, 2015. The purpose of the site visit was

to discuss potential issues prior to submission of a proposal to develop an oil well at the location. An Application for Permit to Drill was subsequently filed with the BLM on June 30, 2015. After notification that the APD was incomplete and revisions were needed, a complete APD was accepted by the BLM on August 13, 2015.

1.3. Purpose and Need for Action

The purpose is to provide Nevada Wildcat LLC approval to drill an oil well on public land within their lease. The need for the action is established by the BLM's responsibility of the Mineral Leasing Law of 1920 and under Federal Land Policy and Management Act (FLPMA).

1.4. Decision to be Made

The BLM Authorized Officer would decide whether or not to authorize the APD and if so, under what terms and conditions.

1.5. Conformance with Land Use Plans

The Ely District Record of Decision and Approved RMP, 2008 as amended
The Ely District RMP, as amended addresses land use planning decisions for the subject area. The Proposed Action and alternative is consistent with the Geology and Mineral Extraction Goal as identified on page 92 of the RMP including:

- Allow for meeting the Nation's energy needs while providing environmentally responsible production of fluid leasable minerals, and geophysical exploration for energy resources on public lands.

Nevada and Northeastern California Greater Sage-Grouse Land Use Plan Amendments (LUPA) and Final Environmental Impact Statement (FEIS), 2015
Nevada and Northern California Greater Sage-Grouse (GRSG) LUPA intent is to conserve, enhance and restore GRSG habitat by avoiding, minimizing, or compensating for unavoidable impacts of threats. The LUPA incorporates management decisions and Resource Design Features (RDFs) to avoid and minimize impacts to GRSG and its habitat. RDFs are listed in Appendix A. The oil and gas lease NVN-82576 was issued on October 12, 2006 and reinstated in 2013. The proponent had a valid existing right prior to the signing of the LUPA in September of 2015.

Required Design Features are required for certain activities in all GRSG habitats types. However, since there was a valid and existing right prior to the signing of the LUPA, the RDFs cannot be required but are recommended for this action.

1.6. Relationship to Statues, Regulations and other Plans

To the extent possible, the Proposed Action and alternatives are consistent with Federal, State, and local land use policies including:

- Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended
- State Protocol Agreement, December 2014 between BLM Nevada and Nevada State Historic Preservation Office (SHPO)
- Federal Water Pollution Control Act of 1977, as amended
- Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S. Code § 703).
- Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended (16 U.S. Code § 668).
- Onshore Oil and Gas Order #1, 2007
- Oil and Gas Exploration and Development Gold Book, amended 2007White Pine County Land Use Plan, 2008

1.7. Scoping, Public Involvement and Issues

The BLM Bristlecone Field Office conducted internal scoping with an interdisciplinary team (IDT) of specialists on August 31, 2015. On May 8, 2015 BLM personnel, the local grazing permittee, and the proponent conducted a Notice of Staking field visit. Potential issues identified during these two meetings included possible impacts upon vegetation, wildlife, wild horses, and grazing.

The Preliminary EA was posted for a 30 day public comment period (4/04/2017-5/04/2017) BLM received three comments. No substantial comments were received. Comments were received concerning wildlife, access, lighting techniques, and impacts to vegetation. Concerns regarding these resources were clarified in the EA.

Chapter 2. Proposed Action and Alternatives

2.1. Introduction

The proposed oil and gas well, Robbers' Roost #1, would be located in Butte Valley, a typical Basin and Range extension graben bounded by high-angle normal faults (Western Cordillera, 2006). The region has been the location of oil and gas exploration activities since the 1950s, with production from Railroad Valley to the south, as well as a few other smaller fields. If oil and gas resources are located by the exploration activities, the well would become a production well, with possible future modifications under Sundry Notices.

The proposed plan to conduct drilling for oil and gas was submitted in an Application for Permit to Drill by the proponent. Two access routes to the proposed well pad are proposed based on the APD and scoping: the Proposed Action route from the north, and the Southern Alternative route. The well pad location is common to both the Proposed Action and the Southern Alternative and would not vary.

2.2. Description of the Proposed Action

The Proposed Action is to construct a well pad conduct drilling for oil and gas with a single 4,000-ft. vertical exploration drill hole with conventional techniques to search for potential oil and gas resources in Butte Valley, White Pine County, Nevada. The well would become a production site if economically viable quantities of petroleum are discovered. If petroleum production is initiated, the oil and gas lease could be extended indefinitely until production becomes uneconomic. The APD did not request hydraulic fracturing (fracking). The Proposed Action includes accessing the well site from the north and that all vehicles would stay on the designated access road to the site (Appendix C).

Well Pad

The proposed well pad would have dimensions of 400 feet by 400 feet and encompass 3.67 acres (Appendix E). The well pad would be constructed outside of currently designated Greater Sage Grouse habitat. All vegetation would be cleared from the well pad location by the operator and the surface would be raised and leveled to support oil and gas drilling equipment and activities.

After construction of the well pad, the operator proposes an initial operating period of 14 days to complete drilling. If economically recoverable quantities of hydrocarbons are found, the proponent would convert the operation to a petroleum production site, and equipment and facilities would potentially remain at the location for a number of years. If petroleum is not found in sufficient quantities, reclamation of the drill pad location would begin immediately.

The gravel and water for well pad construction and drilling activities would be obtained by the operator in purchases from private sources. The operator proposes to purchase water from a private rancher who has water rights at the Crested Wheatgrass Water Well located on public land (Appendix G). The operator would confirm the water source with the BLM prior to the initiation of construction. The operator proposes to use approximately 80,000 gallons of water during the course of drilling.

Within the well pad boundaries, a reserve pit would be constructed. Reserve pits are used for storage or disposal of water, drill mud, and cuttings during drilling operations (The Gold Book, 2008, p. 16). This reserve pit, also termed the "Settling Pit" in the submitted APD, would contain drilling fluids and drill cuttings from drilling the well. As described in the Surface Use Plan of the APD, the pit would be unlined and sealed with bentonite, a relatively inert material. Testing of oil during drilling would be performed in an enclosed steel tank, and no oil would be tested in the reserve pit. No hydrocarbons would be allowed to accumulate in the reserve pit.

Best Management Practices for construction and maintenance are described in The Gold Book (The Gold Book, 2008). The reserve pit would be fenced on three sides with a four-strand barbed wire fence until petroleum exploration and extraction are completed and reclamation begins (Appendix F). Flagging would be placed on the fence to deter possible entry by wildlife. Hydrocarbons would not be allowed to accumulate in the reserve pit. The reserve pit would be allowed to dry before it is backfilled. When the reserve pit is no longer used and is dry, the operator would backfill the pit area, rip or scarify the surface, and revegetate the surface with a self-sustaining community of desirable species.

The operator's Surface Use Plan, included as part of the APD, specifies that if production is established, the BLM and a representative of the operator would inspect the site and develop upgraded requirements for a production facility. If production is initiated, the operator would construct, maintain, and repair the access road to BLM specifications.

Access Route

The proponent would reach the proposed drilling location by travelling northward from paved highway 50 along County-maintained roads. The equipment would pass the vicinity of Red Pepper Butte and Eight Mile Point in order to reach the oil and gas lease area on the western margin of Butte Valley (Appendix D). The Proposed Action would require improvement of an existing two-track road westward from the County-maintained road.

The Northern Access Route, which is part of the Proposed Action by the operator in the submitted APD, would extend for 2,167 meters (7,108 feet, or 1.35 miles) to the proposed well pad location. The operator proposes to widen the existing two-track road to a 16–ft. width.

The access route and improvements would conform to the standards specified by the BLM for oil and gas projects (The Gold Book, 2007, p. 19-30). As stated in that document, the access roads must be constructed or modified to an appropriate standard no higher than necessary to accommodate the intended use. In the Robbers' Roost #1 scenario, full reclamation of all segments of the access routes would not be required because the roads would provide a post-oil and gas use for local ranching purposes.

The gravel source for road and well pad construction would be purchased from private sources. The operator would provide the source location and amount of gravel to the BLM Authorized Officer prior to the initiation of construction.

In order to protect wildlife, wild horses, livestock, and other animals, a 25-mph speed limit would be required on all non-paved roads. Operations staff would direct machinery movement

along the roads and speed limit signs would be posted along the selected access route for safety and protection of animals. The speed limit would also reduce broadcast of dust into the atmosphere. Posted speed limit signs would conform to RDF Gen 6.

Reclamation

Upon completion of the project, the surface disturbances would be reclaimed to meet BLM specifications. The well pad would be ripped, re-shaped to conform to the surrounding level topography, and re-seeded with a BLM-approved seed mix. The reserve pit would be backfilled, when dry, and reseeded along with the drill pad surface. No hydrocarbons would be allowed to accumulate in the reserve pit.

Topsoil would be retained in stockpiles of growth media at the drill pad location. After completion of oil and gas activities, the growth media would be redistributed across the drill pad surface disturbance areas. After growth media distribution, the surface disturbance areas would be reseeded with a weed-free BLM-approved seed mix of desirable species.

Temporary improvements, such as any dry wash crossing improvements, would be reclaimed upon conclusion of oil and gas activities.

Reclamation would be complete when the earthwork is determined to be satisfactory by the BLM, and when the surface disturbances are determined to have self-sustaining communities of desirable plant species.

2.3. Description of Alternatives Analyzed in Detail-Southern Route Alternative

A Southern Route Alternative was recommended based on issues identified during scoping that a southern access route along existing roads could reduce or avoid. This alternative includes the same drill pad location and pad dimensions as the Proposed Action, but would provide access to the site from a different access route.

The Southern Alternative Access Route extends for a distance of 2,671 meters (8,761 feet, or 1.66 miles) to the proposed well pad location (Appendix C). Part of the Southern Access Route is an improved gravel road that would not be widened. Approximately 3-6 inches of additional gravel would be placed directly on this road bed to improve stabilization and support the heavy equipment traffic. It would be necessary to cross the bottom of a dry wash channel along the Southern Access Route. No reinforcement is anticipated to be necessary in the dry wash channel during dry conditions. During wet conditions the access through the wash would include improving the access by placing wooden planks across the wash bottom.

2.4. No Action Alternative

Under the No Action Alternative, the Application for Permit to Drill would not be developed as submitted. The well pad and access route would not be constructed under either of the described alternative scenarios.

2.5. Alternatives Considered but not Analyzed in Detail

No other alternatives were considered.

Chapter 3. Affected Environment

3.1 Introduction

This chapter presents factors in the existing environment, including the physical, biological, social, and economic values and resources, of the impacted area, the issues to be analyzed, the impact to the analyzed resources, and proposed mitigation measures that could be applied to reduce potential impacts.

The following table documents the issues evaluation or rationale for dismissal from analysis:

Table 3.1 Resources and Concerns

Resource/Concern	**Issue? (Y/N)**	**Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis**
Air Quality*	Y	Potential impacts to Air Quality are presented in Chapter 4.
Area of Critical Environmental Concern (ACEC)*	N	There are no ACECs in or near the project area.
Cultural Resources*	N	A Class III inventory was completed for this project by BLM archaeologists and yielded no historic or cultural properties.
Environmental Justice*	N	There are no known disadvantaged populations that would be adversely impacted by the project.
Fish and Wildlife	Y	Potential impacts to Fish and Wildlife are presented in Chapter 4.
Floodplains*	N	No floodplains in project area. No further analysis required.
Forest Health*	N	Resource not present.
Human Health and Safety*	N	Appropriate design features have been incorporated to minimize exposure and risk to human health and safety.
Livestock Grazing	N	The project area represents a small portion of the gazing allotment. Impacts to livestock grazing are negligible and AUMs would not be adjusted.
Migratory Birds*	Y	Impacts to migratory bird nesting habitat are presented in Chapter 4.
Threatened or Endangered Species	N	No Proposed, Threatened or Endangered Species were identified in the project area.

Mineral Resources	N	Potential oil reserves on adjacent oil and gas leases are protected through State and Federal Oil and Gas regulations. There are no potential impacts to mineral materials or locatable minerals projects from this proposed action.
Native American Religious and other Concerns*	N	Formal consultation with the local tribes was implemented and Duckwater Shoshone Tribe brought forward concerns. Duckwater Tribe identified concerns regarding protection of and access to natural, medicinal, and sacred resources, traditional use areas, and sacred sites. The tribe requested a monitor, however no physical properties exist in the project area to require this. The tribe also expressed concern for the welfare of plants, animals, air, landforms, and water and these are analyzed under their specific resource. No further analysis required.
Non-native Invasive and Noxious Species*	N	Conditions of Approval would limit the spread of noxious and invasive species.
Lands and Realty	N	There are no new right-of-ways in the project area. No right-of-way is needed for the project access route.
Lands with Wilderness Characteristics	N	Not present. The 2014 inventory for the area found wilderness characteristics lacking throughout the project area.
Paleontology	N	There are no known paleontological resources in the project area.
Prime and unique farmlands*	N	No Prime and Unique Farmlands exist in the analysis area. No further analysis required.
Recreation	N	There are no known organized recreational activities in the immediate project area. Recreation within and near the project area consists mostly of dispersed recreational actions such as hunting and ATV riding. Impacts would be negligible.
Soils Resources	Y	Potential impacts to Soil Resources are presented in Chapter 4.
Special Status animal Species	Y	Potential impacts to Special Status Animal Species are presented in Chapter 4.
Special Status Plant Species, other than those listed or proposed by the FWS as Threatened or Endangered.	N	There are no known locations of sensitive or rare plants in or near the project area.

Travel and Transportation	N	The Proposed Action and alternatives would improve existing roads that access the project area. These roads would be open throughout the operation and remain open after the project is complete. Therefore, the project would have no effect on transportation or access.
Vegetative Resources	Y	Potential impacts to Vegetation are presented in Chapter 4.
Visual Resources (VRM)	N	The Proposed Action is in a Class IV area. In Class IV areas the objective is to provide for management activities, which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. The Conditions of Approval would be followed to help meet this objective.
Wastes, Hazardous or Solid*	N	Solid and hazardous wastes would be handled according to state and Federal regulations, the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development – The Gold Book, and the Ely BLM District Best Management Practices. No further analysis is required.
Water Quality, Surface/Ground*	Y	Potential impacts to Water Quality are presented in Chapter 4.
Water Resources (Water Rights)	Y	Potential impacts to Water Resources are presented in Chapter 4.
Wetlands/Riparian Zones*	N	No wetlands or riparian areas in project area. No further analysis required.
Wild Horses	N	The proposed project is within the Triple B Herd Management Area (HMA) Wild Horses would be temporarily displaced during pad and road construction and drilling. The design features of the Proposed Action would minimize the effects on wild horses. No further analysis required.
Wilderness/WSA*	N	There are no Wilderness or WSAs within or immediately adjacent to the project area; the nearest is Bristlecone Wilderness, which is 18 miles southeast of the project area.
*Supplemental Authority		

3.2 Affected Environment

3.2.1 Air Quality

The air quality in the area of the well location in Butte Valley is considered to be good, as it is considered to be in all of rural Nevada. This is especially true when compared to the urban population centers of the west such as Las Vegas. The Clean Air Act requires the Environmental Protection Agency to establish National Ambient Air Quality Standards for the six common air pollutants known as "criteria pollutants". These criteria pollutants are carbon monoxide (CO), lead (Pb), oxides of nitrogen (NOx), ozone (O3), sulfur dioxide (SO2), and particulate matter of two size classes: those of an effective diameter less than 2.5 micrometers (PM2.5) and of an effective diameter between 2.5 and 10 micrometers (PM10). PM2.5 is a product of combustion of all types, including rangeland fires and associated ash deposits. PM10 is generally the result of wind-borne dust or dust stirred up by vehicle traffic and is the most common impact to air quality in rural Nevada. The remaining criteria pollutants are the result of the combustion of fossil fuels, which are also a source of greenhouse gases.

3.2.2 Fish and Wildlife

The project area and surrounding area consists predominantly of Wyoming big sagebrush and winterfat, which provides habitat for a variety of wildlife species. The area provides year-round habitat for Rocky Mountain elk and muledeer, as well as winter range for pronghorn. There is no crucial big game habitat in or near the project area. The area also provides habitat for other mammals, such as jackrabbits, badgers, coyotes, as well as small rodents. Reptiles and song birds are also prevalent in the area.

3.2.3 Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) (16 USC 703-712), which is administered by the U.S. Fish and Wildlife Service (USFWS), is the basis of migratory bird conservation and protection in the U.S. It implements four treaties that provide for international protection of migratory birds. In 1972, an amendment to the MBTA resulted in bald eagles and other birds of prey being included in the definition of a migratory bird. Under the authority of the Bald and Golden Eagle Protection Act of 1940 (as amended) (BGEPA) (16 USC 668-668d), bald eagles and golden eagles are provided additional legal protection. The BGEPA makes it unlawful to import, export, sell, purchase, barter, or take any eagle, their parts, products, nests, or eggs.

Migratory birds are those listed in 50 CFR 10.13 and include all native birds commonly found in the U.S., except for native resident game birds. Migratory birds include those species that breed and nest in the Project Area and then migrate south prior to the onset of winter, as well as species that may use the area for migration or year-round habitat.

A variety of migratory birds can be found in and surrounding the project area. Some of the common migratory bird species that may be observed include the horned lark, common raven, Brewer's sparrow, green tailed-towhee and sage thrasher. According to the Nevada Department of Wildlife's (NDOW) raptor database, ferruginous hawk nests have been documented in the

general area. Ferruginous hawks typically nest in juniper stringers along valley benches. Other raptor nests, such as redtailed hawk, may be in the area but have not been documented.

3.2.4 Soils Resources

Landforms in the project area consist of sediment fans that rise gently from the low-lying areas below the drill-site and increase in slope toward the uplands of the Cherry Creek Range. Aerial images of the area reveal the presence of dendritic ephemeral stream drainages that indicate a steep to shallow sloping granular sediment cover. The soils at the project location vary in composition from the silt loam to gravelly fine sandy loam of the Heist-Tulase soil association, to the very gravelly to extremely gravelly loam of the Zimbob-Pookaloo soil association (NRCS, 2016). The Heist-Tulase association is the most common soil in the project area and occurs on the lower sediment-fan areas of 0 to 2 percent slope. The Zimbob-Pookaloo association is less common and occurs on the 15 to 50 slopes higher up on the pediment.

3.2.5 Special Status Species

The Special Status Species, listed in Table 3.2, occur or have the potential to occur in or near the project area.

Table 3.2 Special status species that occur or may have the potential to occur in the project area.

Common	Scientific
Birds	
Golden eagle	*Aquila chrysaetos*
Western burrowing owl	*Athene cunicullariaa hypugaea*
Ferruginous hawk	*Buteo regalis*
Swainson's hawk	*Buteo swainsoni*
Greater sage-grouse	*Centrocercus urophasianus*
Bald eagle	*Haliaeetus leucocephalus*
Loggerhead shrike	*Haliaeetus leucocephalus*
Sage thrasher	*Oreoscoptes montanus*
Brewer's sparrow	*Spizella breweri*
Mammals	
Pallid bat	*Antrozous pallidus*
Townsend's big-eared bat	*Corynorhinus townsendii*
Big brown bat	*Eptesicus fuscus*
Spotted bat	*Euderma maculatum*
Silver-haired bat	*Lasionycteris noctivagans*
Western red bat	*Lasiurus blossevillii*
Hoary bat	*Lasiurus cinereus*
California myotis	*Myotis californicus*
Western small-footed myotis	*Myotis ciliolabrum*
Long-eared myotis	*Myotis evotis*
Little brown myotis	*Myotis lucifugus*
Fringed myotis	*Myotis thysanodes*

Canyon bat	*Pipistrellus hesperus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Pygmy rabbit	*Brachylagus idahoensis*
Dark kangaroo mouse	*Microdipodops megacephalus*
Pale kangaroo mouse	*Microdipodops pallidus*

Greater Sage-Grouse:
According to the Land Use Plan Amendment for GRSG, the Northern Alternative access route, a part of the Proposed Action, travels through approximately 0.25 miles in Priority Habitat Management Area (PHMA), 0.45 miles in General Habitat Management Area (GHMA), and the remainder in non-habitat (Attachment A). The Southern Alternative access route, travels through approximately 0.82 miles in GHMA and the remainder in non-habitat. The well pad itself is located in non-habitat.

Uhalde Well lek is an active lek thatis located 4 miles to the east of the drill pad. According to NDOW, the Robbers Roost NE #2 lek whose activity status was unknown, is a pending active lek of the 2017 breeding season. This lek is approximately 2.1 miles southeast from the drill site, 1.9 miles from the northern access route, and 1.6 miles from the southern access route. Telemetry data from 2013 that was collected by the U.S. Geological Society (USGS) shows GRSG are using the habitat surrounding the project area.

Bats
Nevada supports numerous bat species that use trees, caves, mine shafts and other structures for roosting and hibernating. There may be mine shafts within the surrounding area, but none directly on or near the proposed project. The area is primarily used as a foraging area for sensitive bat species.

Small mammals
Pygmy rabbits inhabit areas of taller sagebrush, typically Wyoming, mountain, or Great Basin big sagebrush and they generally burrow in deep loamy soils. The dark kangaroo mouse inhabits valley bottoms and alluvial fans dominated by big sagebrush, rabbitbrush and horsebrush. It prefers fine gravelly soils. The pale kangaroo mouse inhabits valley bottoms with stabilized sand dunes with saltbush and greasewood. Based on the site's soil type and vegetation, the pale kangaroo mouse is less likely to occur in the area.

Birds and raptors
Birds and raptors were discussed in the Migratory Bird section above.

3.2.6 Vegetative Resources

The proposed project would potentially disturb two vegetation community types (Sagebrush – perennial bunchgrass and Winterfat – perennial bunchgrass). Currently these communities are considered to be in the late seral stage. The most common vegetation within both these communities is Wyoming big sagebrush (*Artemisia tridentata var. wyomingensis*), black sagebrush (*Artemisia nova*), winterfat (*Krascheninnikovia lanata*), Indian Ricegrass (*Achnatherum hymenoides*), needle and threadgrass (*Hesperostipa comate*), Canby's bluegrass (*Poa Secunda*), bottlebrush squirrel tail (*Elymus elymoides*), globemallow (*Sphaeralcea spp.*),

penstemon (*Penstemon spp.*), Phlox (*Phlox spp.*), milkfetch (*Astragalus spp.*), and Utah juniper (*Juniperus osteosperma*).

The winterfat community is characteristically dominated by winterfat with a strong component of perennial cool season bunchgrasses. These winterfat communities play an important role in Nevada as they provide wildlife habitat, livestock forage, and forage for wild horses. Winterfat is an important forage plant because of the high levels of nutrition it retains as a winter feed source for many animal species. The winterfat sites are not resilient to disturbance and are not resistant to invasion from non-native annual grasses, or other non-native species such as Russian thistle (*Salsola iberica*), or halogeton (*Halogeton glomerotus*). The winterfat community that may be impacted by the proposed project is considered to be in good health with a strong component of perennial grasses.

The second dominant community in the area is comprised of Wyoming sagebrush mixed with black sagebrush and an understory of perennial cool season bunchgrasses such as Indian ricegrass or needleandthread grass. The site typically has a forb component in the understory as well. When disturbed, these communities can take several years to recover. Non-native annuals such as cheatgrass (*Bromus tectorum*) can establish in the wake of disturbance. The site in question is considered to be in a shrub state with little perennial grass or forb understory. The most common grass in this area is a bluegrass spp. (*Poa spp.*).

3.2.7 Water Quality (Drinking/Ground)

The proposed oil and gas well is located in hydrographic area 178B Butte Valley Southern Part which is within the larger Central Region hydrographic system in Nevada. There are no perennial surface waters or drinking water sources in the project area. The most recent USGS ground water depth measurement near the area was taken in 1992 in a former Air Force MX well just south of the project at 54 feet below ground surface (bgs) (USGS, 2016).

The proposed well would penetrate a layer of fine-grained sediments and coarse-grained alluvial material before entering the deeper carbonate (limestone) bedrock units that underlie the region. The operator estimates that the drill hole would penetrate the top of the Ely limestone at about 3,400 bgs. The alluvial material hosts the regional alluvial aquifers, and in Butte Valley the alluvial layer ranges in thickness from 0-feet at the base of the Butte Mountains to the west and the Cherry Creek range to the east, to nearly 4,000 feet toward the valley center (Sweetkind, 2007). The alluvial aquifers vary in their saturated thickness and lateral extent, and are often perched above less-permeable layers at different depths.

The limestone bedrock units contain the Basin and Range Carbonate Aquifer System, with boreholes throughout the region encountering the top of the upper carbonate units such as the Joanna Limestone and Ely Limestone at depths from less than 2,000 feet to over 9,000 feet (NBMG, 2016). Depending on the depth to the carbonate bedrock surface at this drill bore location, the exploration well may or may not enter the limestone bedrock before reaching the proposed drilling depth of 4,100 feet, though the proponent anticipates that the drill hole would terminate at 4,100 feet in the Ely Limestone.

Water used for drilling would be injected down the oil well, returned up the hole with the cuttings, discharged into the reserve pit, decanted, and then recirculated down the hole. Water may be consumed when circulation is lost in larger diameter openings such as fractures and solution cavities down the hole. Bentonite (a clay earth material with swelling properties in water) is added to the water used for drilling to control viscosity and density of the drilling fluid. Oil wells are normally cased and cemented through the base of the alluvial material to stabilize the hole, to prevent the uncontrolled influx of water into the hole, and to prevent communication between geologic units. Federal and State water regulations require a minimum of 500' of surface casing (NAS, 2016).

3.2.8 Water Resources (Water Rights)

Four water rights for stock watering purposes from underground sources exist within five miles to the west of the drill-site in Butte Valley. Five stock water rights also exist within a five mile radius of the project to the northeast and southeast in the upland drainages of the Cherry Creek range. There also exist six unnamed springs in the same area of the Cherry Creek range adjacent to the permitted springs on which there currently are no water rights filed.

Chapter 4. Environmental Effects

4.1 Air Quality

Proposed Action
Impacts to air quality that can occur during the exploration project include emissions of criteria pollutants and greenhouse gases. PM10 particulates would be present at times in the form of dust stirred up from earth-moving equipment and moving vehicles. Greenhouse gases and criteria pollutants would be generated as drill rigs, heavy equipment, and support vehicles consume fossil fuels to facilitate the drilling operation. During the project natural gas may at times be vented from the well. The gas may contain Volatile Organic Compounds (VOCs) that could also be emitted from the reserve pit and tanks located at the site.

Southern Alternative
The impacts to air quality would be the same for both the Proposed Action and the Southern Alternative, and would occur for the duration of the project and stop after project completion with the exception of wind-blown dust and other vehicle traffic.

No Action Alternative
The No Action Alternative would have no new impacts to Air quality.

4.2 Fish and Wildlife

Proposed Action
The Proposed Action would result in the loss of 6.28 acres of nesting, foraging, and security habitat. Big game and other wildlife would likely be disturbed and move away from the project area during construction, operation, and traffic to and from the well pad; however there is suitable adjacent habitat. Small mammals and other slower moving wildlife may be killed during road improvements, pad installation, or by traffic to and from the well pad. Traffic and disturbances related to the Proposed Action may cause increased stress and decreased reproductive success for all wildlife. Overall, there would be no effect on wildlife populations due to implementation of the Proposed Action.

Southern Alternative
The impacts of the Southern Alternative to wildlife would be similar to the Proposed Action, except there would be a loss of 6.89 acres of habitat.

No Action Alternative
The No Action Alternative would result in no additional loss of wildlife habitat. Wildlife would not be disturbed from an additional noise source generated by the project. The habitat would remain in its current condition.

4.3 Migratory Birds

Proposed Action
The Proposed Action would result in a loss of 6.28 acres of migratory bird nesting habitat;

however there is adjacent suitable habitat. Migratory birds may be disturbed by the increased human activity and noise generated from the project, and may not use habitat near the project area. If project construction and operation was to occur during the migratory bird breeding season, a nest search would be conducted by a qualified biologist to ensure no harm to nests, eggs, or fledglings. When the well pad is abandoned, reclamation would occur, however restoring winterfat is very difficult and would likely not restore back to native vegetation.

Southern Alternative
Impacts to migratory birds are similar to the Proposed Action; however there would be a loss of 6.89 acres of nesting habitat.

No Action Alternative
The No Action Alternative would result in no additional loss of migratory bird nesting habitat. The habitat would remain in its current condition.

4.4 Soils Resources

Proposed Action and Alternative
Impacts to soils during the drilling project include soil compaction, erosion, excavation, and loss of soil quality. Soil compaction due to development activities at the well pad and along the proposed access roads would reduce aeration, permeability, and water-holding capacity of the soils resulting in the potential for increased surface runoff. Soil horizon mixing would occur in the areas where soil is excavated and stockpiled during the construction phase. The original soil structure would be altered when stockpiled soil is returned to excavated areas during reclamation.

Vegetation removal for the improvement of the access roads and well pad has the potential to alter existing drainage patterns and contribute to accelerated gully and rill erosion. Compaction typically is greatest when soil moisture is high and where heavy equipment activities are concentrated.

No Action Alternative
The No Action Alternative would not impact soils.

4.5 Special Status Species

Proposed Action
Greater Sage-Grouse
The Proposed Action would result in a loss of 0.49 acres of PHMA and 0.87 acres of GHMA for road maintenance. This corresponds to a loss of 1.36 acres of nesting and brood-rearing habitat. Direct mortality of GRSG may occur as vehicles and equipment move to and from the drill pad; however vehicular collisions are unlikely. Traffic to and from the well pad may also lead to increase stress and decreased reproductive success for GRSG.

The noise generated from the drilling operations can alter GRSG use of the surrounding habitat and change GRSG behavior. Nesting females may be disrupted by noise and increased activity, potentially resulting in increased stress and lower nesting success. Additionally, noise from

drilling can interfere with females and young not being able to communicate resulting in high stress levels or mortality.

The timing stipulations and RDFs listed in Appendix A would minimize impacts to GRSG.

Bats
The Proposed Action would result in no impacts to roosting, hibernating or maternity colony sites because none of those sites exist in the vicinity of the project area. Bats foraging may be disturbed from the evening drilling operations; however lights used during the night may attract insects which may also attract bats to the project area.

Small Mammals
The Proposed Action may result is the loss of pygmy rabbit, dark kangaroo mouse, or pale kangaroo mouse habitat. There may be direct mortality to small mammals from drill pad construction or from traffic traveling to and from the site. It is unlikely that pale kangaroo mice would be affected by the Proposed Action because their habitat is likely not present. Pygmy rabbit habitat would be avoided, where practical. Loss of individuals of sensitive small mammals would not result in population decline resulting in a need to list the species as federally threatened or endangered.

Southern Alternative
Greater Sage-Grouse
The impacts GRSG are similar to the Proposed Action, except there may be a loss of 1.59 acres of GHMA for road maintenance, which consists of GRSG nesting and brood-rearing habitat. The timing stipulations and RDFs listed in Appendix A would minimize impacts to GRSG.

Bats
The impacts to bats for the Southern Alternative are the same as the Proposed Action.

Small Mammals
The impacts to small mammals for the Southern Alternative are the same as the Proposed Action.

No Action Alternative
The No Action Alternative would result in no additional loss of habitat for special status species. Special status species would not be disturbed form an additional noise source generated by the project. The habitat would remain in its current condition.

4.6 Vegetative Resources

The Proposed Action
The Proposed Action would have the greatest impact on the winterfat communities. The road to be widened in this alternative is mostly located within one of these communities. The road is not well established and has little to no disturbance influence on the community currently. Widening of the road through this community would increase disturbance and increase undesirable non-native species such as Russian thistle or halogeton. Previous restoration attempts in these

winterfat communities have proven highly unsuccessful. Widening of the road through this plant community would likely result in the permanent loss of winterfat in the disturbed area.

The Southern Alternative
The Southern Alternative would result in the least amount of disturbance to the plant communities present in the area. Most of the road to be used in this alternative would not need to be widened, resulting in less disturbance or removal of vegetation. The section of road that would need to be improved and widened is not located within the winterfat communities. This route does pass through the sagebrush communities and there would be a loss of vegetation in this area. Restoration efforts in these sagebrush communities have proven to be low to moderately successful. This community is susceptible to non-native species when disturbed.

No Action Alternative
The No Action Alternative would have no impact on the vegetation communities and conditions would remain relatively the same as seen currently.

4.7 Water Quality (Drinking/Ground)

Proposed Action
The permeable nature of the well-drained soils and sediments in the project area can allow for the infiltration and transmission of chemicals into underground water sources. Chemicals that can impact groundwater sources during the course of the drilling project include petroleum products as a result of spills from equipment and storage containments. Drilling fluids can also enter the groundwater system through leaks in the base of reserve pit and at depth through borehole casing leaks. Groundwater withdrawals associated with oil and gas exploration projects can strain groundwater resources through water table drawdown and impact water quality through groundwater depletion. Changes in groundwater levels may also influence dust mobilization through alterations in soil chemistry, variations in soil moisture, and shifts in vegetation community structure and morphology of individual plants (Elmore et al., 2008).

The proposed action calls for approximately 80,000 gallons of water to be used for drilling fluid production and dust suppression for the 14-day duration of the project. This water is to be brought in using water trucks from a private source twenty miles from the project. As a result, drawdown impacts to groundwater sources near the project location are not expected.

Southern Alternative
There would be no effects to Water Resources from the Southern Alternative.

No Action Alternative
The No Action Alternative would have no impact to water Quality

4.8 Water Resources (Water Rights)

Existing water rights would not be impacted because water trucks would bring the water for the project in from a private source. The source, the Crested Wheatgrass Well, is located on BLM land, but the water right from which the operator would purchase water is held by a private party.

Chapter 5. Cumulative Impact Analysis

5.1 Introduction

As required under NEPA and the regulations implementing NEPA, this section analyzes potential cumulative impacts from past, present, and reasonably foreseeable future actions (RFFAs). A cumulative impact is defined as "the impact which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) 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 Code of Federal Regulations 1508.7). The resources to be analyzed in the cumulative effects section are those for which the Proposed Action would have an impact and include the following: Air, Fish and Wildlife, Migratory Birds, Soils, Special Status Species, Vegetation, Surface and Ground Water Quality, and Water Rights.

The geographic scope of a cumulative effect is defined with the Cumulative Effects Study Area (CESA). CESAs are defined for each resource evaluated. Two or more resources may have the same CESA. The time frame for the cumulative effect analysis is 20 years.

5.2 Air Quality

The CESA for Air Quality is the Butte Watershed. Impacts to air quality from past and present actions have resulted from particulate and combustion emissions from agriculture, road construction and maintenance, Off-Highway Vehicle (OHV) use and recreation, exploration, mining and processing, aggregate operations, public land management activities, and wildland fire. All activities in the CESA with more than five acres (20 acres for minerals projects) of surface disturbance would operate under an air quality permit from the Nevada Department of Environmental Quality Bureau of Air Pollution Control (NDEP/BAPC).

Impacts to air quality from Reasonably Foreseeable Future Actions (RFFAs) could result from the generation of dust and combustion emissions from OHV use and recreational traffic on unpaved roads, livestock grazing, agricultural use, road construction and maintenance, exploration, aggregate operations, public land management activities, and fugitive emissions from wildland fire. Dust from public traffic on unpaved roads would likely create a low impact to air quality. Impacts from exploration, mining, and reclamation would be regulated by the NDEP/BAPC, the BLM, and the USFS, and impacts to air quality from RFFAs in the CESA would likely be moderate.

The cumulative impact on air quality from the incremental impact of the Proposed Action when added to the past actions, present actions, and RFFAs would be fugitive, point source, and mobile combustion emissions, which would remain moderate. If economic quantities of petroleum are discovered during the exploration project, then the air quality impacts from fugitive dust and emissions related to the proposed action would continue for the length of time the production phase continued. This period of time would be considerably longer than the exploration phase, in which the fugitive dusts and emissions generated would end after the

14 day operation period. The air quality regulations implemented by the NDEP/BAPC and the BLM help to maintain the moderate condition.

5.3 Water Quality (Drinking/Ground)

The CESA for water quality is the Butte Watershed. Impacts to surface and ground water quality and quantity from past and present actions have resulted from agriculture, road construction and maintenance, OHV use and recreation, exploration, mining and processing, aggregate operations, public land management activities (e.g., fuel reduction treatment), and wildland fire. Reclamation of areas disturbed from past actions and natural revegetation have helped to minimize impacts to surface and groundwater quality. Exploration and construction activities include implementation of environmental protection measures to minimize surface in the CESA.

Impacts to surface and ground water quality and quantity from RFFAs are considered to be similar to those described for past and present actions. Disturbance would be minimized through implementation of environmental protection measures. Impacts to surface water quality and quantity are considered to be moderate.

The cumulative impact to surface and ground water from the incremental impact of the Proposed Action when added to the past actions, present actions, and RFFAs is minimal within the CESA. If economic quantities of petroleum are discovered during the exploration project, then the surface and ground water quality impacts related to the Proposed Action would continue for the length of time the production phase continued. This period of time would be considerably longer than the exploration phase, in which the associated impacts would end after the 14-day operation period. The impact would remain moderate because some of the present actions and RFFAs would implement environmental protection measures to minimize effects on surface and ground water quality.

5.4 Soils Resources

The CESA for Soil Resources is the Butte Watershed. Impacts to soils within the CESA have resulted from past and present actions such as grazing, road construction and maintenance, OHV use and recreation, mining and processing activities, aggregate operations, public land management activities, and wildland fire. Reclamation of areas disturbed from past and present actions and natural revegetation recovery have helped to minimize impacts to soils and have prevented soil erosion.

Impacts to soils from RFFAs would be similar to those described above for past and present actions. Disturbances from permitted mining and exploration activities would be minimized through implementation of environmental protection measures.

The cumulative impact to soils from the incremental impact of the proposed action when added to the past actions, present actions, and RFFAs may add effects such as soil compaction and sediment erosion. These effects would be short-term, lasting for the duration of the 14-day exploration project if economic quantities of petroleum products are not found. These effects

would become longer-term should the project enter into a production phase. Effects to soils in either case can be kept moderate with the implementation of soil environmental protection measures.

5.5 Water Resources (Water Rights)

The CESA for Water Resources is the Butte Watershed. Impacts to water resources within the CESA have occurred from past and present actions through the issuance of water rights and permits for water development projects.

RFFAs with the potential to impact water resources include projects such as power transmission projects and municipal water projects. Both of these types of projects have been historically been applied for but denied in the area surrounding this project location. However, the potential exists for such projects to be brought about in the future.

The cumulative impact to water resources from the incremental impact of the proposed action when added to the past actions, present actions, and RFFAs may add additional stress to water resources through water usage. These effects would be short-term, lasting for the duration of the 14-day exploration project if economic quantities of petroleum products are not found. These effects would become longer-term should the project enter into a production phase, with the potential to contribute to groundwater drawdown.

5.6 Wildlife – Big Game

The big game CESA boundary is hunt unit 104. Impacts to big game from past, present, and reasonably foreseeable future actions are grazing, OHV use and recreation, oil and gas exploration, mining and processing, public land management activities, and wildland fire. These actions have resulted in a loss of big game habitat, habitat fragmentation, and increased stress levels that may affect animal fecundity and survivorship. The Proposed Action, in addition to these actions, would not result in any long term cumulative impacts to big game.

5.7 Migratory Birds

The migratory bird CESA boundary is the same as the big game CESA. Impacts to migratory birds from past, present, and reasonably foreseeable future actions are grazing, OHV use and recreation, oil and gas exploration, mining and processing, wildland fire, and other public land management activities. These actions resulted in loss of migratory bird nesting and foraging habitat, as well as habitat fragmentation. The Proposed Action, in addition to these actions, would not result in any long term cumulative impacts to migratory birds. Additionally, migratory birds are afforded additional protection under the Migratory Bird Treaty Act.

5.8 Special Status Species – Greater Sage-Grouse

The Greater Sage-Grouse CESA consists of the northeast portion of the Butte/Buck/White Pine Population Management Unit. Impacts to Greater Sage-Grouse from past, present and reasonably foreseeable future actions are grazing, wildfire, OHV use and recreation, Right-of-Ways, mining, the Greater Sage-Grouse LUPA (2015), and other public land management

actions. The LUPA provides the BLM with goals and management objectives to protect and preserve Greater Sage-Grouse and their habitat. These management objectives would minimize and avoid impacts to Greater Sage-Grouse on BLM land. The Proposed Action in addition to these actions would not result in a long term impact to Greater Sage-Grouse because the proposed project and future projects in the CESA would be in compliance with the LUPA.

5.9 Vegetation Resources

Effects from the Southern Alternative and the Proposed Action would add to any future disturbance to vegetation in the area. The greatest disturbance to vegetation would come from livestock grazing, wild horse grazing, and wildlife grazing, if properly regulated impacts to vegetation from these actions would be minimal. Future threats to vegetation may also include fire and encroachment of single leaf pinyon (*Pinus monophylla*) or Utah juniper. These would result in the loss of shrubs and perennial cool season grasses. Removal of vegetation under the Southern Alternative and the Proposed Action may impede or lower plant resiliency to current or future disturbance. The new or improved roads proposed under the Southern Alternative and the Proposed Action would represent a disturbance for many years. Even if the road is rehabilitated effects and loss of vegetation would be present for many years. The No Action alternative would not contribute any impacts to any future disturbance to the vegetation. The vegetation communities would continue with similar conditions present at this time.

Chapter 6. Tribes, Individuals, Organizations, or Agencies Consulted

6.1 Tribal Consultation

Consultation with Native American Tribes was coordinated through the Ely District BLM Office. Letters to request comments were mailed on January 3, 2017. Three tribes within BLM Ely District and one regional tribal group were consulted. A site visit was conducted with the Duckwater Shoshone Tribe on May 5, 2017.

6.2 Agencies Consulted

Nevada State Historic Preservation Office (SHPO) was consulted regarding potential cultural resources in the lease area per the consultation agreement between SHPO and the BLM.

The Nevada Division of Wildlife (NDOW) was consulted regarding possible impacts of the oil and gas activities upon wildlife. Portions of the lease area lie within designated habitat for the Greater Sage-Grouse.

6.3 List of Preparers

Name	Title	Responsible for the Following Resource Areas
Debra Schultz	Environmental Protection Specialist	Project Manager, Minerals
Concetta Brown	Planning and Environmental Coordinator	NEPA Coordination, Environmental Justice
Josh Corbett	Rangeland Management Specialist	Livestock Grazing, Wetland, Riparian, Vegetation
Andy Gault	Hydrologist	Water Resources, Soil, Air
Lisa Gilbert	Archaeologist	Cultural Resources
Alicia Hankins	Land Law Examiner	Lands & Realty
Nancy Herms	Wildlife Biologist	Wildlife
John Miller	Recreation Specialist	Recreation Resources
John Miller	Wilderness Specialist	Wilderness Resources
Dayna Reale	Archaeologist	Cultural Resources
Ruth Thompson	Wild Horse and Burro Specialist	Wild Horses
Stephanie Trujillo	Associate Field Manager	Minerals/Realty
Elvis Wall	Native American Coordinator	Tribal Consultation

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Appendix A

Greater Sage-Grouse Required Design Features

Since there was a valid and existing right prior to the signing of the LUPA, the RDFs cannot be required but are recommended for this action.

Required Design Feature	Conclusion (Required/Recommended/Not Applicable/Variation/ Applicant Committed)	Rationale* (should be one or two statements, if in-depth analysis is needed, it should be provided separately)
RDF Gen 1: Locate new roads outside of Greater Sage-Grouse habitat to the extent practical.	Recommended	An alternate road is included in this EA as the more suitable Alternative because it does not go through a Priority Habitat Management Area.
RDF Gen 2: Avoid constructing roads within riparian areas and ephemeral drainages. Construct low-water crossings at right angles to ephemeral drainages and stream crossings (note that such construction may require permitting under Sections 401 and 404 of the Clean Water Act).	Applicant Committed	The Preferred Alternative access road would cross an ephemeral drain which the applicant would.
RDF Gen 3: Limit construction of new roads where roads are already in existence and could be used or upgraded to meet the needs of the project or operation. Design roads to an appropriate standard, no higher than necessary, to accommodate intended purpose and level of use.	Applicant Committed	The Preferred access road is already in existence.
RDF Gen 4: Coordinate road construction and use with ROW holders to minimize disturbance to the extent possible.	Not Applicable	There are no other ROW holders in the project area.
RDF Gen 5: During project construction and operation, establish and post speed limits in GRSG habitat to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	Recommended	The applicant would be asked to post signs.

RDF Gen 6: Newly constructed project roads that access valid existing rights would not be managed as public access roads. Proponents would restrict access by employing traffic control devices such as signage, gates,	Recommended	Use of signs.
RDF Gen 7: Require dust abatement practices when authorizing use on roads.	Recommended	Applicant would be asked to water the road.
RDF Gen 9: Upon project completion, reclaim roads developed for project access on public lands unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.	Required	Applicant would be required to rip and seed the road where it goes into the well pad.
RDF Gen 10: Design or site permanent structures that create movement (*e.g.*, pump jack/ windmill) to minimize impacts on GRSG habitat.	Recommended	This RDF would be implemented should the well go into production.
RDF Gen 11: Equip temporary and permanent aboveground facilities with structures or devices that discourage nesting and perching of raptors, corvids, and other predators.	Required	This RDF would be implemented should the well go into production.
RDF Gen 12: Control the spread and effects of nonnative, invasive plant species (*e.g.*, by washing vehicles and equipment, minimize unnecessary surface disturbance; Evangelista et al. 2011). All projects would be required to have a noxious weed management plan in place prior to construction and operations.	Required	This is required of all proponents.
RDF Gen 13: Implement project site-cleaning practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.	Required	This is required of all proponents.
RDF Gen 14: Locate project related temporary housing sites outside of GRSG habitat.	Not Applicable	Housing would not be authorized for this project. Occupancy at the site would be restricted to the operational period.
RDF Gen 15: When interim reclamation is required, irrigate site to establish seedlings more quickly if the site requires it.	Recommended	This would be required if the project takes longer than is expected.

RDF Gen 16: Utilize mulching techniques to expedite reclamation and to protect soils if the site requires it.	Recommended	This would be required if the project takes longer than is expected.
RDF Gen 17: Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.	Required	This is required of all proponents.
RDF GEN 18: When authorizing ground-disturbing activities, require the use of vegetation and soil reclamation standards suitable for the site type prior to construction.	Required	This is required of all proponents.
RDF GEN 19: Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction (BLM 2005b).	Required	This is required of all proponents.
RDF GEN 20: To reduce predator perching in GRSG habitat, limit the construction of vertical facilities and fences to the minimum number and amount needed and install anti-perch devices where applicable.	Required	This is required of all proponents.
RDF GEN 21: Outfit all reservoirs, pits, tanks, troughs or similar features with appropriate type and number of wildlife escape ramps (BLM 1990; Taylor and Tuttle 2007).	Required	This is required of all proponents.
RDF GEN 22: Load and unload all equipment on existing roads to minimize disturbance to vegetation and soil.	Recommended	All projects are required to adhere to this condition.
RDF Lease FM 1: Co-locate powerlines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui *et al.* 2010) in order to minimize or avoid disturbance	Not Applicable	No power lines or pipelines are currently proposed during the exploration phase.
RDF Lease FM 2: Cover, create barriers, or implement other effective deterrents (e.g., netting, fencing, birdballs, and sound cannons) for all ponds and tanks containing potentially toxic materials to reduce GRSG mortality.	Required	The operator may not discharge toxic materials or petroleum-based substances into the reserve pit. The reserve pit must also be fenced.

RDF Lease FM 3: Require installation of noise shields to comply with noise restrictions (see Action SSS 7) when drilling during the breeding, nesting, brood-rearing, and/or wintering season. Require applicable GRSG seasonal timing restrictions when noise restrictions cannot	Required	Noise shields would be an appropriate seasonal mitigation measure.
RDF Lease FM 4: Ensure habitat restoration meets GRSG habitat objectives (Table 2-2) for reclamation and restoration practices/sites (Pyke 2011).	Recommended	This would be asked of the proponent.
RDF Lease FM 5: Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoil management, and revegetating cut-and-fill slopes.	Recommended	This would be asked of the proponent.
RDF Lease FM 6: Restore disturbed areas at final reclamation to the pre-disturbance landforms and meets the GRSG habitat objectives (Table 2-2).	Required	This is required of all proponents.
RDF Lease FM 7: Use only closed-loop systems for drilling operations and no reserve pits within GRSG habitat.	Not Applicable	The drilling operation would not be in GRSG habitat.
RDF Lease FM 8: Place liquid gathering facilities outside of GRSG habitat. Have no tanks at well locations within GRSG habitat to minimize vehicle traffic and perching and nesting sites for aerial predators of GRSG.	Not Applicable	The well pad is not in sage grouse habitat.
RDF Lease FM 9: In GRSG habitat, use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use (Lyon and Anderson 2003).	Not Applicable	The well pad is not in sage grouse habitat.
RDF Lease FM 10: Use dust abatement practices on well pads.	Recommended	This would be asked of the proponent.
RDF Lease FM 11: Cluster disturbances associated with operations and facilities as close as possible, unless site-specific conditions indicate that disturbances to GRSG habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.	Not Applicable	The facilities would not be in sage grouse habitat.

RDF Lease FM 12: Apply a phased development approach with concurrent reclamation.	Recommended	This would be asked of the proponent.
RDF Lease FM 13: Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West	Not Applicable	Any pits or impoundments would not be in Greater Sage-Grouse habitat.
RDF Lease FM 14: In GRSG habitat, remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat (Doherty 2007): • Overbuild size of ponds for muddy and non-vegetated shorelines • Build steep shorelines to decrease vegetation and increase wave actions • Avoid flooding terrestrial vegetation in flat terrain or low lying areas Construct dams or impoundments that restrict down slope seepage or overflow • Line the channel where discharge water flows into the pond with crushed rock • Construct spillway with steep sides and	Not Applicable	Any produced water would not be in Greater Sage-Grouse habitat.
RDF Lease FM 15: Consider using oak (or other material) mats for drilling activities to reduce vegetation disturbance and for roads between closely spaced wells to reduce soil compaction and maintain soil structure to increase likelihood of vegetation reestablishment following drilling.	Not Applicable	The operator would construct one well pad and widen the access road in the exploration phase. No vegetation disturbances are expected beyond the cleared surface disturbance areas.

APPLICANT COMMITTED MEASURES:

- Timing stipulation required by RMP 2008: 3/1 - 5/15 no surface activity
- Request extension to June 30 to protect nesting (*end of the actual nesting season*) This would alleviate the need for a Sage Grouse survey however, a migratory bird survey would still be required prior to activity for this project.
- Berm toward the east to provide an additional noise barrier if they go into production.
- Request they construct minimal road berms and road construction in general
- Request they stay within the county speed limits 35 mph to reduce vehicle collisions with GRSG.
- If they go into production request pump jack is located in a location to reduce noise. Overall layout of well pad to consider noise and ways to reduce disturbance to GRSG.
- Require tanks and other permanent structures to be equipped with perch deterrents.
- Request reclamation seed mix to include native grass, forbs and shrubs that are found in the area. Encourage additional reclamation techniques (irrigation, mulching) if initial reclamation is unsuccessful.
- Request them to flag fencing to alert all wildlife to prevent entanglement/collisions. Top and bottom strands would be smooth wire, top standard is 42" from ground, bottom standard is 16".

Appendix B

Standard Conditions of Approval (COAs) for Oil and Gas Operations for the Ely District

Application for Permit to Drill (APD) and Sundry Notices

The regulations governing drilling operations on public lands are stated in 43 CFR §3160. With submittal of an APD or Sundry Notice by the operator or lessee, the following conditions of approval would be required for the operation as applicable.

Pre-Construction

1. Existing roads should be used to the extent possible. Additional roads, if needed, shall be kept to an absolute minimum and the location of routes must be approved by the Authorized Officer (AO) prior to construction.

2. Upon determination of an impending field development, a transportation plan would be requested to reduce unnecessary access roads.

3. All access roads would be constructed and maintained to BLM road standards (BLM Manual Section 9113).

4. Off-road travel would be restricted to terrain with less than 30 percent slopes unless approved by the AO.

5. Proposed surface disturbance and vehicular travel would be limited to the approved well location and access route.

6. Any changes in well location, facility location, access, or site expansion must be approved by the AO in advance.

7. Prior to approval of an APD or other lease operations, a Section 106 consultation must be completed by the AO as provided for under the Nevada BLM Programmatic Agreement for Cultural Resources.

8. Any activity planned within a ¼-mile on either side the Pony Express National Historic Trail must undergo a visual assessment. Appropriate mitigation of visual impacts would be implemented as necessary to keep the management corridor in as natural a condition as possible.

Well Pad and Facility Construction

1. Every pad, access road, or facility site must have an approved surface drainage plan.

2. A site diagram depicting the location of production facilities, recontoured slopes and stabilization measures shall be approved by the AO prior to installation of production facilities.

3. Drainage from disturbed areas would be confined or directed so that erosion of undisturbed areas is not increased. In addition, no runoff water (including that from roads) would be allowed to flow into intermittent or perennial waterways without first passing through a sediment-trapping mechanism. Erosion control structures may include: water bars, berms, drainage ditches, sediment ponds, or devices.

4. Access road construction for exploratory wells should be planned such that a permanent road can later be constructed in the event of field development.

5. Construction of access roads on steep hillsides and near watercourses would be avoided where alternate routes provide adequate access.

6. Access roads requiring construction with cut and fill would be designed to minimize surface disturbance and take into account the character of the landform, natural contours, cut material, depth of cut, where the fill material would be deposited, resource concerns, and visual contrast.

7. Fill material would not be cast over hilltops or into drainages. Cut slopes should normally be no steeper than 3:1 and fill slopes no steeper than 2:1.

8. Low water crossings should be used whenever possible. Installation of culverts, if necessary, would be designed to maintain the original stream gradient and would be of adequate size to accommodate a 24-hour 100-year event. Fill material would be properly compacted in layers not exceeding 6 inches in thickness to insure stability and to prevent washing out or dislocation of the culvert. The road surface should not be less than 12 inches above the culvert to prevent crushing from weight loads.

9. As required, fill slopes surrounding culverts would be riprapped with a well-graded mixture of rock sizes containing no material greater than two feet or smaller than three inches. The ratio of maximum to minimum dimension of any rock shall not exceed 6:1.

10. Water turnouts needed to provide additional drainage would be constructed not to exceed two percent slope to minimize soil erosion.

11. Well site layout should take into account the character of the topography and landform. Deep vertical cuts and steep long fill slopes should be avoided. All cut and fill slopes should be constructed to the least percent slope practical.

12. Trash would be retained in portable trash cages and hauled to an authorized disposal site for disposal. Burning would not be allowed on the well site.

13. No drilling or storage facilities would be allowed within 500 feet of any pond, reservoir, canal, spring, or stream. Other protective areas near water may be required to protect riparian habitat and special status species.

14. Spring and water developments on public lands may be used only with the prior written approval of the AO or the water rights holder.

15. To maintain aesthetic values, all semi-permanent and permanent facilities would be painted to blend with the natural surroundings. The Standard Environmental Colors would be used for color selection. Fences shall be made of non-reflective materials.

16. Fences shall not be cut without prior approval of the AO. Before cutting any fences, the operator shall firmly brace the fence on both sides of the cut; a temporary gate would be installed for use during the course of operations unless the fence is immediately repaired. Upon completion of operations, fences shall be restored to at least their original condition.

17. As directed by the AO, cattle guards would be installed whenever access roads are through pasture gates or fences. These cattle guards shall be maintained. This includes cleaning out under cattle guard bases when needed.

18. The depth of surface soil material to be removed and stockpiled would be specified by the AO. If topsoil is stockpiled for more than one year, the stockpile shall be seeded or otherwise protected from wind and water erosion. The stockpile shall be marked or segregated to avoid loss or mixing with other subsurface materials. Any trees removed would be separated from soils and stockpiled separately.

19. Mud, separation pits, and other containments used during the exploration or operation of the lease for the storage of any hazardous materials shall be adequately fenced, posted, and/or covered.

20. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the AO. Within five working days the AO would inform the operator as to whether:

a. the materials appear eligible for the National Register of Historic Places

b. the mitigation measures the operator would likely have to undertake before the site can be used (assuming in situ preservation is not necessary)

c. a timeframe for the authorized officer to complete an expedited review under 36 CFR §800.11 or other applicable Programmatic Agreement, to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate

21. If the operator wishes, at any time, relocate activities to avoid the expense of mitigation and/or the delays associated with the process described in item 20 above for inadvertent discovery of cultural resources, the authorized officer would assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator would be responsible for mitigation costs. The authorized officer would provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the authorized officer that the required mitigation has been completed, the operator would then be allowed to resume construction.

22. Bald eagle roosts, peregrine falcon hack sites and known occupied raptor aeries (nests) would be avoided during the nesting and fledging period.

23. Field development construction activities within ½-mile of a sage grouse lek would require motorized equipment to have noise abatement devices to preclude excessive noise during the sage grouse strutting period.

24. The cutting of rare, unique or unusual trees would not be permitted. In particular cutting of Bristlecone pine, Swamp Cedar, Ponderosa pine, and White Fir would be avoided.

25. Consultation with the U.S. Fish and Wildlife Service (FWS) is required per section 7 of the Endangered Species Act prior to approval of an APD or other lease operations if any proposed listed or listed threatened or endangered species or its critical habitat is likely to be affected by project activities. If there is deemed to be any adverse impact, the proposal would be modified or the request denied.

26. Any actions that would adversely impact a special status species would be modified.

27. Fences shall be flagged with bright colored flagging at least every rod for visibility to wild horses. All fences should be constructed using green steel posts with white or silver tops to increase visibility. Fences should also avoid obvious horse migration routes (deep trails, stud piles) if at all possible.

28. No access roads, drill pads, mud pits or storage facilities would be allowed within 200 meters of cave entrances, drainage areas and subsurface passages. No waste material or chemicals would be placed, or disposed of, in sinkholes or gates during specified time frames by cave entrances. If during construction activities any sinkholes or cave openings are discovered, construction activities would cease and the AO would be notified.

29. The discharge of dredged or fill material into surface waters such as navigable and interstate waters and their tributaries, wetlands adjacent to those waters and all impoundments of those waters may require an individual permit or notification under Section 404 of the Clean Water Act (CWA) issued by the District Engineer (DE) of the Corps of Engineers (COE). Criteria applied under Section 404 is established in regulation and would be used to determine the type of permit or notification required.

Field Operation

1. Operations shall be done in a manner that prevents damage, interference, or disruption of water flows, and improvements associated with all springs, wells, or impoundments. It is the operator's responsibility to enact the precautions necessary to prevent damage, interference, or disruptions.

2. Companies controlling roads that provide access into crucial wildlife areas may be required to close the road with a lockable gate to prevent general use of the road during critical periods of

the year when resource problems are experienced (during hunting seasons, winter, etc.). This restrictive measure would be applied where needed to protect wildlife resources or to minimize environmental degradation.

3. The use of closed road segments would be restricted to legitimate, authorized agents of the lessee and/or their subcontractor(s), the land managing agency, and other agencies with a legitimate need (NDOW, other law enforcement agencies, etc.).

4. Unauthorized use or failure to lock gates during specified time frames by the lessee or its subcontractors would be considered a violation of the terms of the APD or associated grants.

5. The operator shall regularly maintain all roads used for access to the lease operation. A maintenance plan may be required. A regular maintenance program may include, but not be limited to, upgrading of existing roads, blading, ditching, culvert and drainage installation, and graveling or capping of roadbed.

6. Noxious weeds that may be introduced due to soil disturbance and reclamation would be treated by methods to be approved by the AO. These methods may include biological, mechanical, or chemical. Should chemical methods be approved, the lessee must submit a Pesticide Use Proposal to the AO 60 days prior to the planned application date.

Reclamation and Abandonment

1. A water well may be accepted by the BLM Ely District upon completion of operations. Please submit the following information to the Ely District Office, Bureau of Land Management, 702 N. Industrial Way, Ely, NV 89301:

a. Profile 1 Water Analysis

b. Type of inside diameter of casing used in well

c. Total depth of well

d. Depth of concrete seal

e. Depth of static water level

f. Water bearing formation or description of aquifer

2. The operator or contractor would contact the AO 48 hours prior to reclamation work.

3. Restoration work may not begin on the well site until the reserve pits are completely dry.

4. Disturbed areas would be recontoured to blend as nearly as possible with the natural topography prior to revegetation. This includes removing all berms and refilling all cuts. Compacted portions of the pad would be ripped to a depth of 12 inches unless in solid rock.

5. Site preparation for reclamation may include contour furrowing, terracing, reduction of steep cut and fill slopes, and the installation of water bars, etc.

6. All portions of the access roads not needed for other uses as determined by the AO would be reclaimed.

7. The stockpiled topsoil would be spread evenly over the disturbed area.

8. The operator would be required to construct water bars and re-open drainages on abandoned access roads and pipeline routes to minimize erosion as required. Water bars would be spaced appropriately dependent upon topography and slope. Pipeline routes shall be water-barred perpendicular to the fall-line of the slope.

9. The area is considered to be satisfactorily reclaimed when all disturbed areas have been recontoured to blend with the natural topography, erosion stabilized and an acceptable vegetative cover has been established. The Nevada Guidelines for Successful Revegetation for the Nevada Division of Environmental Protection, the Bureau of Land Management and the U.S.D.A Forest Service (attached as part of the SPPs/COAs) would be used to determine if revegetation is successful.

10. Rehabilitation shall be planned on the sites of both producing and abandoned wells. The entire site or portion thereof, not required for the continued operation of the well, should be restored as nearly as practical to its original condition. Final grading of back-filled and cut slopes would be done to prevent erosion and encourage establishment of vegetation.

11. Petroleum products such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents used to fuel, lubricate, and clean vehicles and equipment would be containerized in approved containers.

12. Hazardous material shall be properly stored in separate containers to prevent mixing, drainage, or accidents. Hazardous materials shall not be drained onto the ground or into streams or drainage areas.

13. Totally enclosed containment shall be provided for all solid construction waste including trash, garbage, petroleum products, and related litter would be removed to an authorized sanitary landfill approved for the disposal of these classes of waste.

14. All construction, operation, and maintenance activities shall comply with all applicable Federal, State, and local laws and regulations regarding the use of hazardous substances and the protection of air and water quality.

15. In construction areas where recontouring is not required, vegetation would be left in place wherever possible and the original contour would be maintained to avoid excessive root damage and allow for resprouting.

16. Watering facilities (e.g. – tanks, developed springs, water lines, wells, etc.) would be repaired or replaced if they are damaged or destroyed by construction activities to its predisturbed condition as required by the AO.

17. Mulching of the seed-bed following seeding may be required under certain conditions (*i.e.* – expected severe erosion), as determined by the AO.

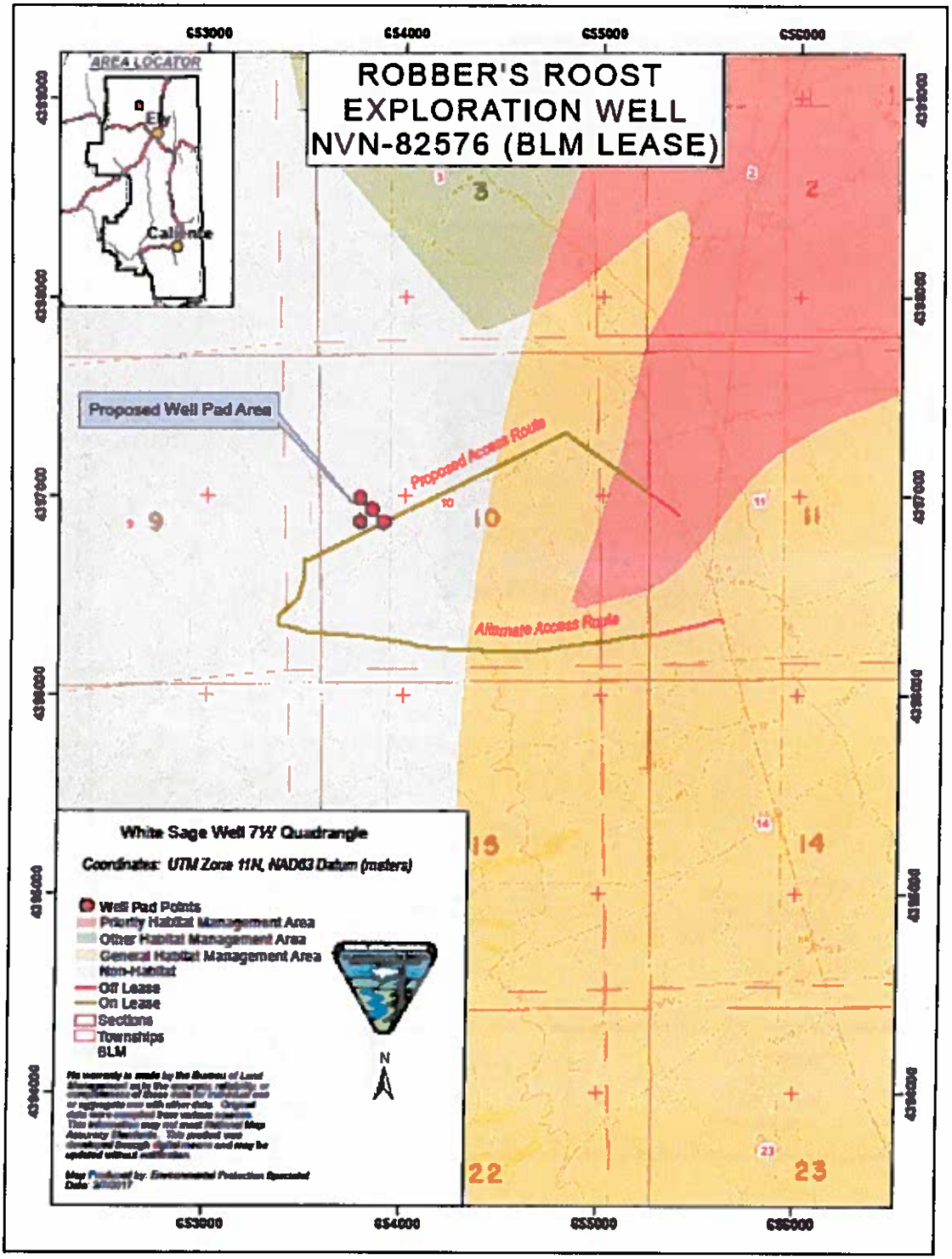
18. Seed would be broadcast between October 1 and March 15 using a site-specific seed mixture and depth of planting as determined by the AO. Seed may be applied with a rangeland drill at half the rate of broadcast seeding. All seeding application rates would be in pounds of pure live seed per acre. Seed should be adapted varieties.

19. A four-strand barbed wire fence would be required around the drill pad and former reserve pit area while revegetation is in progress. The fence may be removed by the operator when revegetation is determined to be satisfactory by BLM resource specialists.

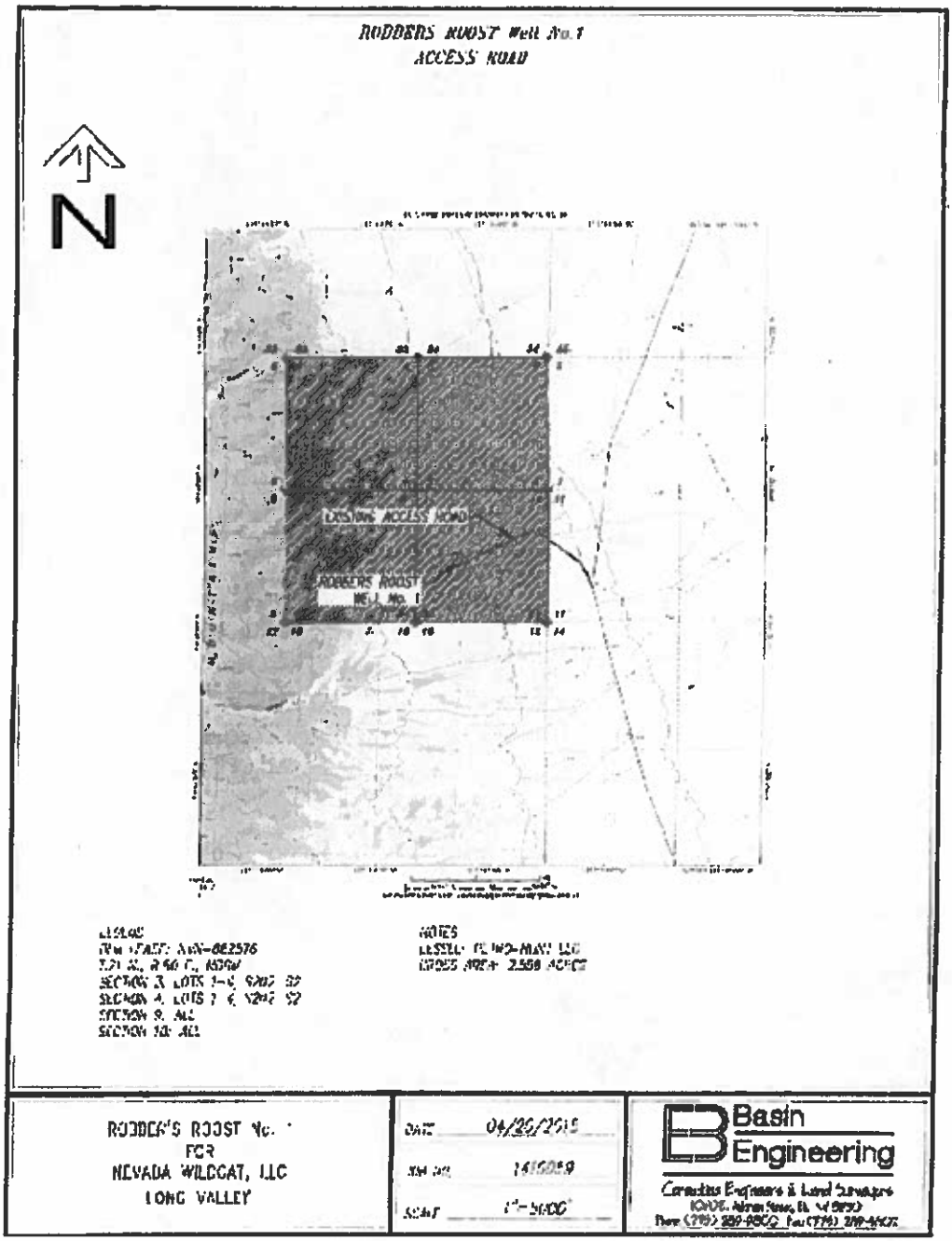
20. A BLM-approved fence would be required around the reclaimed drill pad area in order to prevent livestock and wild horse grazing. The operator would remove the fence after the BLM approves the revegetation of the drill pad and surface disturbance areas.

Appendix C

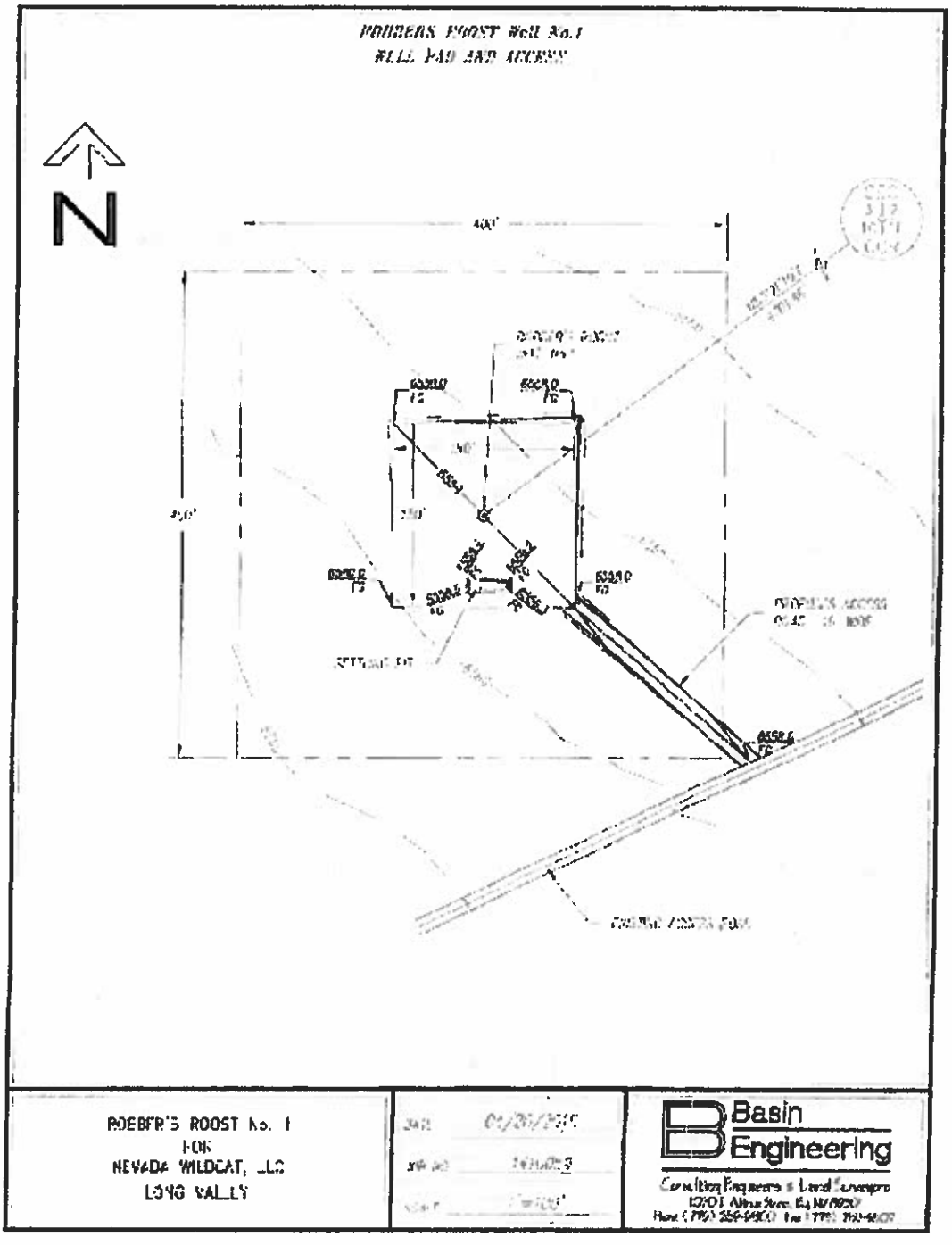
Robbers' Roost Proposed Well Location with Greater Sage-Grouse Habitat Categories



Appendix D
Access Road

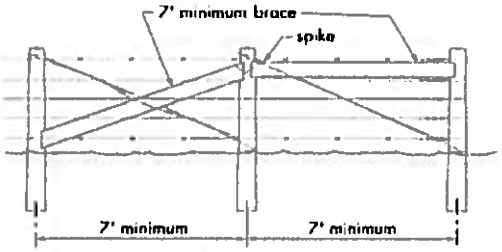


Appendix E
Well Pad Diagram



Appendix F

Wildlife Fence Enclosure Standards



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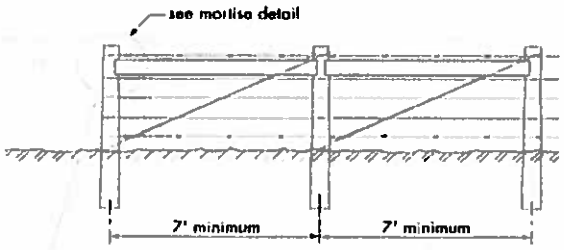

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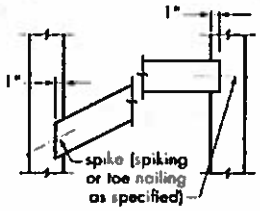
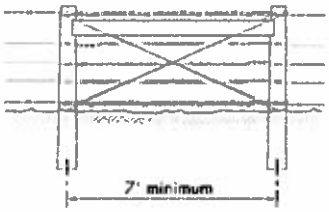
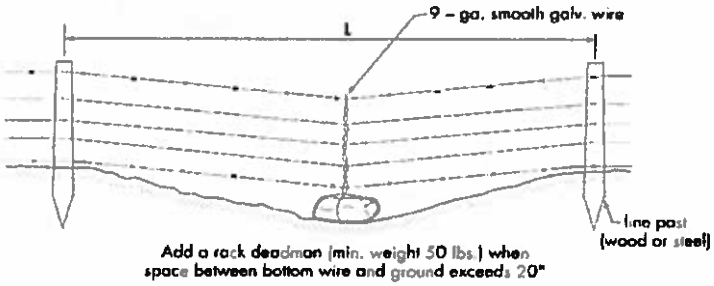


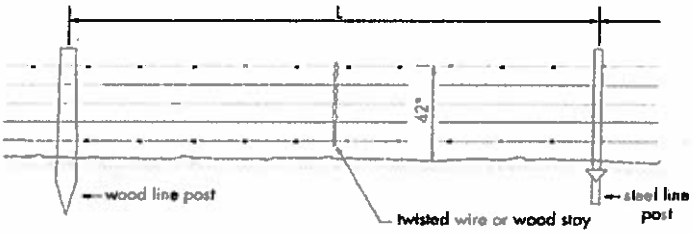
Mortise Detail



Stress Panel



Panel at Minor Depression



Line Panels

Appendix G

Water Source Location