United States Department of the Interior

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In Reply Refer To:
3809 (LLNVB01000)
NVN-088264
DOI-BLM-NV-B010-2010-0081-EA

MAR 15 2011

Dear Interested Public:

Pursuant to the National Environmental Policy Act (NEPA) and Council on Environmental Quality regulations for implementing NEPA the Bureau of Land Management (BLM) Mount Lewis Field Office (MLFO) has prepared an Environmental Assessment (EA), which analyzes the impacts of a proposed mining exploration project in Eureka County, Nevada. The EA identifies, describes and evaluates resource protection measures that would mitigate the possible impacts from the proposal.

The proposed Red Canyon Exploration Project (Project) is located approximately 30 miles northwest of the town of Eureka, Nevada in the Roberts Mountains. The project area includes approximately 1,556 acres and is located entirely on public land administered by the BLM MLFO. Montezuma Mines Inc. (MMI) proposes to conduct exploration related activities in phases on public lands that would result in a total of approximately 125 acres of surface disturbance, which would be subject to reclamation. Phase I activities would create 24.61 acres of surface disturbance and would consist of exploration drilling of 31 sites, and the construction of 17,670 linear feet of exploration drill roads. Subsequent phases would occur over the next 5 years and locations would be dependent on prior exploration activities with approval from BLM prior to implementation. The subsequent phases would total 95.40 acres of surface disturbance.

According to the regulations found at 43 CFR 4.410, you have the right to appeal the decision analyzed in this EA if you have a legally recognizable interest which has been, or could be, adversely affected by it. An adversely affected party can be one who has participated in the decision making process by commenting on an environmental document however, such comments must be substantive in content.

The EA will be available for a 30-day public comment period. Written comments on this EA will be accepted at the above address until 4:30 p.m., April 15, 2011. This EA can be viewed on the BLM Battle Mountain District website at:
http://www.blm.gov/nv/st/en/fo/battle_mountain_field/blm_information/national_environmental.html

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

If you have any questions or to obtain a hard copy of this document, please contact Larry Turner, Mining Engineer, or Angelica Rose, Planning and Environmental Coordinator, at the above address or at (775) 635-4000.

Sincerely,

Christopher J. Cook
Acting Field Manager
Mount Lewis Field Office

MONTEZUMA MINES INC.
RED CANYON EXPLORATION PROJECT
EUREKA COUNTY, NEVADA

Environmental Assessment
#DOI-BLM-NV-B010-2010-0081-EA

March 2011

Bureau of Land Management
Mount Lewis Field Office
Battle Mountain District
50 Bastian Road
Battle Mountain, Nevada 89820-2332

MONTEZUMA MINES INC.
RED CANYON EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

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LIST OF ACRONYMS

amsl	above mean sea level
APE	Area of Potential Effect
AUMs	Animal Unit Months
BAPC	Bureau of Air Pollution Control
BLM	Bureau of Land Management
BMPs	Best Management Practices
BMRR	Bureau of Mining Regulation and Reclamation
CESAs	Cumulative Effects Study Areas
CFR	Code of Federal Register
CO	carbon monoxide
CO_2(e)	carbon dioxide equivalent
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973, as amended
˚F	Fahrenheit
FG Line	Falcon to Gondor Transmission Line
FR	Federal Register
4WD	four wheel drive
FLPMA	Federal Land Policy and Management Act of 1976
GHG	Greenhouse Gas
GPS	global positioning system
HMA	Herd Management Area
HUC6	Hydrologic Unit Code Watershed Level 6
IB	Informational Bulletin
ID	Interdisciplinary
IM	Instruction Memorandum
LCT	Lahontan Cutthroat Trout
MBTA	Migratory Bird Treaty Act
MDB&M	Mount Diablo Base and Meridian
MLFO	Mount Lewis Field Office
MLRA	Major Land Resources Area
MMI	Montezuma Mines Inc.
MSDS	Material Safety Data Sheets
MSHA	Mine Safety Health Administration
NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act
NDOA	Nevada Department of Agriculture
NDEP	Nevada Department of Environmental Protection
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NNHP	Nevada Natural Heritage Program
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NSAAQS	Nevada State Ambient Air Quality Standard
PoO	Plan of Operations/Permit for Reclamation
PMU	Planning Management Unit

RFFA	Reasonably Foreseeable Future Actions
RMP	Shoshone-Eureka Resource Management Plan
ROW	Rights-of-Way
ROD	Record of Decision
SIP	State Implementation Plan
TCP	Traditional Cultural Properties
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
VRM	Visual Resource Management
WSA	Wilderness Study Area

MONTEZUMA MINES INC.
RED CANYON EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

1 INTRODUCTION / PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

The Red Canyon Exploration Project (Project) is located approximately 30 miles northwest of the town of Eureka, Nevada, in the Roberts Mountains at elevations ranging between approximately 6,700 feet above mean sea level (amsl) to 7,230 feet amsl. The Project boundary encompasses all or portions of Sections 1 and 12, Township 23 North, Range 49 East (T23N, R49E) and Sections 6, 7, 8, 17, and 18, T23N, R50E, Mount Diablo Base and Meridian (MDB&M), Eureka County, Nevada (Project Area). The Project Area includes approximately 1,556 acres and is located entirely on public land administered by the Bureau of Land Management (BLM) Battle Mountain District, Mount Lewis Field Office (MLFO). Figure 1.1.1 shows the Project Area, access roads, and land ownership status.

Montezuma Mines Inc. (MMI) proposes to expand Notice-level exploration activities on public land under Notice #NVN-086223 out of the BLM MLFO, Battle Mountain District. The Notice-level activity includes construction of drill sites and sumps, new road construction and overland travel with an approved surface disturbance total of 4.99 acres. MMI proposes to conduct additional exploration related activities in phases that would create approximately 120.01 acres of surface disturbance subject to reclamation. The existing and proposed surface disturbance for the Project would total 125 acres.

The combined acreage of existing and proposed disturbance on BLM-administered land is greater than five acres; therefore, in March 2010 MMI submitted a Plan of Operations/Permit for Reclamation (PoO) (BLM Record Number NVN-088264) to the BLM and the Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation (BMRR) in accordance with the BLM's Surface Management Regulations 43 Code of Federal Register (CFR) 3809.400 and Nevada reclamation regulations at Nevada Administrative Code (NAC) 519A.

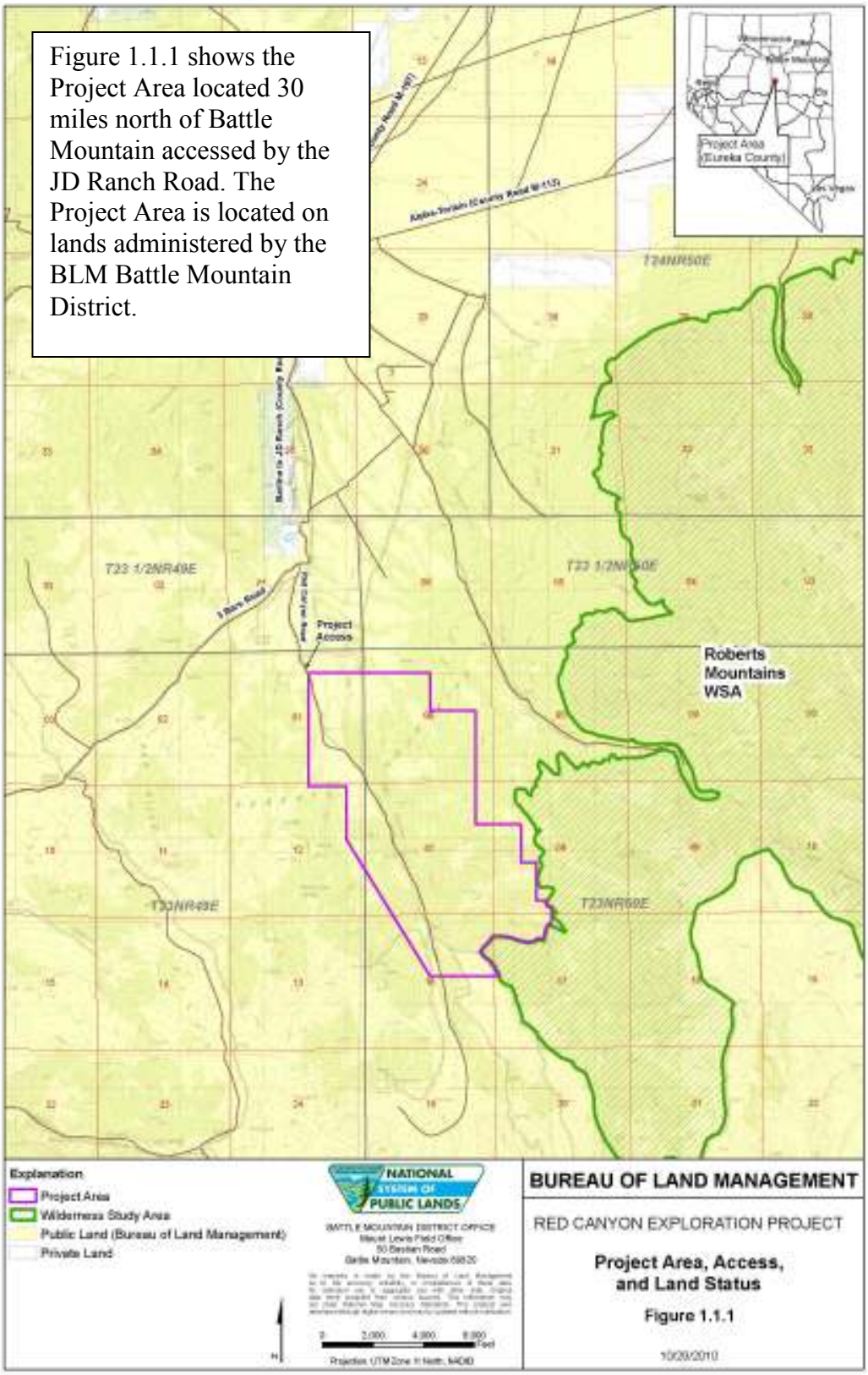
1.2 Purpose of and Need for Action

The purpose of the proposed action is to authorize MMI the opportunity to explore, locate, and delineate precious metals (gold) deposits on public lands and the federal mineral estate as provided under the General Mining Law of 1872 (Mining Law).

The need for the action is established by the BLM's responsibility under Section 302 of the Federal Land Policy and Management Act of 1976 (FLPMA) and the BLM Surface Management Regulations at 43 CFR 3809, to respond to a mining exploration plan of operations and ensure any actions taken to prospect, explore, assess, develop, and process locatable mineral resources on public lands prevent unnecessary or undue degradation of the public lands and reclaim disturbed areas.

The decision BLM will make based on the NEPA analysis is to approve the plan of operations with no modifications to authorize the exploration activities; approve the plan of operations, with additional mitigation measures to prevent unnecessary or undue degradation of public lands

Figure 1.1.1: Project Area, Access, and Land Status



and/or protect sensitive resource values and to provide for reclamation of disturbed areas; or deny approval of the plan of operations and not authorize the exploration activities.

1.3 BLM Responsibilities and Relationship to Planning

The BLM is responsible for the preparation of this EA, which was prepared in conformance with the policy guidance provided in the updated BLM National Environmental Policy Act (NEPA) Handbook H-1790-1 (BLM 2008).

1.3.1 Shoshone-Eureka Management Plan

The Proposed Action is in conformance with the BLM's Shoshone-Eureka Resource Management Plan (RMP) dated March 1986 (BLM 1986a). Specifically, on page 29 in the RMP Record of Decision (ROD), under the heading "Minerals" subtitled "Objectives" number 1:

> "Make available and encourage development of mineral resources to meet national, regional, and local needs consistent with national objectives for an adequate supply of minerals."

Under "Management Decisions," "Locatable Materials," page 29, number 1:

> "All public lands in the planning areas will be open for mining and prospecting unless withdrawn or restricted from mineral entry."

Under "Management Decisions," number 5, Current Mineral Production Areas:

> "Recognize these areas as having a highest and best use for mineral production and encourage mining with minimum environmental disturbance..."

Under 43 CFR 3809.415 the operator of a plan of operations must prevent unnecessary or undue degradation to the public lands.

1.3.2 Local Land Use Planning and Policy

The Eureka County 1973 Master Plan, updated in 2000 and again in 2010, contains a description of land uses, restrictions on development, and recommendations for future land use planning. The Eureka County Master Plan 2010 included an Economic Development Element which incorporated recommendations for increased land use planning that expands and diversifies the County's economy. The Natural Resources and Land Use Element was developed and included into the Plan in response to Nevada Senate Bill 40 (1983) which directs counties to develop plans and strategies for resources that occur within lands managed by federal and state agencies.

1.4 Scoping

The Project was internally scoped by the BLM Interdisciplinary (ID) team at a meeting held on March 23, 2010, at the BLM office in Battle Mountain. Native American Tribes with known interests in the area were notified of the Project on May 25, 2010.

1.5 Issues

During an internal meeting, BLM personnel identified the elements associated with supplemental authorities and other resources and uses to be addressed in this document as outlined in Chapter 3. The following specific issues related to the Proposed Action were identified:

- Air and Atmospheric Values;
- Cultural Resources;
- Environmental Justice;
- Fire Management;
- Forestry and Woodlands;
- Geology and Mineral Resources;
- Noxious Weeds, Invasive and Non-native Species;
- Land Use and Realty;
- Migratory Birds;
- Native American Concerns;
- Paleontological Resources;
- Rangeland Management;
- Recreation;
- Socioeconomic Values;
- Soils;
- Special Status Species;
- Vegetation;
- Visual Resources;
- Wastes, Hazardous or Solid;
- Water Quality, Surface Water and Ground Water;
- Wetlands and Riparian Zones;
- Wild Horses and Burros;
- Wilderness; and
- Wildlife.

2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Proposed Action

Under the Proposed Action, MMI proposes to conduct exploration related activities that would result in a maximum of 125 acres of surface disturbance subject to reclamation. Proposed exploration activities resulting in 88.54 acres of new phased surface disturbance that would consist of the creation of drill sites and sumps, overland travel, the construction of new access roads, and the installation of up to three ground water monitoring wells. In addition to proposed surface disturbance, there are approximately 31.47 acres of existing post-January 1, 1981, roads that would be used and reclaimed and 4.99 acres of Notice-level disturbance, for a total Project-related disturbance of 125 acres. The existing and proposed disturbance is outlined by each type of activity in Table 2.1-1.

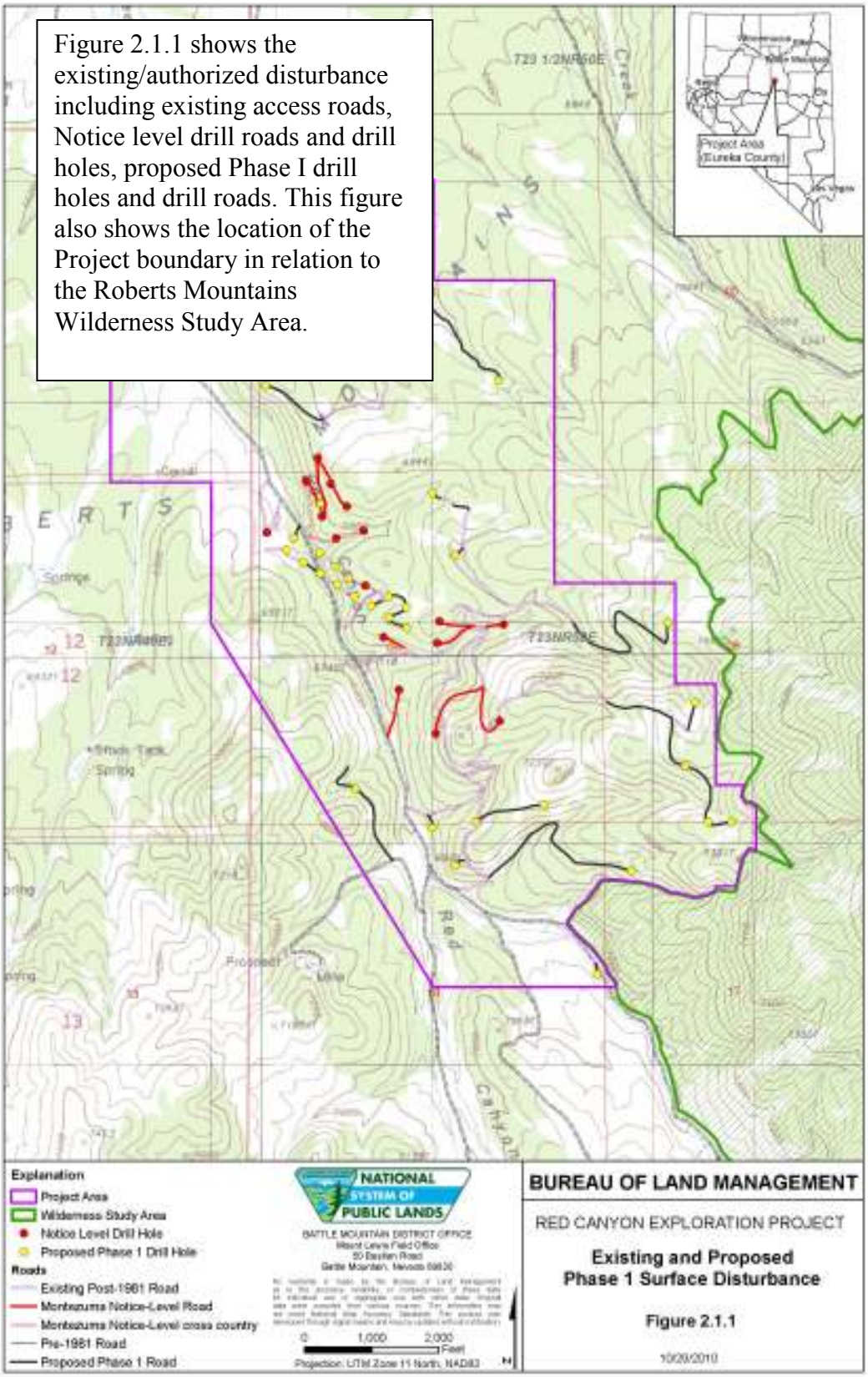
Table 2.1-1: Acreage of Existing and Proposed Project Disturbance

Exploration Activity	Existing Surface Disturbance (acres)	Proposed Surface Disturbance (acres)		Total Surface Disturbance (acres)
	Notice-level	Phase I	Subsequent Phases	
Constructed Roads	3.35	7.68	53.10	64.13
Overland Travel	0.27	0.00	3.00	3.27
Post-January 1, 1981 Existing Roads	0.00	14.17	17.30	31.47
Constructed Drill Sites (including sumps)	1.37	2.76	21.70	25.83
Monitoring Wells	0.00	0.00	0.30	0.30
Total Disturbance	4.99	24.61	95.40	125.00

The Proposed Action would be implemented in a phased manner. As outlined in Table 2.1-1, Phase I activities under the PoO would create 24.61 acres of surface disturbance. Phase I activities would consist of exploration drilling of a total of 31 sites (2.76 acres), the construction of 17,670 linear feet (7.68 acres) of exploration drill roads and the use of approximately 35,518 linear feet (14.17 acres) of existing post-January 1, 1981, roads. All Phase I proposed activities and existing disturbance within the Project Area are shown on Figure 2.1.1. Any changes in Phase I surface disturbance, as shown in Figure 2.1.1, would require additional approval by the BLM.

The remaining 95.40 acres of disturbance would occur in subsequent phases over the next five years. Locations of the disturbance in Phase I and subsequent phases would be based on the results of prior exploration activities. By using this phased approach to drilling, MMI would assess the expansion needs of the Project based on previous drill results. In order to provide the BLM and BMRR relevant data concerning surface disturbance, a map would be submitted showing subsequent phases for review and approval by the BLM per 43 CFR 3809.432 (b) prior to any additional surface disturbance. Once a phase has been approved by the BLM, any changes in locations of surface disturbing activities of that phase would require approval by the BLM. Any changes in an approved phase of the Project requested by the operator would not result in an

Figure 2.1.1: Existing and Proposed Phase I Disturbance



exceedance of the approved acreage for that phase of the Project. In addition, MMI would provide to the BLM and BMRR an annual report on, or before, April 15th of each year that documented surface disturbance locations, types of surface disturbance, and any completed concurrent reclamation.

2.1.1 Location and Access

The Project is accessed by driving north on State Highway 278 from Eureka for approximately 39 miles, then left at the Alpha-Tonkin county road (M-113) for approximately 11 miles, then another left at the Bartine to J.D. Ranch county road (M-107) for approximately three miles before turning south onto the Red Canyon Road for one mile to the Project Area. Figure 1.1.1 shows access to the Project Area via the Red Canyon Road.

2.1.2 Equipment

Project personnel would access the site in four-wheel drive (4WD) vehicles. Drilling would be conducted using truck-mounted LF140 or LF90 core drill rigs and a truck-mounted Ingersoll Rand TH-75 reverse circulation drill rig, or equivalent. The following list of support vehicles and equipment is expected to be used at some point in the life of the Project:

- Up to two water trucks (3,500- to 3,800-gallon);
- Up to two mud mixing tanks and pumps;
- One circulation tank;
- One pipe truck;
- One casing truck;
- One booster truck;
- One backhoe;
- One auxiliary air compressor;
- One portable light plant/generator;
- One Caterpillar D8 bulldozer;
- One grader or equivalent;
- One excavator; and
- Two all-terrain vehicles with a seed broadcaster.

A Caterpillar D8 bulldozer or equivalent would be used to construct roads and drill sites where needed. Roads and drill sites would be reclaimed using an excavator and an all-terrain vehicle with a seed broadcaster, or comparable method. MMI would take steps to prevent fires by ensuring that each field vehicle carries hand tools and a fire extinguisher. Water trucks at the Project Area would be used in the event of a fire. All portable equipment, including drill rigs, support vehicles, and drilling supplies, would be removed from the Project Area during extended periods of non-operation.

2.1.3 Road Construction

The Project Area would be accessed via existing roads as described in Section 2.1.1 and shown in Figure 1.1.1. MMI would, to the extent practicable, utilize pre-January 1, 1981, roads for access. All construction activities would be consistent with applicable BLM approved Best Management Practices (BMPs).

When new road construction is necessary, roads would be built with an approximately 14-foot running surface including the safety berm, as required by Mine Safety Health Administration (MSHA). Road construction would occur in areas with varying topography. As a result, the disturbance widths would vary between 16 feet and 22 feet. Approximately 17,690 linear feet (7.68 acres) of new road would be constructed under Phase I. Balanced cut and fill construction would be used to the extent practicable to minimize the exposed cut slopes and the volume of fill material. Since the depth of cut would be kept to a minimum, growth media removed during construction would be stockpiled as the fill slope to be used during reclamation. Trees removed during the construction of drill roads would be stockpiled and used during reclamation of the roads for slope stabilization and to act as water bars. Road construction within drainages would be avoided whenever possible. When drainages must be crossed with a road, BMPs established by the NDEP and the Nevada Division of Conservation Districts Handbook of Best Management Practices, adopted by the State Environmental Commission on December 7, 1994, would be followed to minimize the surface disturbance and erosion potential. Culverts would generally not be installed on exploration roads. However, if a culvert is necessary, the placement and size would be approved by the BLM and NDEP.

Road construction would be performed with a dozer and would occur intermittently throughout the life of the Project. As previously stated, MMI would utilize existing roads to the extent practicable; however, alternate road locations may be determined in the field based on geologic information collected during the exploration program. Alternate road locations would need to be approved by the BLM before starting their construction. Road grades would be kept to an average of ten percent or less to minimize erosion. Where steeper grades are unavoidable, water bar spacing would not exceed 400 feet. Water bar spacing on flatter slopes would average 300 to 400 feet, or at a distance approved by the BLM.

Maintenance of exploration roads would include minor seasonal regrading and reestablishment of water bars as necessary, as outlined in the BLM Manual 9113. Erosion control would be monitored in the spring and fall or after any significant precipitation event. Maintenance of existing roads would not increase the surface disturbance within the Project Area and would consist of smoothing rutted surfaces and holes on existing access and drill roads. Maintenance of existing pre-1981 roads would be conducted only on an as-needed basis and would include minor seasonal regrading and maintenance of drainage features as necessary. Maintenance would not increase the surface disturbance area. If road gravel is necessary to improve some of the roads in the area, the gravel would be obtained from a BLM approved source. The gravel would be placed on the road by a dump truck and smoothed by a road grader.

2.1.4 Drilling Activities and Work Force

New drill site disturbance would be kept to the minimum size necessary to ensure safe access and a safe working area for equipment and crew. Sumps would be constructed as necessary within the drill site disturbance to collect drill cuttings and manage drilling fluids. Drill site construction within perennial, intermittent, and ephemeral drainages would be avoided. Exceptions could be made during dry summer months when no water is present. The disturbance would then be reclaimed prior to the occurrence of seasonal flows in those drainages. Per the environmental protection measure outlined in Section 2.1.11, surface disturbance associated with drill site locations adjacent to Red Canyon drainage would be set back a minimum of 20 feet from the Red Canyon drainage to avoid accelerated discharge of sediment into state waters and BMPs would be used to trap sediment and debris from entering the drainage. During Phase I, MMI would conduct exploration drilling from 31 drill sites utilizing two drill rigs (one or two

truck-mounted reverse circulation rigs and/or one reverse circulation rig and core rig or equivalent).

Drill sites would each measure approximately 40 feet by 100 feet or an average of 3,877 square feet (approximately 0.089 acre). The total proposed disturbance associated with the construction of 31 Phase I drill site construction would a total approximately 2.76 acres, including sump disturbance. Surface disturbance would vary based on the slope of the terrain where the sites are constructed. Trees removed during drill site construction would be placed in stockpiles and later used for slope stabilization during reclamation activities. All drill sites would be constructed on proposed constructed roads and post-1981 roads. The drill sites constructed on proposed roads and post-1981 road disturbance would be completely reclaimed. Sump disturbance would be constructed within the drill site disturbance and would be 40 feet by 20 feet by ten feet deep. The drill sites and sumps would be constructed in areas with varying topography. The disturbance width of the drill sites would vary from approximately 44 feet to 61 feet.

Drill holes would be both vertical and angled with average drill depths of approximately 1,000 feet. Up to three pre-collar holes would be drilled with a reverse circulation rig then completed with a core rig. Cuttings not bagged and removed during sample collection would be used as a source of backfill and placed back down the borehole. All drill holes except the three pre-collar holes would be plugged prior to the drill rig moving from the drill site in accordance with Nevada Revised Statute (NRS) 534, NAC 534.4369, and NAC 534.4371. If ground water is encountered, the drill holes would be plugged pursuant to NAC 534.420.

Only water or nontoxic drilling fluids would be utilized, as necessary, during drilling. MMI would obtain water at the US Gold Tonkin Springs Mine, per a standing oral agreement to use their water rights, located approximately two miles northwest of the Project. MMI would access the water source by traveling north on the Red Canyon Road, then west on the Alpha-Tonkin county road to the Tonkin Springs Mine. Up to two 3,500- to 3,800-gallon water trucks would transport the water from the Tonkin Springs mine to the Project Area. Locals ranchers is considered an alternate source of water should the water at Tonkin Springs Mine no longer be available for use. During Project activities water use would average approximately 2,000 to 3,000 gallons per day for dust suppression.

Standard drilling procedures usually require a geologist to be on site throughout Project-related drilling activities. The duties of the geologist generally include sitting the drill rig, logging each hole according to the geologic features encountered, determining the maximum depth of each hole, and advising the drill operator as needed. The geologist usually travels to and from the drill site in a separate 4WD pickup truck.

A standard drill rig crew usually consists of a drill operator and one to two helpers (2-3 man crew). The helpers remove and box the recovered core or rotary samples and cuttings from reverse circulation and core rigs, mix drilling fluids in the portable mud tank, operate the water truck, assist with drilling operations, and conduct maintenance as necessary. The crew would be transported to and from the drill site in 4WD vehicles. Over the life of the Project, up to four drill rigs (reverse circulation and core) are expected to be in operation at the Project Area at any time. The Phase I activities for this Project would use two drill rigs. The work force would consist of two geologists, two drill crews, one operator for the dozer, and one operator for the track hoe. Up to a total of 14 individuals could be working at any given time during future phases of the Project. Drilling activities would generally be limited to daylight hours but could continue up to

24 hours per day for some drill rigs. Project personnel and contractors would stay in Eureka, Nevada.

All equipment would be properly muffled and equipped with suitable and necessary fire suppression equipment, such as fire extinguishers and hand tools. All Project-related traffic would observe prudent speed limits to enhance public safety, protect wildlife and livestock, and minimize dust emissions. All activities would be conducted in conformance with applicable federal and state health and safety requirements.

All Project-related refuse would be disposed of on a daily basis consistent with applicable regulations. No refuse would be disposed of on site. In the event that hazardous or regulated materials such as diesel fuel are spilled, measures would be taken to control the spill and the NDEP and BLM would be notified. A Spill Contingency Plan has been prepared that outlines procedures in case of a spill and is located in Appendix D of the PoO. All drill holes would be abandoned in accordance with applicable federal and state standards as set forth and discussed in detail in the PoO.

2.1.5 Ground Water Monitoring Wells

MMI could construct up to three ground water monitoring wells within the Project Area to collect baseline data for future use. Ground water monitoring wells would be drilled in accordance with NAC 534.4351 through 534.4363. MMI would either complete up to three exploration drill holes for use as ground water monitoring wells or drill new holes for the wells, if needed. In accordance with NAC 534.4361.1, a surface pad would be constructed around each monitoring well. It is anticipated that each monitoring well surface pad would measure approximately 40 feet by 100 feet for an approximately 0.3 acre of disturbance. The monitoring wells would be plugged in accordance to NAC 534.420.

The location and depth of potential ground water monitoring wells can not be determined at this time. Once determined, MMI would notify the BLM, BMRR, and the NDWR of the monitoring well locations.

2.1.6 Water Use

Drill holes would average approximately 1,000 feet in depth. Drill fluids would be managed with the use of sumps at each drill site. Reverse circulation and core drilling requires recirculation of drilling fluid to cool the bit and remove cuttings. Water with or without nontoxic drilling fluid additives may be utilized, as necessary.

The management of drill cuttings would be conducted in a manner that is consistent with BMPs and includes the use of one or all of the following: sediment traps or sumps located at drill sites; straw bales (certified weed-free); silt fences; and the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling. If needed, the use of a sand separation system would be used in conjunction with the sumps so that the recirculation of drilling fluids can be maximized.

None of the drilling fluids to be used on the Project contain hazardous substances and all are approved for well drilling and would not contaminate aquifers. Material Safety Data Sheets (MSDSs) for common drill additives are included in Appendix D of the PoO.

2.1.7 Surface and Ground Water Control

Sumps would be constructed at each drill site to collect drill cuttings and manage drill fluids. Drill sites would not be located in drainages. Should any drainages be disturbed, they would be re-shaped to approach the pre-construction contours. The resulting channels would be of the same capacity as up and downstream reaches and would be made non-erosive by use of surface stabilization techniques (rip-rap from a BLM approved source) where necessary, and ultimately revegetated. Following completion of earthwork, all disturbed areas would be broadcast seeded. The drill holes would be plugged by placing drill cuttings or inorganic fill material into the total depth of the hole, or if ground water is encountered, plugged as a well pursuant to NAC 534.420.

2.1.8 Surface Occupancy

Under 43 CFR Subpart 3715, occupancy means full or part-time residence on the public lands. Occupancy also means activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for the purpose of monitoring activities. Residence or structures include, but are not limited to, barriers to access, fences, tents, motor homes, trailers, cabins, houses, buildings, and storage of equipment or supplies. MMI does not plan to utilize temporary structures on site, but would house equipment and storage of materials in a storage unit in Eureka, if necessary. There are no separate lay down yards planned for the Project as materials would be stored at each drill site location within the surface disturbance associated with the Project activities. A portable toilet would be utilized at each drill site and would be relocated to and from one drill site to the next. Monitoring wells would have locked structures that extend above ground level. These activities are reasonably incident to exploration and meet the definition of occupancy.

2.1.9 Solid and Hazardous Materials

All nonhazardous refuse generated by the Project would be disposed of off site at an authorized landfill facility consistent with applicable regulations. No refuse would be disposed of within the Project Area. Water and nontoxic drilling fluids would be utilized as necessary during drilling and would be stored at the Project Area. Solid waste and general refuse would be stored in containers at the drill site locations. The Notice refuse was stored at the staging area at the junction of the Tonkin Springs Mine Road and Red Canyon Road prior to being transported off site. Porta potties would be transported on trailers and would be stationed at the drill sites. These facilities would be serviced once a week by Terry's Pumpin' & Potties or other similar contractor.

Regulated petroleum substances utilized at the Project Area would include diesel fuel, gasoline, and lubricating grease and only include the substances that are within or support the equipment and vehicles. Varying amounts of these products would be used or stored on site depending on the number and types of equipment working on the Project. No drums or containers would be stored at the drill sites. Fuel would be supplied to the drill rigs and ancillary equipment by Al Park Petroleum who loads the fuel onto smaller trucks for transport to the drill rigs. Therefore, fueling is likely to take place at the various drill pad locations. These fuel trucks would have built-in secondary containment and leak prevention as required by law. In the event that hazardous or regulated materials are spilled, measures would be taken to control the spill, and the BLM and NDEP would be notified as required. Any hazardous substance spills would be handled in accordance with MMI's Spill Contingency Plan (Appendix D of the PoO), including an immediate cleanup and any resulting waste transferred off site in accordance with all

applicable local, state, and federal regulations. Contract drillers would maintain spill kits on site for use in case of a spill. As described in Section 2.1.11, if a spill of a petroleum constituent is considered to meet the reportable quantity per the NDEP's guidelines (greater than 25 gallons or greater than 3 cubic yards of impacted material) or a reportable quantity for hazardous waste is released based on the Federal EPA guidelines established under Title III List of Lists (40 C.F.R. Part 302), the BLM and NDEP would be notified within 24 hours and the appropriate remedial actions and confirmation sampling would be conducted in accordance with NDEP direction.

2.1.10 Reclamation

Reclamation would be completed to the standards described in 43 CFR 3809.420 and NAC 519A. Reclamation would meet the reclamation objectives as outlined in the United States Department of Interior Solid Minerals Reclamation Handbook #H-3042-1, Surface Management of Mining Operations Handbook H-3809-1, and revegetation success standards per BLM and BMRR "Revised Guidelines for Successful Mining and Exploration Revegetation." Reclamation activities would be conducted concurrently with exploration activities when it has been determined that exploration disturbance is no longer needed. Reclamation would begin at the earliest practicable time within exploration areas considered inactive, without potential, or completed.

Regrading and reshaping of all constructed drill sites, constructed exploration roads, and existing post-January 1, 1981, roads utilized for Project-related activities would be completed to approximately the original topography. Fill material, enhanced with growth media, would be pulled onto the roadbeds to fill the road cuts and restore the slope to natural contours. Sumps would be backfilled with the stockpiled spoil pile. Reclamation would be completed with an excavator and dozer as necessary.

Drill sites on existing pre-January 1, 1981, disturbance would not require reclamation beyond backfilling the sumps. Drill sites constructed on existing pre-January 1, 1981, roads would be reclaimed back to pre-project condition. Drill sites constructed on post-January 1, 1981, roads and disturbance would be reclaimed.

Should any drainages be disturbed, they would be re-shaped to approach the pre-construction contours. The resulting channels would be of the same capacity as up and downstream reaches and would be made non-erosive by use of surface stabilization techniques (rip-rap from a BLM approved source) where necessary, and ultimately revegetated. Following completion of earthwork, all disturbed areas would be broadcast seeded.

The depth of cut for newly constructed exploration roads would be minimal. Soils capable of serving as growth media would be salvaged and stockpiled as the fill slope. In addition to the soils, as much of the soil organic matter as possible would be salvaged to minimize compaction and promote aeration. Soil amendments are not considered necessary in those areas where sufficient growth media are available.

All drill holes (i.e., boreholes) would be plugged prior to the drill rig moving from the drill site in accordance with NRS 534, Section 31, NAC 534.4369 and NAC 534.4371, and guidance from the BLM. In the event that ground water is encountered, drill holes would be plugged pursuant to NAC 534.420. Three drill holes would be collared with a reverse circulation drill rig and completed using a core rig. Once the core rig has completed drilling, the hole would be plugged. If casings are set in a borehole, either the boreholes would be completed as wells and plugged

pursuant to NRS 534.420 or the casings would be completely removed from the boreholes before they are plugged pursuant to Section 31. The upper portion of the borehole may be permanently cased if the annulus is completely sealed from the casing shoe to surface pursuant to NAC 534.380. In the event that the upper portion of a borehole is permanently cased, the casing would be perforated, in accordance with NAC 534.420.

Reclamation activities would be conducted concurrently with exploration activities when feasible, including the recontouring of slopes and other earthwork. Slopes will be stabilized prior to final seeding and reclamation. Timing of revegetation activities is critically important to the overall success of the program and would follow the schedule outlined in Table 2.1-2. Seeding activities would be timed to take advantage of optimal climatic periods, would be coordinated with other reclamation activities and would use the BLM-provided seed mix in Table 2.1-3. In general, final earthwork and drainage control would be completed in the summer or early fall. Seedbed preparation would generally be completed in the fall, either concurrently with or immediately prior to seeding. Seeds would be sown in late fall to take advantage of winter and spring precipitation and optimum spring germination. The seeding would be completed using a broadcast method and then raked. The reclaimed surfaces would be left in a textured or rough condition (small humps, pits, etc.). Broadcast seed application would be at the rate of approximately 13.35 pounds of pure live seed per acre and native seed would be used, when available. Only certified weed-free seed would be used for reclamation seeding. Early spring seeding may be utilized for areas not seeded in the fall. Reclamation activities would be coordinated with the BLM and the BMRR, as necessary. Site monitoring for stability and revegetation success would be conducted once a year, during the spring or fall, for a minimum of five years until attainment of the revegetation standards.

Table 2.1-2: Anticipated Final Reclamation Schedule

TECHNIQUES	Quarter				
	1st Jan-Mar	2nd Apr-Jun	3rd Jul-Sept	4th Oct-Dec	Year(s)
Regrading					Within two years of Project completion
Seeding					Within two years of Project completion
Monitoring					Three years beyond regrading and seeding

Note: Regrading activities could occur year-round.

Table 2.1-3: BLM Approved Seed Mix

Common Name	Scientific Name	Lbs./Acre (pure live seed)
Great Basin wildrye	***Leymus cinereus***	**3.0**
Indian ricegrass	***Achnatherum hymenoides***	**3.0**
Thurber's Needlegrass	***Stipa thurberiana***	**3.0**
Bottlebrush squirreltail	***Elymus elymoides***	**2.0**
Palmer's penstemon	***Penstemon palmeri***	**1.0**
Scarlet globemallow	***Sphaeralcea coccinea***	**1.0**
Lewis flax	***Linum lewisii***	**1.0**
Wyoming big sagebrush	***Artemisia tridentata wyomingensis***	**0.1**
Spiny hopsage	***Grayia spinosa***	**1.00**
Forage kochia	***Kochia prostrata***	**0.5**
	Total	**13.35**

Post-closure management would commence on any reclaimed area following completion of the reclamation work for the area. Post-closure management would extend until the reclamation of the site or component has been accepted by both the BLM and BMRR. For bonding purposes, a three-year post-closure management period is assumed following completion of reclamation construction on any site. For sites reclaimed early in the operations, management of the reclaimed sites would occur concurrently with operational site management. Annual reports showing reclamation progress would be submitted to the BLM and BMRR.

2.1.11 Environmental Protection Measures

MMI would commit to the following environmental protection measures as part of the Proposed Action to prevent unnecessary or undue degradation during construction, operation, and reclamation of the Project. The measures are derived from the general requirements established in the BLM's Surface Management Regulations at 43 CFR 3809 and the BMRR's mining reclamation regulations, as well as other water and air quality regulations.

Air Quality

- Emissions of fugitive dust from disturbed surfaces would be minimized by utilizing appropriate control measures. Surface application of water from a water truck and reduced speed limits on dirt access roads is the current method of dust control during high wind conditions.

Cultural Resources

- Pursuant to 43 CFR 10.4(g), MMI would notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further pursuant to 43 CFR 10.4 (c) and (d), the operator would immediately stop all activities in the vicinity of the discovery and not commence again for a maximum of 30 days or when notified to proceed by the BLM authorized officer.

- MMI would not knowingly disturb, alter, injure, or destroy any historical or archaeological site, structure, building, or object. If MMI discovers any cultural resource that might be altered or destroyed by operations, the discovery would be left intact and reported to the authorized BLM officer.

- In order to prevent impacts to cultural resources, MMI would avoid eligible or unevaluated cultural sites within the Project Area. In order to avoid eligible or unevaluated cultural sites, MMI would submit an annual work plan to the BLM. MMI would ensure that eligible or unevaluated cultural sites within the area of proposed phase surface disturbance are mapped by a qualified cultural resource specialist with a global positioning system (GPS) unit prior to surface disturbance, and a summary report of that mapping would be provided to the BLM by the cultural resource specialist. The BLM would review the proposed locations of the surface disturbance and notify MMI if the locations overlap with an eligible or unevaluated cultural site. If an eligible or unevaluated cultural site is located within the area of proposed surface disturbance, the identified cultural site(s) would be avoided.

Erosion and Sediment Control

- Final reclamation of constructed roads, sumps, and drill pads would consist of, if applicable, fully recontouring disturbances to their original grade and reseeding in the fall season immediately following completion of exploration activities. Overland travel routes would be scarified, if compacted, and then seeded.

- Reseeding would be consistent with all BLM recommendations for mix constituents, application rate, and seeding methods.

- Drill pads and sumps would be reclaimed as soon as practicable after completion of logging and sampling.

Fire Management

- All applicable state and federal fire laws and regulations would be complied with and all reasonable measures would be taken to prevent and suppress fires in the Project Area.

- In the event the Project should start a fire, MMI would be responsible for all the costs associated with suppression. The following precautionary measures would be taken to prevent and report wildland fires:

    - All vehicles would carry fire extinguishers;

    - Adequate fire fighting equipment (i.e., shovel, Pulaski, extinguishers), and an ample water supply would be kept at each drill site;

    - Vehicle catalytic converters would be inspected often and cleaned of brush and grass debris;

    - MMI would conduct welding operations in an area free from or mostly free from vegetation. An ample water supply and shovel would be on hand to extinguish

any fires created from the sparks. Extra personnel would be at the welding site to watch for fires created by welding sparks;

- MMI would report wildland fires immediately to the BLM Central Nevada Interagency Dispatch Center at (775) 623-3444; and

- When conducting operations during the months between May and September, MMI would contact the BLM MLFO, Division of Fire and Aviation at (775) 635-4000 to inquire about any fire restrictions in place for the area of operation and to advise this office of approximate beginning and ending dates for your activities.

- A defensible space around fire-sensitive equipment utilized in the Project Area would be created. The defensible space would be 2.5 times the height of the vegetation in the area.

Hazardous or Solid Wastes

- Pursuant to 43 CFR 8365.1-1(b)(3), no sewage, petroleum products, or refuse would be dumped from any trailer or vehicle.

- Only nontoxic fluids would be used in the drilling process.

- Regulated wastes would be removed from the Project Area and disposed of in a state, federal, or local designated area.

- If a spill of a petroleum constituent is considered to meet the reportable quantity per the NDEP's guidelines (greater than 25 gallons or greater than 3 cubic yards of impacted material) or a reportable quantity for hazardous waste is released based on the Federal EPA guidelines established under Title III List of Lists (40 C.F.R. Part 302), the BLM and NDEP would be notified within 24 hours and the appropriate remedial actions and confirmation sampling would be conducted under direction of the NDEP.

Noxious Weeds, Invasive and Non-native Species

- Noxious weeds would be controlled through implementation of preventive BMPs and eradication measures if noxious weeds were found.

- To eliminate the transport of vehicle-borne noxious weed seeds, roots, or rhizomes all vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities, for emergency fire suppression, or for authorized off-road driving within the Project Area would be free of soil and debris capable of transporting weed. All such vehicles and equipment would be cleaned in Eureka with high power or high pressure equipment prior to entering the Project Area. Vehicles and equipment would not drive through known populations of noxious weeds or invasive species following the vehicle washing and prior to entering the Project Area. Vehicles used for emergency fire suppression would be cleaned as part of check-in and demobilization procedures. Cleaning efforts would concentrate on tracks, feet and tires, on the undercarriage. Special emphasis would be applied to the axles, frames, cross members, motor mounts, on and underneath the steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs would be swept out and refuse would be

disposed of in waste receptacles. Cleaning sites would be recorded using GPS and provided to the MLFO weed coordinator or designated contact person.

- MMI would coordinate the eradication of the known population of musk thistle with the BLM prior to surface disturbing activities in the vicinity of this population.

Migratory Birds

- In order to avoid potential impacts to breeding migratory birds (including golden eagles [*Aquila chrysaetos*]), a nest survey would be conducted by a BLM approved biologist prior to any surface disturbance associated with exploration activities during the avian breeding season (March 1 through August 31 for raptors and April 1 through August 1 for other avian species). Pre-disturbance surveys for migratory birds are only valid for 14 days. If the disturbance for the specific location does not occur within 14 days of the survey another survey would be needed. If nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nest material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) would be delineated after consultation with the BLM resource specialist and the buffer area avoided to prevent destruction or disturbance to nests or birds until they are no longer actively breeding or rearing young. The site characteristics to be used to determine the size of the buffer area are as follows: a) topographic screening; b) distance from disturbance to nest; c) the size and quality of foraging habitat surrounding the nest; d) sensitivity of the species to nest disturbances; and e) the protection status of the species.

Native American Concerns

- Tribal representatives and/or lineal descendants, along with BLM cultural resources specialists, may periodically monitor identified sites (previously identified or inadvertent discovery of any new site). This monitoring may continue throughout the life of the proposed Project.

- With the implementation of the protection, avoidance, and monitoring measures previously described above, no additional mitigation measures are necessary at this time (pending continued consultation). However, as the Project Area continues to be utilized or new disturbance is proposed, consultation can be reinitiated for the same activity at any time. Depending on observed impacts, monitoring, identified mitigation measures, unforeseen impacts, growth of the Project, and continued tribal participation, consultation can occur throughout the life of this Project.

Paleontological Resources

- MMI would not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. If MMI discovers any paleontological resource that might be altered or destroyed by operations, the discovery would be left intact and reported to the authorized BLM officer.

Public Safety

- Public safety would be maintained throughout the life of the Project. All equipment and other facilities would be maintained in a safe and orderly manner.

- All trenches, sumps, and other small excavations that pose a hazard or nuisance to the public, wildlife, or livestock would be adequately fenced to preclude access.

- Activities would be restricted to frozen or dry ground conditions where feasible. Operations would be curtailed when saturated and soft soil conditions exist.

- In the event that any existing roads are severely damaged as a result of MMI activities, MMI would return them to their original condition.

Survey Monuments

- Any survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible.

Water Quality

- In order to avoid potential impacts to water resources within the Project Area, MMI would avoid direct impacts to the riparian areas within the Project Area. MMI would not conduct any surface disturbing activity, including drilling, within a 100-foot buffer of springs identified in the Project Area.

- Surface disturbance associated with proposed drill site locations adjacent to Red Canyon drainage would be set back 20 feet from the banks of this water course to avoid accelerated sedimentation and impacts to water quality. Further, BMPs including the installation of straw waddles or bales would be implemented on the downslope side of the disturbance footprint to further protect this water course from sedimentation. No drill sites would be located within the bed of this water course.

- All but three drill holes would be surveyed and plugged as an operational procedure immediately after completion of drilling in accordance with NAC 534.421 and 534.425. Three drill holes would be collared with a reverse circulation drill rig and completed using a core rig. Once the core rig has completed drilling, the hole would be plugged. Remaining drill holes would be plugged by placing drill cuttings or inorganic fill material into the total depth of the hole, or if ground water is encountered, plugged as a well pursuant to NAC 534.420.

- Drill cuttings would be contained and fluids managed on site utilizing appropriate control measures. Sediment traps would be used as necessary and filled at the end of the drill program.

- MMI would follow the Spill Contingency Plan for the Project as outlined in Appendix D of the PoO.

Wilderness Study Area

- MMI would survey and flag the boundary of the Roberts Mountains Wilderness Study Area (WSA) where it bounds the Project Area on the southeast margin to ensure that no surface disturbing activity is conducted within the WSA.

2.2 No Action Alternative

In accordance with BLM NEPA guidelines H-1790-1, Chapter V (BLM 1988), this EA evaluates the No Action Alternative which is a reasonable alternative to the Proposed Action. The objective of the No Action Alternative is to describe the environmental consequences that would result if the Proposed Action were not implemented. The No Action Alternative forms the baseline from which the impacts of all other alternatives can be measured.

Under the No Action Alternative, the Proposed Action would not be approved by the BLM; however, the area would remain available for other multiple use activities as approved by the BLM. MMI would continue exploration in the Project Area under the limits of the approved Notice up to a total of five acres of surface disturbance. This acreage could be reclaimed and released by the BLM and BMRR, based on compliance with the revegetation success release criteria; thereby, allowing MMI to create sequential acreage of disturbance with BLM approval. Activities associated with this total disturbance of five acres of surface disturbance include maintenance of existing access roads, construction of exploration roads, and construction of drill pads.

2.3 Alternatives Considered but Eliminated from Detailed Study

2.3.1 Cross Country or Overland Travel Alternative

This alternative would utilize only overland or cross country travel and would not allow construction of new roads. Utilization of cross country travel exclusively for the Project would eliminate much of the exploration due to the presence of piñon-juniper woodlands and sagebrush vegetation communities, which would not permit the passage of Project-related equipment. This alternative does not meet the purpose and need of the Proposed Action, which is to fully evaluate the mineral potential in the Project Area as allowed under the Mining Law, as amended, because exploration for mineralization in this area is difficult and requires numerous drill holes in order to evaluate the geologic and mineral potential.

2.3.2 Use Only Existing Roads Alternative

Under this alternative, all exploration activities would use only existing roads and no new roads would be constructed. This alternative does not meet the purpose and need of the Proposed Action because exploration of the lithologically controlled deposits in this area is difficult and requires numerous drill holes and trenches in order to evaluate the geologic and mineral potential. An alternative that eliminates access to portions of the exploration area would deny the claimant the opportunity to fully evaluate and characterize the mineral potential. However, the Proposed Action incorporates the use of existing roads to maximum extent possible.

2.3.3 Helicopter Drilling Alternative

This alternative would involve conducting exploration by using a helicopter to access the entire Project Area rather than construct roads. This would involve slinging or transporting a drill rig, fuel, supplies, laborers for pad construction, and drilling personnel via helicopter to all of the proposed drill sites. Water for drilling purposes would either need to be pumped to the site via water lines using diesel generators and pumps or by slinging water to the drill site. All personnel would be ferried to the drill site from staging areas via helicopter or they would have to hike to the drill sites from the existing roads. All drill samples would have to be removed from the drill sites with the use of a helicopter. New surface disturbance would still result from this alternative from construction of all the drill sites, the exploration drilling that occurred on existing roads, and from the development of staging areas. The Helicopter Drilling Alternative for the entire Project Area was considered but eliminated from full analysis for several reasons. First, helicopter drilling for the entire Project Area would not meet the purpose and need of the Proposed Action because at the present time, helicopters typically support core rigs. Some the activities under the Proposed Action would need to be conducted by high-production reverse circulation drill rigs, which are not helicopter supported. In addition, helicopter drilling would take substantially longer to obtain the same geologic data and could also require more drill holes, resulting in more disturbance and potential impacts to natural resources. Many of the proposed drill sites have existing road access. Additionally, a number of roads within the Project Area have already been constructed under Notice-level activities. Therefore, helicopter drilling for all the drill sites throughout the Project Area would not provide any environmental benefit over the Proposed Action.

3 AFFECTED ENVIRONMENT

3.1 Introduction

The purpose of this section of the EA is to describe the existing environment of the Project Area affected by the Proposed Action or alternatives under consideration.

Supplemental Authorities that are subject to requirements specified by statute or Executive Order must be considered in all BLM environmental documents. The elements associated with the supplemental authorities listed in the NEPA Handbook (BLM 2008, Appendix 1) and in the Nevada Instruction Memorandum 2009-030, Change 1 are listed in Table 3.1-1. The table lists the elements and their status in the Project Area as well as the rationale to determine whether the element is present in the Project Area would be affected by the Proposed Action. Supplemental Authorities that may be affected by the Proposed Action are analyzed in Chapter 4. Those elements listed under the supplemental authorities that do not occur in the Project Area and would not be affected are not discussed further in this EA. The elimination of nonrelevant issues follows CEQ policy, as stated at CFR 1500.4.

Table 3.1-1: Elements Associated with Supplemental Authorities and Rationale for Detailed Analysis for the Proposed Action

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/ Potentially Affected	Rationale/Reference Section
Air Quality		X		See Section 3.2.
Areas of Critical Environmental Concern (ACEC)	X			Supplemental Authority is not present, not further addressed in this EA.
Cultural Resources			X	See Section 3.3.
Environmental Justice	X			Not present as described in Section 3.4.
Farmlands (Prime or Unique)	X			Supplemental Authority is not present, not further addressed in this EA.
Fish Habitat		X		See Section 3.25.
Floodplains	X			Supplemental Authority is not present, not further addressed in this EA.
Forests and Rangelands (HFRA Projects only)	X			This Project does not meet the requirements to qualify as an HFRA project.
Human Health and Safety (Herbicide Projects)	X			This Project is not proposing to use herbicides; therefore, Executive Order 13045 does not apply.
Migratory Birds			X	See Section 3.10.
Native American Religious Concerns		X		See Section 3.11.
Noxious Weeds, Invasive Non-native Species			X	See Section 3.8.
Threatened or Endangered Species	X			See Section 3.17, Special Status Species.
Wastes, Hazardous or Solid		X		See Section 3.20.

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/ Potentially Affected	Rationale/Reference Section
Water Quality - Surface and Ground			X	See Section 3.21.
Wetlands and Riparian Zones			X	See Section 3.22.
Wild and Scenic Rivers	X			Supplemental Authority is not present, not further addressed in this EA.
Wilderness/WSAs/Wildlands			X	See Section 3.24.

In addition to the elements listed under supplemental authorities, the BLM considers other resources and uses that occur on public lands and the issues that may result from the implementation of the Proposed Action. Other resources or uses of the human environment that have been considered for this EA are listed in Table 3.1-2 below. Resources or uses that may be affected by the Proposed Action are analyzed in Chapter 4.

Table 3.1-2: Resources or Uses Other Than Elements Associated with Supplemental Authorities

Other Resources or Uses	Present/ Not Affected	Present/ Potentially Affected	Reference Section
Fire Management		X	See Section 3.5.
Forestry and Woodland Resources		X	See Section 3.6.
Geology and Mineral Resources	X		See Section 3.7.
Land Use and Realty		X	See Section 3.9.
Paleontological Resources	X		See Section 3.12.
Rangeland Management		X	See Section 3.13.
Recreation	X		See Section 3.14.
Socioeconomic Values		X	See Section 3.15.
Soils		X	See Section 3.16.
Special Status Species (Plants and Wildlife)		X	See Section 3.17.
Vegetation		X	See Section 3.18.
Visual Resources		X	See Section 3.19.
Wild Horses	X		See Section 3.23.
Wildlife		X	See Section 3.25.

The BLM has used environmental data collected in the Project Area to predict environmental effects that could result from the Proposed Action and alternatives. A level of uncertainty is associated with any set of data in terms of predicting outcomes, especially when natural systems are involved. The predictions described in this analysis are intended to allow comparison of alternatives to the Proposed Action, as well as provide a method to determine whether activities proposed by the applicant would be expected to comply with applicable regulations.

3.2 Air and Atmospheric Values

3.2.1 Air Quality

The Bureau of Air Pollution Control (BAPC) is the agency in the State of Nevada that has been delegated the responsibility for implementing a State Implementation Plan (SIP) (excluding Washoe and Clark Counties, which have their own SIP). Included in a SIP are the State of Nevada air quality permit programs (NAC 445B.001 through 445B.3791, inclusive). Also part of a SIP is the Nevada State Ambient Air Quality Standards (NSAAQSs). The NSAAQSs are generally identical to the National Ambient Air Quality Standards, with the exception of the following: (a) an additional standard for carbon monoxide (CO) in areas with an elevation in excess of 5,000 feet amsl; (b) a hydrogen sulfide standard; and (c) a violation of state standard occurs with the first annual exceedance of an ambient standard, while federal standards are generally not violated until the second annual exceedance. In addition to establishing the NSAAQSs, the BAPC is responsible for permit and enforcement activities throughout the State of Nevada (except Clark and Washoe Counties).

The Project Area is located in the unclassified Humboldt River (Southern Part) Hydrographic Basin within the Central Region Hydrographic Region, which is considered in attainment relative to the federal air quality standards. The existing air quality is typical of largely undeveloped regions of the western United States with limited sources of pollutants.

3.2.2 Climate and Meteorology

The Project Area is located in the higher elevations of the Roberts Mountains. The climate and vegetation in the Project Area are typical of the higher elevation environment of the northern Basin and Range Province. The climate receives moderate levels of precipitation, with moderate fluctuations in seasonal temperatures, and the average annual precipitation is 11.84 inches. Temperatures during the winters are cool with periods of very cold weather with the lowest average temperature in January of 38.2 degrees Fahrenheit (˚F). The summers are hot and dry with the highest average monthly temperature in July of 86.4 ˚F. The average annual maximum and minimum temperatures in Eureka, which is approximately 30 miles southeast of the Project Area, are 60.5 and 33 ˚F (WRCC 2010), respectively. Elevation in the Project Area ranges between 6,700 to 7,230 feet amsl.

3.2.3 Climate Change

According to the BLM's Instruction Memorandum (IM) No. 2008-171, "Guidance on Incorporating Climate Change into Planning and NEPA Documents," dated August 19, 2008, climate change considerations should be acknowledged in EA documents. The IM states that ongoing scientific research has identified the potential impacts of anthropogenic (man-made) greenhouse gas (GHG) emissions and changes in biological carbon sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused carbon dioxide equivalent (CO_2(e)) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures

since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years. Current emissions within the vicinity of the Project Area include vehicle combustion emissions, fugitive dust from travel on unimproved roads, ranch activities, and wildland fires. Emissions of all pollutants are generally expected to be low due to the extremely limited number of sources in the vicinity of the Project Area.

Existing climate prediction models are global in nature; therefore they are not at the appropriate scale to estimate potential impacts of climate change within the Humboldt River (Southern Part) Hydrographic Basin within the Central Region Hydrographic Region in which the Project is located. Due to the nature and scale of the Project, effects on climate change are not further analyzed in this EA.

3.3 Cultural Resources

The area of potential effect (APE) for this Project is defined as the 1,556-acre Project Area. A Class III cultural resource inventory of the entire APE was completed by Knight and Leavitt Associates between May 17 and June 4, 2010 (Baker et al. 2010). A total of 31 sites was recorded, including eight sites within the Pete Hanson Creek Carbonari Historic District (District), with 12 of the sites previously recorded (three previously recorded sites were not relocated). Nine of the 23 unassociated sites are recommended eligible to the National Register of Historic Places (NRHP) under criterion D, and one site is recommended eligible under criteria A, B and C. It is recommended that eligibility determination for six of the sites be postponed pending further work. Six of the sites are recommended not eligible for the NRHP. The District is also recommended eligible under criterion D, with three of the sites that comprise the District recommended as contributing to the NRHP eligibility of the District. It is recommended that an eligibility determination be deferred on one of the sites pending further work, and that four of the sites that comprise the District be considered non-contributing elements of the National Register eligibility of the District. The unevaluated sites would be treated as eligible until further investigation is conducted and an official determination of eligibility is made.

The BLM has reviewed this report and has yet to make a formal determination of NRHP eligibility for any of the sites or determine Project effects per Section 106 of the National Historic Preservation Act. However, it is not critical that this determination is made prior to a decision on the Proposed Action as all eligible and unevaluated sites would be avoided as described in Section 2.1.11.

3.4 Environmental Justice

On February 11, 1994, President William Clinton issued EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. In April of 1995, the Environmental Protection Agency (EPA) released the document titled Environmental Justice Strategy: Executive Order 12898. The document established EPA-wide goals and defined the approaches by which the EPA would ensure that disproportionately high and adverse human health or environmental effects on minority communities and low-income communities are identified and addressed.

The 2000 United States Census reported that the Eureka County population consisted of 1.6 percent American Indian and 9.6 percent Hispanic populations. Black, Asian, and Pacific Islanders comprised 0.4, 0.8, and 0.1 percent, respectively, of Eureka County's population (United States Census Bureau 2009). For Nevada as a whole, American Indian and Hispanic persons made up 1.3 and 19.7 percent, respectively, of the population in 2000. Black, Asian, and Pacific Islanders constituted 6.8, 4.5, and 0.4 percent of the population, respectively in the State of Nevada in 2000 (United States Census Bureau 2009).

In accordance with EPA's Environmental Justice Guidelines (EPA 1998), these minority populations should be identified when either of the following exists:

- The minority population of the affected area exceeds 50 percent; or
- The minority population of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

The population of American Indians, Hispanics, Blacks, Asians, Pacific Islanders, and other minorities does not exceed 50 percent of the population for Eureka County. Although persons of American Indian heritage constitute a higher percentage of the total population within Eureka County than the minority population in the State of Nevada, the Project Area is located on BLM-administered lands and private lands in predominantly vacant and rural areas. Since the Project Area is undeveloped and unpopulated, the minority population is not meaningfully greater than the percentage for the State of Nevada as a whole. Therefore, for the purposes of screening for environmental justice concerns, the identified populations defined in EPA's guidance (EPA 1998) do not exist within the Project Area.

The median household incomes in Eureka County, and the State of Nevada in 2006 were $57,500 and $59,550, respectively (State of Nevada 2008b). According to the Census Bureau's Small Area Income and Poverty Estimates for Nevada Counties in 2007, the percentage of individuals below the poverty level in Eureka County and the State of Nevada was 9.1 and 10.6 percent, respectively (United States Census Bureau 2009). The median income in Eureka County was only slightly lower than for the state as a whole in 2006 and the 2007 poverty rates were slightly lower; therefore, a low income population group as defined in EPA's guidance (EPA 1998) for the purposes of screening for environmental justice concerns is not present in the Project Area.

No minority or low-income groups would be disproportionately affected as a result of the Proposed Action. Therefore, no further analysis of environmental justice is included in this EA.

3.5 Fire Management

The Project Area lies within the Three Bars Fire Management Unit, which has a relatively high fire occurrence and a history of large fires. The BLM has ongoing hazardous fuels reduction projects adjacent to the Project Area. These projects include the Red Hills Hazardous Fuels Reduction Project (NV-064-2823-JM-JF28) and the Tonkin Hazardous Fuels Reduction Project (NV-064-2823-JQ-JF27). These actions are being conducted under the Healthy Forest Initiative Categorical Exclusion authority for hazardous reduction projects (516 DM 2, Appendix 1, 1.12). The Red Hills project NEPA number is NV-064-CX05-086 and the Tonkin project NEPA number is NV064-CX05-079. These projects are in conformance with the RMP, amended for Fire Management in 2002, as well as the Fire Land Use Plan Amendment and Decision Record (NV61-EA97-071), which was approved on September 17, 2002. These actions are also in compliance with the BLM BMFO Fire Management Plan approved September 30, 2004.

The Red Hills Unit encompasses 3,671 acres. Broadcast prescribed fire will be conducted on 1,700 to 2,537 acres (46 to 70 percent of the Red Hills Unit). Up to 100 acres will be treated by pile and slash burning and up to 400 acres will be treated utilizing mechanical methods. The purpose of this action is to reduce hazardous fuel accumulations in the Red Hills and Tonkin Springs area of Eureka County, Nevada. In addition to hazardous fuels reduction, secondary benefits of the project will be to protect and improve wildlife habitat in the long term, particularly greater sage-grouse (*Centrocercus urophasianus*) habitat, and to reintroduce fire under prescribed conditions into this fire-dependent ecosystem.

The Tonkin project encompasses 2,400 acres in the Tonkin Springs area at the northeast end of the Simpson Park Mountains. Up to 200 acres of sagebrush habitat will be treated by mowing to create fuel breaks using a rotary mower towed by a tractor or a bull-hog. An additional 800 acres of piñon-juniper area will be thinned using chainsaws, a bull-hog, or a feller-buncher. The activity fuels generated by thinning the piñon-juniper will be first made available for firewood or fence posts. Any activity fuels not disposed of in this manner will be either chipped or disposed of through pile burning. The footprint for pile burning will not exceed 200 acres. The purpose of this action is to reduce hazardous fuel accumulations in high value greater sage-grouse habitat in the Tonkin Springs area of Eureka County, Nevada. In addition to hazardous fuels reduction, a secondary benefit of the project will be to enhance habitat for wildlife, particularly greater sage-grouse. The current vegetative composition is areas of sagebrush-perennial grass with some piñon-juniper enthronement to areas that are dominated by piñon-juniper. This area is currently in Fire Regime III and Condition Class II. Current hazardous fuel accumulations range from five tons per acre (total above ground biomass) in the sage-piñon-juniper fuel type to 29 tons per acre in the piñon fuel type.

Given these fuel loadings and the abundance of fine fuels in the form of perennial grasses and the frequent fires that occur in this area, the Project Area is at very high to extreme risk of loss of natural resources from wildland fire.

3.6 Forestry and Woodlands

The dominant vegetation community within the Project Area is a Great Basin Piñon and Juniper Woodland. This community in the Project Area is not within either a designated or proposed old growth management area. The Project Area is located within a pine nut sale and a Christmas tree sale area. The Project Area is not located within a commercial timber harvest area.

3.7 Geology and Mineral Resources

The general geology of the Project Area consists dominantly of a thick section of Paleozoic sedimentary rocks ranging in age from Cambrian to Devonian. The strata consist of quartzite, limestone, dolomite, shale, and minor sandstone. Intrusive rocks in the area include Cretaceous and Tertiary felsic dikes and small plutons. Tertiary volcanic rocks are locally present and unconformably overlie the sedimentary sequence. Late Tertiary to Quaternary gravel, Quaternary colluvium, and lesser alluvium locally overlie the bedrock units.

On a regional scale, the upper and lower plate rock packages are separated by a low-angle regional fault known as the Roberts Mountains thrust. At Red Canyon, uplift and erosion of the upper plate rocks created a window that exposes favorable carbonate host rocks. The window exposes strongly oxidized, decalcified, brecciated and silicified lower plate carbonate rocks over a three square mile area. Carbonate rocks at Red Canyon are age equivalent to rocks hosting the Cortez Hills and Pipeline gold deposits.

Four distinct rock packages occur within the Project Area including the following:

- Lower plate Silurian to Devonian carbonate rocks are dominated by silty to muddy limestone, calcarenite, fossiliferous limestone, dolomite, siltstone, and lesser chert. These rocks are included in the Horse Canyon, Devils Gate, Denay, McColley Canyon, and Lone Mountain Formations. Lower plate carbonate rocks are the preferred host for multi-million ounce sediment-hosted gold deposits along the Cortez and Carlin Gold Trends. Potential stratigraphic host horizons for disseminated gold occur in silty debris flow units within the Denay and McColley Canyon Formations, at the McColley Canyon-Lone Mountain Formations contact, in karst horizons in the Devils Gate Formation, and in silty units of the Horse Canyon Formation;

- Upper plate siliceous sedimentary rocks form the Vinini and Elder Formations. Chert, siltstone, mudstone, and greenstone crop out in the western and southern portions of the Project Area;

- Tertiary volcanic rocks overlie lower plate carbonate rocks in the central portion of the Project Area; and

- Quaternary gravel and tuffaceous conglomerate deposits form a pediment in the northern third of the Project Area. The pediment slopes gently-north away from the mountain range where the gravels cover carbonate rocks and potential exploration opportunities.

Geologic mapping illustrates chaotic bedding orientations and the periodicity of structural features at Red Canyon. The Project Area is transected by southeast-plunging folds and west northwest-, northeast-, northwest-, and east-northeast-striking faults. Compilation of Red Canyon and Tonkin Springs structural data illustrates district scale patterns including northwest and west-northwest faults transecting upper and lower plate rocks and an alignment of Red Canyon prospects and Tonkin Springs gold inventories and resources.

At the surface, hydrothermal alteration in the form of iron oxidation, decalcification, silicification, clay, and barite and stibnite occurrences are exposed over a three square mile area. In the subsurface, select drill holes contain oxidation that locally exceeds 1,000 feet in depth.

3.8 Noxious Weeds, Invasive and Non-native Species

The BLM defines a noxious weed as, "a plant that interferes with management objectives for a given area of land at a given point in time." The MLFO Battle Mountain District recognizes the current noxious weed list designated by the State of Nevada Department of Agriculture (NDOA) statute, found at http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm. An invasive species is defined as a non-native or alien plant or animal that has entered into an ecosystem. Invasive species are likely to cause economic harm or harm to human health (EO 13112). Noxious weeds, invasive and non-native species are highly competitive, aggressive and easily spread. The Battle Mountain District has developed an Integrated Weed Management Plan for the entire Battle Mountain District. In addition, the BLM follows all Federal Noxious and Invasive Weed Laws, EO 11312 (Prevention and Control of Invasive Species) and various BLM Manuals and NRS and NAC Chapter 555.

Surveys conducted in May 2010 identified a small population of musk thistle (*Carduus nutans*) along the margins of a ponded area in the southwestern portion of the Project Area and two single individual plants in the northwest portion of the Project Area (Figure 3.8.1). Musk thistle is considered a Category "B" weed by the NDOA. Category "B" weeds are required by the NDOA to be controlled in areas where populations are previously known to occur (NDOA 2010). The survey also identified the non-native species bur buttercup (*Ceratocephala testiculata*) within historically disturbed areas throughout the Project Area. No cheatgrass (*Bromus tectorum*) was noted within the Project Area during the surveys. No other noxious weed populations were identified within the Project Area or along the access roads. Hoary cress (a NDOA listed noxious weed) populations are known to occur along the 3 Bars Road, a major access road to the Project Area.

3.9 Land Use and Realty

The Eureka County 1973 Master Plan, updated in 2000 and again in 2010, contains a description of local land uses, restrictions on development, and recommendations for future land use planning, which designates the Project Area as Public Rangeland. The current land use is livestock grazing, mineral exploration, dispersed recreation, and wildlife habitat. The Project Area is crosscut by numerous pre-1981 roads. The Project Area is located within a pine nut sale and a Christmas tree sale area. The entire Project Area is located on public lands managed by the BLM. No rights-of-way (ROWs) are located in the Project Area; however, an oil and gas lease parcel overlaps a portion of the Project Area. Figure 1.1.1 shows the Project Area, access roads, and land ownership status. MMI is not proposing any changes or alterations to existing access roads outside of the Project Area.

3.10 Migratory Birds

"Migratory bird" means any bird listed in 50 CFR 10.13. All native birds found commonly in the United States, with the exception of native resident game birds, are protected under the Migratory Bird Treaty Act (MBTA). The MBTA prohibits taking of migratory birds, their parts, nests, eggs, and nestlings. EO 13186, signed January 10, 2001, directs federal agencies to protect migratory birds by integrating bird conservation principles, measures, and practices.

Figure 3.8.1: Vegetation Communities, Wildlife Habitat, and Noxious Weed Populations

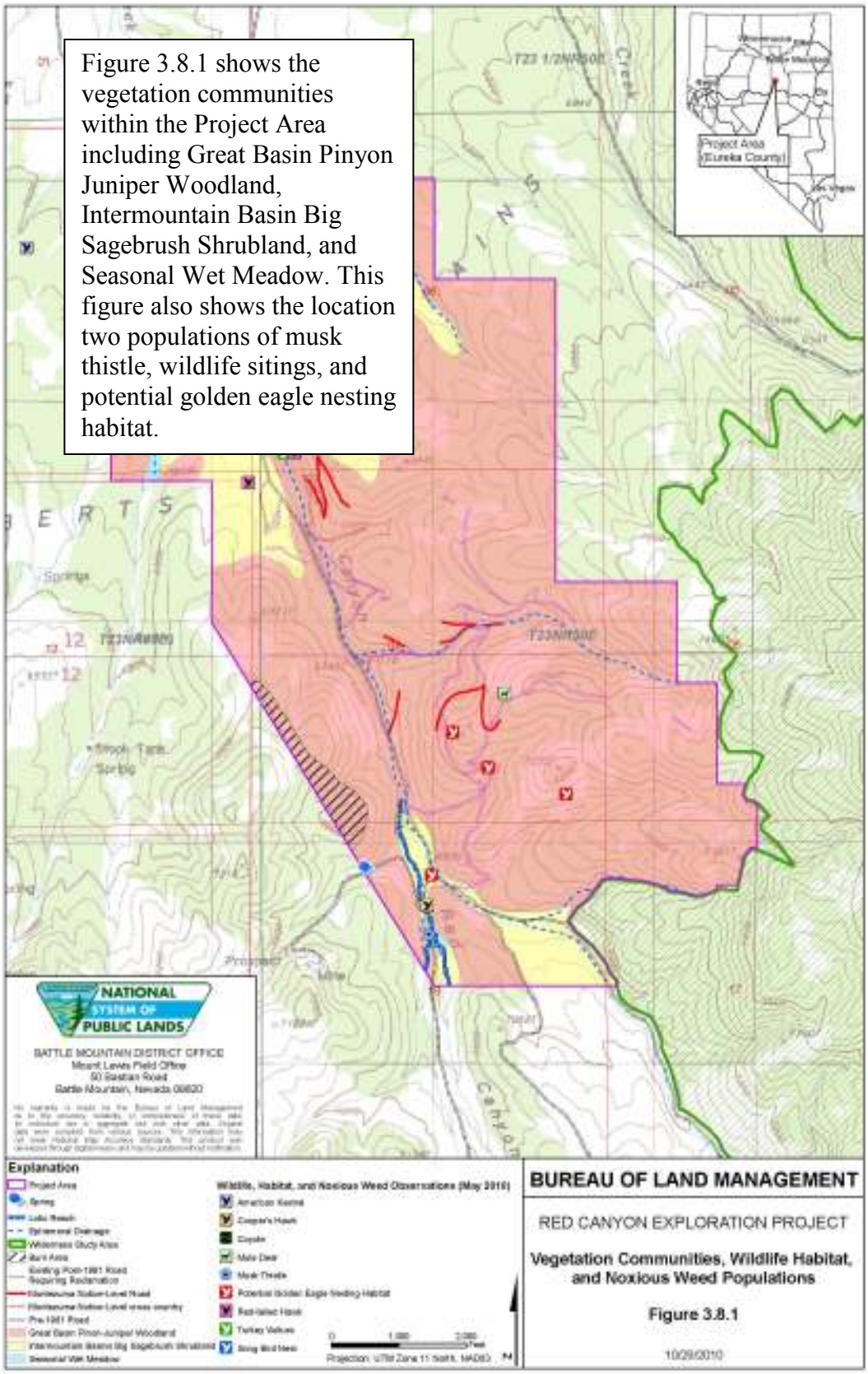


Table 3.10-1 lists the bird species that were observed within the Project Area during a May 2010 wildlife survey. The Nevada Department of Wildlife (NDOW) identified other migratory bird species associated with piñon-juniper woodland and sagebrush habitats that are expected to use the Project Area on a regular or transient basis including canyon wren (*Catherpes mexicanus*), rock wren (*Salpinctes obsoletus*), horned lark (*Eremophila alpestris*), dark-eyed junco (*Junco hyemalis*), Cassin's finch (*Carpodacus cassinii*), and American goldfinch (*Carduelis tristis*), which are species identified by NDOW to have potential to occur within the Project Area (NDOW 2010). Additional species that were not observed or mentioned above may also utilize the area on a regular or seasonal basis.

Table 3.10-1: Migratory Bird Species Detected in the Project Area

Common Name	Scientific Name	PIF[1] Long-term Planning and Responsibility Species	NVPIF[2] Priority Species	Habitat Associations*
American kestrel	*Falco sparverius*	No	No	Found in various open and semi-open habitats. Nest in natural holes in trees and abandoned bird nests.
American Robin	*Turdus migratorius*	No	No	Found in mixed, coniferous, and hardwood forests, grasslands, shrublands, and orchards.
Blue-gray gnatcatcher	*Polioptila caerulea*	No	No	Found in deciduous forest, open woodland, second growth, scrub, brushy areas, chaparral, and in open piñon-juniper woodland. Nests where tracts of brush, scrub, or chaparral are intermixed with taller vegetation
Brewer's sparrow	*Spizella breweri*	No (Management)	No	Found in sagebrush over most of range, in areas with scattered shrubs and short grass. Can also be found to lesser extent in mountain mahogany, rabbit brush, bunchgrass grasslands with shrubs, bitterbrush, ceanothus, manzanita and large openings in piñon-juniper. Nest in low in sagebrush, other shrub, or cactus, from a few centimeters to approximately three feet from the ground.
Brewer's blackbird	*Euphagus cyanocephalus*	No	No	Found in agricultural fields that have brushy edges, open areas including parks, campgrounds, parking lots, wetlands, and suburban and urban settings.
Bushtit	*Psaltriparus minimus*	No	No	Found in woodlands and scrub habitat with scattered trees and shrubs, in brushy streamsides, piñon-juniper, chaparral and pine-oak associations.

Common Name	Scientific Name	PIF[1] Long-term Planning and Responsibility Species	NVPIF[2] Priority Species	Habitat Associations*
Canada Goose	*Branta canadensis*	No	No	Found in various habitats near water, from temperate regions to tundra. In migration and winter, coastal and freshwater marshes, lakes, rivers, fields, etc. Nest is built on the ground or on an elevated place.
Cliff swallow	*Petrochelidon pyrrhonota*	No	No	Found in open canyons and river valleys with rocky cliffs for nesting, under bridges and freeways, farmland, wetlands, prairies, residential areas, road cuts and over open water. Require a source of mud for their nests.
Common raven	*Corvus corax*	No	No	Found in dense forests, open sagebrush country, and alpine parklands.
Cooper's hawk	*Accipiter cooperii*	No	Yes	Nest in old, tall deciduous tree groves, such as cottonwood stands.
Gray flycatcher	*Empidonax wrightii*	Yes	Yes	Found in tall sagebrush and bitterbrush stands and the sagebrush shrubland to piñon-juniper transitional zone. Nest in tall sagebrush or conifers.
Gray vireo	***Vireo vicinior***	Yes	No	Found in open piñon-juniper woodlands. Nest in west or north facing trees in forked, lateral branches.
Green-tailed towhee	*Pipilo chlorurus*	Yes	No	Found in mixed-species shrublands of intermediate and higher elevations, including piñon-juniper woodlands, montane sage steppe, and aspen. Nest on or near the ground under dense shrub cover.
Hairy woodpecker	*Picoides villosus*	No	No	Found in forest, open woodland, swamps, well-wooded towns and parks, open situations with scattered trees. Nests in hole dug mostly by male in live or dead tree or stub.
House finch	*Carpodacus mexicanus*	No	No	Found in arid scrub and brush, thornbush, oak-juniper, pine-oak associations, chaparral, open woodlands, towns, cultivated lands, and savanna. Nest on ledge, tree branches, shrub, and cacti.

Common Name	Scientific Name	PIF[1] Long-term Planning and Responsibility Species	NVPIF[2] Priority Species	Habitat Associations*
Mountain bluebird	*Sialia currucoides*	Yes	No	Found in coniferous forest edges, open woodlands, and in the transitional area between piñon-juniper woodlands and sagebrush.
Mountain chickadee	*Poecile gambeli*	No	No	Found in dry coniferous forests, especially ponderosa and lodgepole pines. During the summer they can also be found in high-elevation aspen forests. In winter, they sometimes inhabit juniper stands and river bottoms.
Northern flicker	*Colaptes auratus*	No	No	Found in open forest, both deciduous and coniferous, open woodland, open situations with scattered trees and snags, riparian woodland, pine-oak association, parks. Nests in dead tree trunk, or stump, or dead top of live tree; sometimes nests in wooden pole, building or earth bank.
Piñon jay	***Gymnorhinus cyanocephalus***	No (Management)	Yes	Found almost exclusively in piñon-juniper and occasionally wander into sagebrush and Joshua tree.
Prairie falcon	***Falco mexicanus***	No	Yes	Forage in sagebrush, salt desert, wet meadows, and some agricultural areas; nest in cliff ledges with overhead cover. Observed off site along County Road M-113.
Red-tailed hawk	*Buteo jamaicensis*	No	No	Found in wide variety of open woodland and open country with scattered trees, rarely in dense forest.
Rufous hummingbird	*Selasphorus rufus*	No (Management)	No	Found in coniferous forest, second growth, thickets, and brushy hillsides, with foraging extending into adjacent scrubby areas and meadows with abundant nectar flowers. Nest in trees, shrubs or vines.
Sage sparrow	*Amphispiza belli*	Yes	Yes	Found in big sagebrush and associated shrub species. Nest close to and on the ground under shrubs or in grass tufts.
Song sparrow	*Melospiza melodia*	No	No	Found in brushy, shrubby, and deep grassy areas along watercourses. Nests on ground, especially early in season, among clumps of dead grasses.

Common Name	Scientific Name	PIF[1] Long-term Planning and Responsibility Species	NVPIF[2] Priority Species	Habitat Associations*
Spotted towhee	*Piplio maculatus*	No	No	Found in a wide variety of shrubby habitats characterized by deep litter and humus on ground, and sheltering vegetation overhead. Nest in litter on ground, under bush or brush pile, clump of grass, or elevated in vines, trees, bushes.
Turkey vulture	*Cathartes aura*	No	No	Found in forested and open situations, from lowlands to mountains.
Vesper sparrow	***Pooecetes gramineus***	No	Yes	Found in sagebrush steppe and dry-grassland associated species during breeding. Nest on the ground under vegetative cover.
Western meadowlark	*Sturnella neglecta*	No	No	Found in grasslands, savannas, cultivated fields, and pastures, in lowland and mountain valleys, foothills, and open mountains. Nest on dry ground.
Western meadowlark	*Sturnella neglecta*	No	No	Found in grasslands, savanna, cultivated fields, and pastures. Summers in grasslands and valleys; ranges up to higher elevations in foothills and open mountain areas. Female builds nest on dry ground.
Western scrub jay	*Aphelocoma californica*	No	No	Found in scrub (especially oak, piñon and juniper), brush, chaparral and pine-oak associations. Nest in low trees or shrubs.

[1]Partners in Flight
[2]Nevada Partners in Flight
Bold – denotes BLM Sensitive Species
*References: NatureServe 2010 and Great Basin Bird Observatory 2005.

3.11 Native American Religious Concerns

Located within the traditional territory of the Western Shoshone, the MLFO administrative boundary contains spiritual, traditional, and cultural resources, sites, and social practices that aid in maintaining and strengthening social, cultural, and spiritual integrity. Recognized tribes with known interests near the Project Area are: Te-Moak Tribe of Western Shoshone (South Fork, Elko, and Battle Mountain Bands), Duckwater Shoshone Tribe, and the Yomba Shoshone Tribe. In addition, various other community members and individuals are known to have interests in the general area of the Roberts Mountains.

Social activities that continue to define the cultures take place across lands currently administered by the BLM. Some Western Shoshone maintain certain cultural, spiritual, and traditional activities, visit their sacred sites, hunt game, and gather available medicinal and edible

plants. Through oral history (the practice of handing down knowledge from the elders to the younger generations), some Western Shoshone continue to maintain a world view similar to that of their ancestors.

Cultural, traditional, and spiritual sites and activities of importance to tribes include, but are not limited to the following: existing antelope traps; certain mountain tops used for vision questing and prayer; medicinal and edible plant gathering locations; prehistoric and historic village sites and gravesites; sites associated with creation stories; hot and cold springs; collection of materials used for basketry and cradle board making; locations of stone tools such as points and grinding stones (mono and matate); chert and obsidian quarries; hunting sites; sweat lodge locations; locations of pine nut ceremonies, traditional gathering, and camping; rocks used for offerings and medicine gathering; tribally identified Traditional Cultural Properties (TCPs); TCPs found eligible to the National Register of Historic Places; rock shelters; rock art locations; lands or resources that are near, within, or bordering current reservation boundaries, and actions that conflict with tribal land acquisition efforts.

In accordance with the NHPA (P.L. 89-665), the NEPA, the FLPMA (P.L. 94-579), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act [NAGPRA] (P.L. 101-601) and EO 13007, the BLM must provide affected tribes an opportunity to comment and consult on the proposed Project. The BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional/cultural/spiritual sites, activities, and resources.

On May 25, 2010, consultation initiation/invitation letters were mailed from the BLM MLFO Battle Mountain District Office to the following: Te-Moak Tribe of Western Shoshone; Battle Mountain Band; South Fork Band; Yomba Shoshone Tribe; and Duckwater Shoshone Tribe. At the time this EA was prepared, the BLM continues to provide opportunities for participation and input.

3.12 Paleontological Resources

The BLM manages paleontological resources under a number of federal laws including the following: FLPMA Sections 310 and 302(b), which direct the BLM to manage public lands to protect the quality of scientific and other values; 43 CFR 8365.1-5, which prohibits the willful disturbance, removal, and destruction of scientific resources or natural objects; 43 CFR 3622, which regulates the amount of petrified wood that can be collected for personal, noncommercial purposes without a permit; and 43 CFR 3809.420 (b)(8), which stipulates that a mining operator "shall not knowingly disturb, alter, injure, or destroy any scientifically important paleontological remains or any historical or archaeological site, structure, building or object on Federal lands."

On a regional scale, the vicinity of Roberts Mountains, especially Vinini Creek, Pete Hanson Creek, and Cottonwood Canyon, contain invertebrate fossil resources that have yielded numerous new invertebrate species. Johnson (1962) reported a previously unrecorded species of brachiopod, leading to the designation of a new Middle Devonian zone from rocks in the Roberts Mountains. Ausich (1978) reported a species of Pisocrinus from the Roberts Mountains which expanded the known range for this type of Silurian crinoid. Stone and Berdan (1984), based on investigations of the Late Silurian strata of the Roberts Mountains identified three new genera and 18 new species of ostracodes. Finney, et al. (2007) reported graptolites, prominent Paleozoic zooplankton, during most of the Hirnantian mass extinction event in the Vinini Formation at Vinini Creek, Roberts Mountains, Nevada.

The Roberts Mountains, Monitor Range, and Lone Mountain have been an important resource in the study of Late Ordovician period mass extinction (Finney et al. 1999). The Late Ordovician mass extinction was the second greatest of five large prehistoric mass extinctions. Eureka County contains records of the Late Ordovician mass extinction in three sedimentary successions. The Simpson Park Range (Red Hill area) and Roberts Mountains has produced a number of Devonian period vertebrate fish fossils along with marine invertebrates. Turner and Murphy (1988) states the fossil specimens discovered include dipnoans, acanthodians, arthrodires, antiarchs, and crossopterygians. Significant vertebrate microfossils have been recovered from the Roberts Mountains region. Turner and Murphy (1988) report the discovery of Siluro-Devonian vertebrate microfossils within the Roberts Mountains and Burrow (2003) describes the remains of an upper Silurian acanthodian Poracanthodes punctatus.

The Lone Mountain Dolomite, a geologic unit present in the Project Area, is known to be only sparsely fossiliferous. In the northern extent of the Fish Creek Range, the Lone Mountain Dolomite does contain brachiopod faunas of Late Silurian age (NBMG 1967). In general, the lower portion, which is more thinly bedded, contains more invertebrate fossils than the more heavily bedded upper portion. Paleontological resources considered significant are not located within the geological formations present in the Project Area. Additionally, there would appear to be limited potential for preserved paleontological resources due to the extensive hydrothermal alteration and faulting evident in the Project Area.

3.13 Rangeland Management

3.13.1 Livestock Grazing

The Project Area is located within the Roberts Mountains and Pete Hanson pastures of the JD Grazing Allotment where cattle are grazed. The Roberts Mountain Pasture sustains a total of 401 active cattle Animal Unit Months (AUMs) available from May 1 through June 30. The Pete Hanson Pasture sustains a total of 1,213 AUMs available from July 1 through September 30. An AUM represents the amount of forage required to support one cow and her calf for one month.

A small ponded area is located within the southwestern portion of the Project Area, however it is not located within areas subject to Project activities or disturbance.

3.13.2 Rangeland Improvements

No fencing, cattle guards, or other rangeland improvements are present within the Project Area.

3.14 Recreation

Recreational uses of the public land in the vicinity of the Project Area consist of dispersed activities such as hunting, biking, primitive camping, rock hounding, and off-road vehicle travel. The primary recreational use is hunting. The Tonkin Springs Reservoir is located north of the Project Area and is used by anglers and recreationists. No developed campgrounds are located in the vicinity of the Project.

3.15 Socioeconomic Values

The Project Area is located in Eureka County approximately 30 miles northwest of the town of Eureka, Nevada. Eureka County is located in central Nevada and encompasses 4,176 square miles. Approximately 81 percent of the land in the County is administered by the federal government. Interstate 80 traverses the county in an east-west direction on the northern end, as does Highway 50 on the southern end. State Highway 278, which runs north to south, bisects the center of the county. This highway links the towns of Carlin and Eureka.

The total population of Eureka County in 2008 was estimated to be 1,553, which was a decrease of ten percent since 1999 (population 1,726) (State of Nevada 2009a). The majority of the County's residents live in the unincorporated town and county seat of Eureka, while the balance of county residents live primarily in Crescent Valley and Beowawe in northern Eureka County. The population in the town of Eureka in 2008 was estimated to be 473 (State of Nevada 2009a). The town of Eureka provides a variety of retail, restaurant, and lodging options as well as recreational facilities and government services. The median household income in Eureka County in 2006 was $57,500 annually (State of Nevada 2009b). The majority of job-related income is derived from the mining sector (State of Nevada 2009b). The unemployment rate in Eureka County was 8.3 percent in August 2009, which was 4.7 percent lower than the State of Nevada as a whole at 13.0 percent (State of Nevada 2009b).

Mining is the major economic activity in Eureka County. Agriculture also plays a vital role in the county's economy. The Project work force of up to 14 individuals would stay in Eureka, Nevada and the majority of the workers would be employed in the State of Nevada or through businesses with Nevada operations.

3.16 Soils

The soil types in the Project Area are typical of those found throughout this portion of northern Nevada, and consist largely of gravelly and stony loams. The soil mapping units shown are listed in Table 3.16-1.

The Project Area is located within the Central Nevada Basin and Range Major Land Resource Area (MLRA) (Natural Resource Conservation Service [NRCS] 2010). The Central Nevada Basin and Range MLRA is in the Great Basin Section of the Basin and Range geologic province. This area is dominated by nearly level, aggraded desert basins and valleys between series of north to south mountain ranges. Locally, the Project Area lies on the western flank of the Roberts Mountains between Tonkin Summit and Roberts Creek Mountain in Eureka County, Nevada.

Thirteen soil associations were identified within the Project Area from the NRCS database (Table 3.16-1). The soils in the mountainous, central part of the Project Area are typically very stony to very gravelly loams found on eight to 75 percent slopes intermixed with rocky outcrops. These soils are shallow to moderately deep over lithic and paralithic bedrock and derive from residuum and colluvium from mixed igneous, metamorphic, and volcanic rocks.

The Project Area extends northwest as the topography transitions into the soils characteristic of fan piedmonts and remnants as the terrain becomes gentler and slopes decrease to eight percent or less. These soils are moderately deep to deep over duripan and are derived from alluvium of mixed igneous, sedimentary, and volcanic rocks and ash. Soil texture becomes finer as gravelly

loams give way to fine sandy and silty loams. Soils found in the basins and basin floors within the Project Area are deep and are derived from alluvium of mixed rocks and volcanic ash.

Table 3.16-1: Soil Series within the Project Area

Association	Soil Series	Range in Depth to Hardpan	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
Foxmount-Haunchee-Rock outcrop (451)	Foxmount	24 to 40 inches	Side slopes of mountains; 15 to 50%	Loam	Moderate	Moderate	Moderate
	Haunchee	Ten to 20 inches	Crests and upper side slopes of mountains; 30 to 75%	Very gravelly loam	Moderate	Moderate	Low
	Rock outcrop	Zero inches	Crests of mountains; 15%	NA	NA	Moderate	Low
Hopeka-Solak-Ados (330)	Hopeka	Four to ten inches	Side slopes; 15 to 50%	Very gravelly loam	Moderate	Moderate	Low
	Solak	Four to ten inches	Ridgetops, upper side slopes; Zero to ten%	Very gravelly loam	Moderate	Moderate	Low
	Ados	Four to 15 inches	Lower part of side slopes; Four to 15%	Gravelly loam	Moderate	Moderate	Low
Hymas-Ansping (501)	Hymas	Ten to 20 inches	Upper side slopes; 15 to 30%	Very stony fine sandy loam	Moderate	Moderate	Moderate
	Ansping	40 to 55 inches	Lower side slopes; 15 to 35%	Ansping loam	Moderate	Moderate	Moderate
Ansping-Hymas (511)	Ansping	40 to 55 inches	Lower side slopes and foot slopes; Four to 15%	Loam	Moderate	Moderate	Moderate
	Hymas	Ten to 20 inches	Upper side slopes; 15 to 30%	Cobbly loam	Moderate	Moderate	Moderate
Rock outcrop-Labshaft (491)	Rock outcrop	Zero	Crests and side slopes; 55%	NA	NA	Moderate	NA
	Labshaft	Ten to 20 inches	Side slopes; 15 to 50%	Very stony loam	Moderately slow	Moderate	Moderate

Association	Soil Series	Range in Depth to Hardpan	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
Mau-Shagnasty-Eightmile (321)	Mau	20 to 40 inches	Lower side slopes; 15 to 30%	Stony loam	Slow	Moderate	Low
	Shagnasty	50 to 60 inches	Side slopes; 15 to 30%	Very stony loam	Slow	Moderate	Low
	Eightmile	Six to 14 inches	Upper side slopes; 15 to 30%	Very gravelly loam	Moderate	Moderate	Low
Lien-Hayeston (111)	Lien	Seven to ten inches	Crests and shoulders of ballenas; Four to 15%	Very gravelly loam	Moderately rapid	Moderate	Low
	Hayeston	60 or more inches	Inset fans; Zero to four%	Sandy loam	Moderately rapid	Moderate	Low
Haunchee-Hatur-Rock outcrop (462)	Haunchee	10 to 20 inches	Crests and upper side slopes of mountains; 30 to 75%	Gravelly loam	Moderately slow	Moderate	Low
	Hatur	20 to 40 inches	Mountain slopes; 15 to 50%	Very gravelly to extremely gravelly sandy loam	Slow	Low	Low
	Rock outcrop	Zero	Crests and side slopes; 55%	NA	NA	Moderate	NA
Tomera Loam (581)	Tomera	More than 80 inches	Fan piedmonts; Four to eight%	Loam, gravelly clay, and very cobbly loam	Moderately slow to moderately high	Moderate	Low
Ruby Hill Sandy Loam (600)	Rubyhill	20 to 30 inches	Fan piedmonts; Zero to four%	Sandy to gravelly loam	Very to moderately slow	Moderate	Moderate
Chad-Cleavage-Softscrabble (681)	Chad	40 to 60 inches	Mountain slopes; 15 to 30%	Cobbly to gravelly clay loam	Moderately slow	Moderate	Low
	Cleavage	14 to 20 inches	Mountain slopes; 8 to 15%	Gravelly to very gravelly clay loam	Slow	Moderate	Low

Association	Soil Series	Range in Depth to Hardpan	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
	Softscrabble	More than 80 inches	Mountain slopes; 8 to 15%	Stony fine sandy loam to very gravelly clay loam	Moderately low to moderately high	Moderate	Low
Atrypa Gravelly Loam (830)	Atrypa	10 to 20 inches	Mountain slopes; 30 to 50%	Gravelly loam	Moderately slow	Moderate	Moderate
Atrypa-Mau (831)	Atrypa	10 to 20 inches	Mountain slopes; 15 to 30%	Gravelly loam	Moderately slow	Moderate	Moderate
	Mau	20 to 40 inches	Hillside slopes; 15 to 30%	Gravelly loam to very gravelly clay loam	Slow	Moderate	Low

Source: NRCS 2010.

3.17 Special Status Species

BLM policy for management of special status species is in the BLM Manual Section 6840. Special status species include the following:

- Federally Threatened or Endangered Species: Any species that the United States Fish and Wildlife Service (USFWS) has listed as an endangered or threatened species under the Endangered Species Act of 1973, as amended (ESA) throughout all or a significant portion of its range;

- Proposed Threatened or Endangered Species: Any species that the USFWS has proposed for listing as a federally endangered or threatened species under the ESA;

- Candidate Species: Plant and animal taxa that are under consideration for possible listing as threatened or endangered under the ESA;

- BLM Sensitive Species: 1) Species that are currently under status review by the USFWS; 2) Species whose numbers are declining so rapidly that federal listing may become necessary; 3) Species with typically small and widely dispersed populations; or 4) Species that inhabit ecological refugia or other specialized or unique habitats; and

- State of Nevada Listed Species: State-protected animals that have been determined to meet BLM's Manual 6840 policy definition.

Nevada BLM policy is to provide State of Nevada listed species and Nevada BLM sensitive species with the same level of protection as is provided to candidate species in BLM Manual 6840.06C. Per wording in Table IIa in BLM Information Bulletin (IB) No. NV-2003-097,

Nevada protected animals that meet BLM's 6840 policy definition are those species of animals occurring on BLM-managed lands in Nevada that are: 1) 'protected' under authority of the NAC; 2) have been determined to meet BLM's policy definition of "listing by a state in a category implying potential endangerment or extinction;" and 3) are not already included as federally listed, proposed, or candidate species.

The USFWS, the Nevada Natural Heritage Program (NNHP), and the NDOW were contacted to obtain a list of threatened and endangered and sensitive species that have the potential to occur within the Project Area. In addition, the BLM Sensitive Species List and Special Status Species (threatened and endangered) lists for the Battle Mountain District were evaluated. The special status wildlife and plant species that have potential to occur with the Project Area are further discussed below.

3.17.1 Special Status Wildlife Species

Federally Threatened and Endangered Species

In response to a request for identification of federally-listed and candidate species in the Project Area, the USFWS memorandum of April 14, 2010, stated that the Lahontan cutthroat trout (*Onocorhynchus clarkia henshawi*) (LCT), a federally threatened species, and the greater sage-grouse, a candidate species have the potential to occur in the Project Area. These species are further described below.

Lahontan Cutthroat Trout

LCT were originally listed as endangered under the Endangered Species Conservation Act of 1969 on October 13, 1970 (35 Federal Register [FR] 16047-16048), then reclassified as threatened on July 16, 1975, under the ESA to facilitate management and allow regulated angling (40 FR 29863-29864). The Recovery Plan for LCT was approved on January 30, 1995. The NDOW developed a recovery plan for LCT dated December 2004, which specifically addresses the status of the LCT population within the Upper Humboldt River Basin (NDOW 2004). The USFWS is required by section 4(c)(2) of the ESA to conduct a status review of each listed species at least once every five years. The purpose of a five-year review is to evaluate whether or not the species' status has changed since it was listed (or since the most recent five-year review). A Five-Year Review, dated March 30, 2009, was conducted by the Nevada Fish and Wildlife Office (NFWO). The results of the Five-Year Review recommended that the current listing status of LCT remain the same (NFWO 2009).

LCT is an inland subspecies of cutthroat trout (family Salmonidae). The species may be either riverine or lacustrine and are endemic to the Lahontan Basin of northeast California, southeast Oregon, and northern Nevada. The range for LCT in Nevada includes the Truckee, Carson, Walker, Quinn, and Humboldt River basins, the Honey and Coyote Lake basins, and Black Rock Desert basin. The Project Area falls within the Humboldt River basin which supports the greatest number of fluvial LCT populations native to the Lahontan Basin. The Humboldt River basin is broken up into subbasins. The Project Area is located within the Pine Creek subbasin. Self-sustaining LCT populations currently occur in only 10.7 percent of the historic stream and 0.4 percent of the historic lake habitats. Within the Pine Creek subbasin, there are two streams, Birch Creek and Pete Hanson Creek, with five miles of occupied habitat and 13 miles of potential habitat. Birch Creek is located on the northeastern side of Western Peak approximately seven miles northeast of the Project Area. Pete Hanson Creek is located on the northwest side of

Roberts Creek Mountain approximately one half mile northeast of the Project Area (USFWS 1994).

Pete Hanson Creek originates south of Western Peak, on the southwest side of Cooper Peak at approximately 7,200 feet amsl in the Roberts Mountains. Pete Hanson Creek flows northwest until it reaches the valley floor where it is diverted for agriculture. The most recent fish population survey of Pete Hanson Creek was conducted in July 2009. LCT occupy approximately 3.5 miles of Pete Hanson Creek at an average population of 445 fish per mile.

Currently, no habitat exists in the Project Area for LCT. Only ephemeral drainages are present within the Project Area. The Red Canyon Drainage drains to the Tonkin Reservoir and then into the Denay Creek which runs parallel to the Pete Hansen Creek. Therefore, there is no connection between the surface water drainage from the Project Area and Pete Hansen Creek or other LCT occupied waters.

Greater Sage-grouse

Greater sage-grouse is a candidate for listing under the ESA and on March 23, 2010, the USFWS's 12-month status review of the species determined that the species warrants the protection under the ESA. The listing of the greater sage-grouse at this time is precluded by the need to address higher priority species and the state and BLM are responsible for management of the species. The greater sage-grouse is also a BLM Sensitive Species.

Greater sage-grouse, an upland game bird, is largely dependent on sagebrush for nesting and brood rearing and feed almost exclusively on sagebrush leaves during the winter. They are known to occur in foothills, plains, and mountain slopes where sagebrush meadows, and aspen, are in close proximity. Dense sagebrush overstory and an herbaceous understory of grasses are important to provide shade and security, and both new herbaceous growth and residual cover are important in the understory. Greater sage-grouse have specific habitat requirements to carry out their life cycle functions. Early spring habitat or breeding sites called "leks," are usually situated on ridge tops or grassy areas surrounded by a substantial brush and herbaceous component (Schroeder et al. 1999). Leks have less herbaceous and shrub cover than surrounding areas. In early spring males gather in leks where they strut to attract females.

Late spring habitat or nesting sites are located in thick cover in sagebrush habitat beneath sagebrush or other shrubs. Nests are situated on the ground in a shallow depression with an average distance between nest sites and nearest leks of 0.7 to 3.9 miles; however, females may move greater than 12.4 miles from a lek to nest (NatureServe 2010).

Early brood rearing habitat may be relatively open with approximately 14 percent canopy cover of sagebrush and abundant forbs which attract insects to feed young chicks. Denser sagebrush is often on the periphery to provide shelter from predators. Late brood rearing habitat includes sagebrush vegetation with plants that are more succulent and have a perennial water source nearby such as meadows with streams (NatureServe 2010).

Fall habitat consists mainly of sagebrush as a result of frost killing the forbs and grasses. In the winter males and females separate into different groups. Fall movements to winter ranges are typically slow. The winter habitat consists of sagebrush that has approximately 15 percent canopy cover and is approximately 18 inches in height (Schroeder et al. 1999). The territory of this species ranges from the mid-west to the western United States.

An ongoing study is being conducted in relationship to the Falcon-Gondor transmission line (FG line) and the effects on greater sage-grouse populations. In fall 2003 Sierra Pacific Power Company began the construction of a 345 kilovolt transmission line between FG line. Construction of the FG line was completed in the spring of 2004 and the line was energized in May of that year. The FG line is approximately 290 km long and has 735 towers that vary in height from 23 to 40 m, depending on the topography. The path of the FG line places it in the middle Eureka County's prime sage grouse habitat. The study site is located in central Nevada within Eureka County and is bounded by the Cortez and Simpson Park Mountains to the west and the Diamond and Sulphur Spring Mountains to the East. This area includes the Denay, Pine, Kobeh, Diamond, Horse Creek, Grass, and Garden valleys. The study area encompasses approximately 6,500 square kilometers of sagebrush steppe and piñon-juniper mountain ranges with many ephemeral streams. Sage grouse utilize two main sagebrush communities in the study area. At low elevations (less than 7000 feet amsl), a Wyoming big sage community is dominant, with pockets of black sage and basin big sage, as well as rubber rabbitbrush, greasewood, and some scattered Utah juniper. At higher elevations (greater than 7,000 feet amsl), a mixed mountain big sage/low sage community is most prevalent. Large expanses of singleleaf piñon/Utah Juniper forest are also common in the study area, and in many cases are found mid-elevation between the two sagebrush communities. The study area includes 120 km of the FG line and focuses on thirteen active leks at various distances from the FG line. Five of these leks have been monitored by the NDOW and the BLM for the past thirty years. The FG line crosses the access road that leads to the Project Area and this region was the focus of the Roberts Creek Mt. population. The Cortez population was also studied. The most recent summary of the results of these studies indicate that there are substantial demographic differences between the Roberts Creek and Cortez populations, and suggest that sage grouse in the Cortez Range are at higher risk (Blomberg and Sedinger 2009).

According to data provided by the NDOW, greater sage-grouse have the potential to use the Project Area and vicinity throughout the year. Greater sage-grouse leks are present along the valley floors west of the Project Area. The entire Project Area falls within greater sage-grouse summer and wintering habitat. The closest known lek is located approximately five miles west of the western boundary of the Project Area. No greater sage-grouse or sign was detected within the Project Area during the biological surveys performed by Enviroscientists in May 2010. The Project Area is located within the BLM's Three Bars Sage-grouse Planning Management Unit (PMU).

BLM Sensitive Species

In addition to federally listed species (i.e., protected by the ESA) and candidate species discussed above, the BLM also protects special status species by policy (BLM 1988). The list includes certain species designated by the State of Nevada, as well as species designated as "sensitive" by the Nevada BLM State Director.

The NDOW and BLM have identified that the pygmy rabbit (*Brachylagus idahoensis*) and various BLM and state sensitive raptor, bird, and bat species to have the potential to occur within the Project Area.

Pygmy Rabbit

Pygmy rabbit typical habitat consists of dense stands of big sagebrush growing in deep loose soils that are deeper than 20 inches, have at least 13 to 30 percent clay content, and are light colored and friable. Pygmy rabbit habitat is generally on flatter ground or moderate slopes in Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) uplands, basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) drainages, and in ephemeral drainages in between ridges of low sagebrush (*Artemisia arbuscula*) (Ulmschneider 2004).

The pygmy rabbit is believed to be one of only two rabbits in North America that digs its own burrows. Pygmy rabbits dig burrows three inches in diameter and a burrow may have three or more entrances (NatureServe 2010). Burrows are relatively simple and shallow, often no more than seven feet in length and less than four feet deep with no distinct chambers. The elevation range for this species is 4,500 to 7,450 feet amsl; however, they occur in elevations up to 8,000 feet amsl in the mountains in central Nevada. The winter diet of pygmy rabbits is composed of up to 99 percent sagebrush. During spring and summer, their diet may consist of roughly 51 percent sagebrush, 39 percent grasses, and ten percent forbs. During winter, pygmy rabbits use extensive snow burrows to access sagebrush forage, as travel corridors among their underground burrows, and possibly as thermal cover (USFWS 2003).

According to NDOW records, pygmy rabbits have been documented in close proximity to the Project Area and noted that if suitable habitat is present within the Project Area that this species is likely to occupy the area (NDOW 2010).

In May 2010, a pygmy rabbit detection survey and habitat assessment was completed for the Project Area. Marginal suitable sagebrush habitat was observed along ephemeral drainages in the northwestern portion of the Project Area. No pygmy rabbits were observed and no positive sign (burrow with scat) was detected within habitat surveyed within the Project Area.

Raptors

The NDOW and BLM have noted that several sensitive raptor species are known to occur within the Project vicinity and include peregrine falcon (*Falco peregrinus)*, prairie falcon, golden eagle, and northern goshawk (*Accipiter gentilis*). A northern goshawk nest was documented within two miles of the Project Area and was reported to have been active in 1993, but its current status is unknown. The NDOW has stated that the Project Area and vicinity are foraging habitat for these species as well as other common raptor species including Cooper's hawk, red-tailed hawk, American kestrel, and osprey (*Pandion haliaetus*) (NDOW 2010).

In May 2010, a raptor survey was conducted for the Project Area to identify species utilizing the site and to assess potential nesting and foraging habitat for raptors. During the survey, red-tailed hawk, Cooper's hawk, American kestrel, and turkey vulture were noted foraging within the Project Area. A prairie falcon (BLM Sensitive Species) was noted off site along County Road M-113 in Denay Valley. The entire site is suitable foraging habitat for various raptor species with wooded areas and open sagebrush and grassland habitats. Nesting habitat for American kestrel was noted within the Project Area and a mated pair was noted northwest of the Project Area and later seen foraging within the Project Area.

The USFWS has issued an interim guidance on the management of golden eagles to further aid in impact analysis and mitigation identification during the NEPA process (USFWS 2010). Per

this guidance, potential eagle foraging and nesting habitats (cliffs) were mapped during the migratory bird and raptor survey. Only three cliffs representing marginal golden eagle nesting habitat were noted within the Project Area (Figure 3.8.1). The Roberts Mountains located east of the Project Area offers more extensive nesting habitat with large rocky precipices. The entire Project Area would be suitable foraging habitat for the golden eagle.

Birds

During the May 2010 biological surveys, three BLM sensitive bird species were observed in the Project Area including the gray vireo, piñon jay, and vesper sparrow.

Bats

The NDOW identified seven BLM sensitive species of bats that may occur within the Project Area and include pallid bat (*Antrozous pallidus*), California myotis (*Myotis californicus*), little brown bat (*Myotis lucifugus*), Brazilian free-tailed bat (*Tadarida braziliensis*), western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), and long-legged myotis (*Myotis volans*) (NDOW 2010). Western small-footed myotis, California myotis, and long-eared myotis are crevice roosters, meaning that they can roost in trees, talus slopes, and rock outcrops within the Project Area. Long-legged myotis may roost in hollow trees within the Project Area. The Project Area may provide foraging habitat for all seven of the bat species listed above and the nearby Tonkin Reservoir is a likely water resource for these species.

3.17.2 Special Status Plant Species

In a letter dated March 22, 2010, the NNHP stated that no at risk taxa have been recorded within the Project Area and a three-mile radius (NNHP 2010). In a letter dated April 14, 2010, the USFWS did not identify any threatened or endangered plant species to have the potential to occur within the Project Area (USFWS 2010).

3.18 Vegetation

Based on the results of the biological surveys conducted in May 2010, vegetation communities within the Project Area consist of Great Basin Piñon-Juniper Woodland, Big Sagebrush Shrublands, and Seasonal Wet Meadow. These vegetation communities exhibit various levels of disturbance from past exploration activities, wildland fires (including the Red Hills Hazardous Fuels Reduction Project), and roads within the Project Area. The vegetation communities and the recently burned areas are shown on Figure 3.8.1.

Great Basin Piñon-Juniper Woodland

The Great Basin Piñon-Juniper Woodland community is the most dominant plant association within the Project Area and covers approximately 1,243 acres (80 percent) of the Project Area. The structure and density of this community vary across the Project Area with a denser tree canopy and sparse understory within the higher elevations and on steeper slopes. In the northern portion of the Project Area, this community is intermixed with sagebrush vegetation and has a more open canopy. The dominant species in the overstory are single-leaf piñon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). The dominant shrubs found in this community include Wyoming big sagebrush, rabbitbrush *(Chrysothamnus* sp.), and Nevada jointfir (*Ephedra nevadensis*). Beavertail (*Opuntia* sp.) and goldenbush (*Ericameria* sp.) were

noted in the dryer rocky soils within this community. Forbs observed within this vegetation community include phlox (*Phlox* sp.) and buckwheat (*Eriogonum* sp.), lupine (*Lupinus* sp.), and arrowleaf balsamroot (*Balsamorhiza sagittata*). Grasses occur predominantly within canopy openings within this community and include bottlebrush squirreltail (*Elymus elymoides*), Idaho fescue (*Festuca idahoensis*), Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass, bluebunch wheatgrass, and Sandberg bluegrass (*Poa secunda*).

Intermountain Basins Big Sagebrush Shrubland

The Intermountain Basins Big Sagebrush Shrubland community measures approximately 294 acres (19 percent) within the Project Area and is primarily located within the lower elevations in the northern portions and along the ephemeral drainages in the northwestern portion of the Project Area. The dominant shrub in this community is Wyoming big sagebrush and to a lesser extent green rabbitbrush (*Chrysothamnus vicidiflorus*). Forbs including lupine, phlox, milkvetch (*Astragalus* sp.) and buckwheat were interspersed with the shrubs. Grasses noted within this community included Indian ricegrass, bottlebrush squirreltail, Idaho fescue, Great Basin wildrye (*Leymus cinereus*). In some instances, small contiguous patches of Great Basin wildrye were present within the matrix of the Intermountain Basins Big Sagebrush Shrubland community.

Seasonal Wet Meadow

Two lotic reaches and one spring is located within the Project Area and support species associated with mesic conditions. These areas have been classified as Seasonal Wet Meadows and comprise approximately 19 acres (one percent) within the Project Area. Species noted in these areas included wild rose (*Rosa woodsii*), Baltic rush (*Juncus balticus*), sedges (*Carex* sp.), spikerush (*Eleocharis* sp.), meadow barley (*Hordeum brachyantherium*), dandelion (*Taraxacum officinale*), common yarrow (*Achillea millefolium*), curly dock (*Rumex crispus*), bulrush (*Scirpus microcarpus*), sego lily (*Calochotus nuttalli*), and buttercup species (*Ranunculus* sp.).

3.19 Visual Resources

The Visual Resource Management (VRM) system designates classes for BLM-administered lands in order to identify and evaluate scenic values to determine the appropriate levels of management during land use planning. Each management class portrays the relative value of the visual resources and serves as a tool that describes the visual management objectives (BLM 1986b).

Table 3.19-1: BLM Visual Resource Management Classes

Class	Description
I	**The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.**
II	**The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any change must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.**
III	**The objective of this class is to partially retain the existing character of the landscape. The level of change to the character should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.**
IV	**The objective of this class 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. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.**

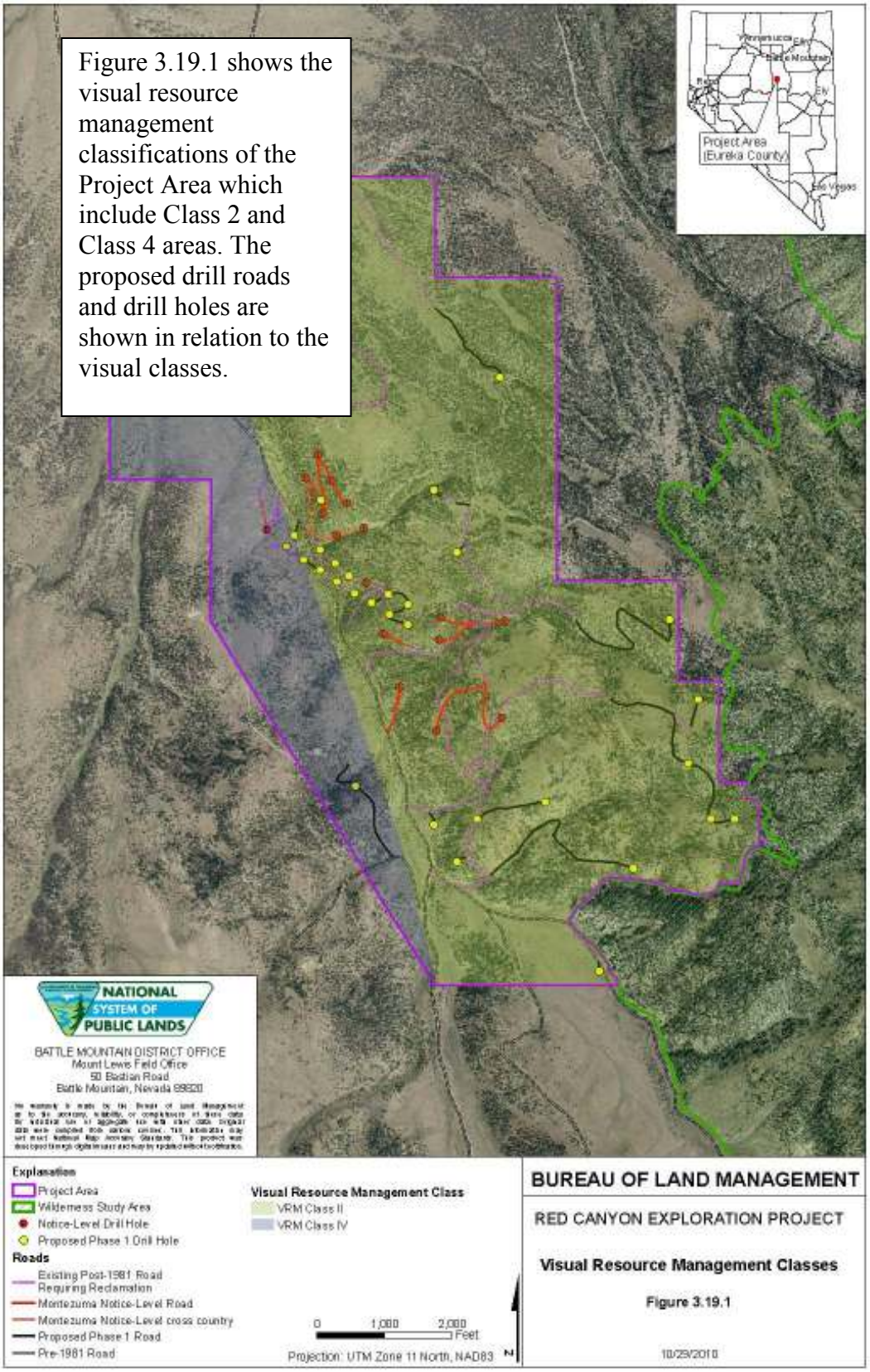
Source: BLM 1986b

The Project Area is located in the central Great Basin section of the Basin and Range province. The Great Basin province is defined by a rhythmic pattern of isolated mountain ranges and broad basins. Clear skies and open vistas characterize the natural landscape. Locally, the Project Area is characterized by Roberts Mountains located east of the Project Area. Vegetation is predominantly Piñon-Juniper Woodland and intermixed sagebrush shrubland.

Previous disturbance in the Project Area and vicinity consists of linear (i.e., access roads, drill roads, power lines) and patchy features (i.e., drill pads). Portions of the western Project Area have been recently burned and create a break in the lines and forms of the natural landscape.

The study area for visual resources is defined as the viewshed of the Project, or the area from which the Project Area can be seen, which is the Bartine to J.D. Ranch (County Road M-107) where M-107 intersects with the Red Canyon Road. The viewshed includes parts of the Roberts Mountains to the southeast. Within this viewshed are numerous areas from which the Project is not visible due to variable topography.

Figure 3.19.1: Visual Resources Management Classes within Project Area



3.20 Wastes, Hazardous or Solid

Regulated petroleum products and hazardous materials used in the Project Area include fuels automotive chemicals (e.g., fuel, antifreeze, battery acid, lead tire weights, mercury switches, or catalytic converters) used to operate equipment associated with Project activities. Only nontoxic drilling fluids (i.e., Enviroplug coarse, abantonite, alcomer, cement, bentonite, EZ-mud, and superplug) would be utilized in the drilling process.

3.21 Water Quality

3.21.1 Surface Water

Surface water within the Project Area is dependent on seasonal precipitation. The Project Area receives moderate levels of precipitation, with moderate fluctuations in seasonal temperatures, and the average annual precipitation is 11.84 inches (WRCC 2010). The precipitation falls mainly as winter snow and locally intense summer thunderstorms. Most precipitation in central Nevada is from frontal storms mainly from the north and west during the winter months and convectional storms during the summer months. Frontal storms are generally low intensity, short duration events covering large areas. Convective storms are generally high-intensity thunderstorms, and are brief and have limited aerial extent.

Surface water features within the Project Area is limited to one spring, two lotic reaches, and ephemeral drainages. The Red Canyon Creek is the major drainage that bisects the Project Area and flows into the Tonkin Springs Reservoir, a fishery and waters of the state protected under the Clean Water Act, located north of the Project Area. The Tonkin Reservoir drains into the Denay Creek. Due to lack of hydrophytic vegetation along the majority of the drainages throughout the Project Area, runoff from the slopes is rapid and infiltrates quickly into the soil.

3.21.2 Ground Water

Ground water within the Project Area consists of flow through fractured bedrock and alluvial deposits. This type of flow is unpredictable and can often be found as perched water, particularly in the Vinini Formation to the west of the Wall Fault on the west side of the Red Canyon Creek. Hydrological information available from exploration drilling performed to date suggests that the water table in the Project Area is relatively shallow. Based on previous drilling in the area, the depth to ground water is at approximately 280 to 300 feet below the ground surface; however, in the main Red Canyon drainage area water can occur in drill holes at approximately 140 feet below the ground surface. None of the shallow drill holes (e.g., holes less than 100 feet deep) encountered ground water.

3.22 Wetlands and Riparian Zones

Two lotic reaches are located within the Project Area; one in the northwest portion of the Project Area and the second in the southwestern corner of the Project Area as shown on Figure 3.8.1. The lotic reach in the northwestern portion of the Project Area is fed by springs located west of the Project Area. The lotic reach in the southwestern corner of the site represents the confluence of three drainages that enter the Project Area and is also fed by a spring located along the southwestern boundary of the Project Area. An earthen dam has been constructed in this reach which has created a small ponded area that supports hydrophytic vegetation along its margins. The spring is located adjacent to an existing road and also supports hydrophytic vegetation.

3.23 Wild Horses

The Project Area is not within a Herd Management Area (HMA); however, wild horses are expected to utilize the Project Area on a seasonal basis. As a result of the elevation and winter conditions, the primary use of the Project Area by wild horses occurs during the summer months. The limited perennial water sources restrict wild horse use of the Project Area to periods when ephemeral water sources are available. In addition, the BLM does not manage for wild horses if the Project Area is not located within a HMA.

3.24 Wilderness

Wilderness Areas

There are no wilderness areas within or in the vicinity of the Project Area.

Wilderness Study Areas

The Project Area is adjacent to the western boundary of the Roberts Mountains Wilderness Study Area (WSA) (NV-060-541), which is located in the Roberts Mountains and contains approximately 15,090 acres of public land with no privately owned inholdings. The Roberts Mountains WSA is irregularly shaped and surrounded on three sides by a major valley system. The western boundary is formed by topographic lines and cherrystem roads. The south and southeast boundaries are formed by roads and trails. The eastern boundary follows ridgelines, roads, and drainages and the northern boundary is formed by topographic lines (BLM 2001).

The Roberts Mountains WSA consists of the rugged mountainous area of the Roberts Mountains and contains three prominent peaks. Vegetation consists of willow, cottonwood, aspen, birch, and dogwood trees in the deep narrow canyons and mountain mahogany trees and limber pine are found in isolated stands on the barren rock ridges. The special feature in this WSA is the Roberts Mountains Thrust Fault, responsible for the mountains' existence, and one of the best known structural features of the intermountain west (BLM 2001).

The United States Geological Survey (USGS) and the United States Bureau of Mines investigated the Roberts Mountains WSA and published USGS Survey Bulletin 1731-K. This document describes three areas of high mineral resource potential for gold and silver with gradational areas of moderate and low resource potential in silicified dolomite beneath the Roberts Mountains Thrust along the eastern edge of the WSA (BLM 2001).

Lands with Wilderness Characteristics (Wildlands)

The entire proposed Project Area is located within the Nevada Initial Inventory Unit NV-060-541, a portion of which is formally managed as Roberts Mountain WSA. According to the 1980 Wilderness Intensive Inventory for NV-060-541, the location of the Project Area was eliminated from consideration for wilderness character due to not being in a natural state. The impacts cited for this determination include historic logging and charcoal operations, a substantial number of range improvements, and the, 'premeation [sic] of routes into the high country due to uncontrolled use of off road vehicles' (BLM 1980). More recent analysis of route inventory data conducted by the BLM in 2005 and review of aerial photographs reaffirm this determination of

unnatural condition for the Project Area, due specifically to the presence of developed roads and surface disturbance in the form of numerous ways.

3.25 Wildlife

Wildlife habitat in the Project Area is typical of those associated with the Piñon Juniper Woodland and sagebrush vegetation communities found throughout the northern Great Basin. The Project Area provides plentiful wildlife habitat directly attributable to the varying structures and densities of the vegetation communities, the topographic features of the Red Canyon area and the nearby Tonkin Springs Reservoir. Piñon-juniper woodlands provide a variety of sheltering functions for wildlife. The evergreen overstory provides thermal protection for wildlife in the winter and shelter from the sun in the summer. Sagebrush provides habitat for various Great Basin wildlife species and supports a high diversity or density of wildlife species.

The Project Area consists of mountains, canyons, several ephemeral drainages, and a spring within the Project Area. One ponded area that may provide a water source for wildlife is located in the southwest corner of the Project Area. Historical and current disturbance regimes have resulted in modification to the soils, topography, and vegetation structure in certain portions of the Project Area, which may impact wildlife use. The existing roads in the Project Area and north to south trending Red Canyon Creek may serve as wildlife corridors for larger mammals and game species between habitat areas south of the Project Area and the Tonkin Springs Reservoir north of the Project Area.

In May 2010, a general wildlife survey was performed covering the various wildlife habitat types within the Project Area. In addition, the NDOW was contacted regarding the presence of wildlife species within and near the Project Area. The following discussion summarizes the results of the survey including which species were observed or detected utilizing the Project Area as well as species likely to be present or to utilize the Project Area based on the information provided by the NDOW (NDOW 2010).

Mammals

The Project Area is located within mule deer (*Odocoileus hemionus*) summer range and deer scat was noted within the Project Area during the May 2010 biological surveys. NDOW has indicated that pronghorn antelope may be present in the Project Area and vicinity, primarily in lower elevation sagebrush. Mountain lions (*Puma concolor*) may occur within the Project Area on a transient basis since mule deer are the primary prey for mountain lions, and are likely to inhabit the Roberts Mountains east of the Project Area. Sign of coyote (*Canis latrans*), American badger (*Taxidea taxus*), and a skunk species was detected within the Project Area during the May 2010 biological survey and a bobcat (*Lynx rufus*) has been observed on site. Other mammalian predators likely to inhabit the area include gray fox (*Urocyon cinereoargenteus*), shorttail weasel (*Mustela erminea*), longtail weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), and spotted skunk (*Spilogale gracilis*). Small mammals and birds are the prey base for the raptors and other predators that inhabit the area. Species of small mammals observed in the Project Area include golden-mantled ground squirrels (*Spermophilis lateralis*), least chipmunks (*Tamius minimus*) and cottontail rabbit (*Sylvilagus nuttallii*). A variety of shrews and rodents occur in the many habitats within the Project Area as evidenced by the small diameter burrows.

Birds

The bird and raptor species identified during the May 2010 surveys are listed in Table 3.10-1 and additional species that have the potential to occur are further discussed in Sections 3.10 and 3.17. Several game bird species and other bird species not observed or mentioned may also inhabit the area on a regular or seasonal basis.

Amphibians and Reptiles

The only reptile that was detected during the May 2010 biological survey was the western fence lizard (*Sceloporus occidentalis*). Other amphibian and reptile species not detected or mentioned may utilize the area. According to the NDOW, additional herpetofauna that may occupy the Project Area include gopher snake (*Pituophis melanoleucus*), western rattle snake (*Crotalus viridis*), sagebrush lizard (*Sceloprus graciosus*), and the horned lizard (*Phrynosoma* sp.). The pacific chorus frog (*Hyla regilla*) may be found in ephemeral drainages (NDOW 2010).

Fish

No perennial streams or fish habitat occur in the Project Area.

4 ENVIRONMENTAL CONSEQUENCES

The direct and indirect effects of the Proposed Action on resources present and brought forward for analysis are discussed in this section. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. The effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).

4.1 Proposed Action

4.1.1 Air and Atmospheric Values

The Proposed Action has the potential to disturb up to 125 acres. Travel on dirt access roads and drilling activities within the Project Area has the potential to create fugitive dust and vehicle emissions, causing a minor impact to air resources. All mineral exploration activities with 20 acres of surface disturbance would be operated under a required Surface Area Disturbance permit from the BAPC, and fugitive dust would be controlled by minimizing surface disturbance and utilization of other BMPs. Speed limits on access roads would be observed and travel on roads within the Project Area would be conducted at prudent speeds. Fugitive dust would be controlled by using water trucks for dust suppression, if required. Reclamation of surface disturbance would gradually eliminate any potential for long-term impacts to air resources. Any potential temporary impacts to air resources would cease once activities and reclamation are completed, and would not exceed National Ambient Air Quality Standards (NAAQS).

4.1.2 Cultural Resources

Based on the results of the Class III cultural survey conducted by Knight and Levitt, there are cultural resources within the Project Area. There would be no impacts to cultural resources because any eligible or unevaluated site would be avoided. Avoidance would be implemented through the submission of a work plan for subsequent phases as described in Sections 2.1 and 2.1.11. This resource is not further analyzed in this EA.

4.1.3 Fire Management

Implementation of the Proposed Action would be coordinated with the BLM's MLFO fire staff in order to ensure the safety of MMI personnel during all periods of prescribed fire activity in the area. Based on fire avoidance measures to be implemented under the Proposed Action (Section 2.1.11) and the fact that the Project Area would continue to be accessible, no impacts to fire management are anticipated. In addition, reclamation measures include seeding with native vegetation that may be more favorable for fire avoidance and suppression in the long term. No impacts to fire management from the Proposed Action are anticipated; therefore, fire management is not further analyzed in this EA.

4.1.4 Forestry and Woodlands

Activities associated with pine nut collection and Christmas tree sales would not be restricted and these uses would not be impacted by the Proposed Action. Tree removal associated with road construction and exploration activities would be limited in nature relative to the abundance

of the Great Basin Piñon-Juniper Woodland community within the Project Area and surrounding areas. There would be no impact to forestry and woodlands management from the Proposed Action; therefore, forestry and woodlands are not further analyzed in this EA.

4.1.5 Geology and Mineral Resources

The Project would not involve the removal of large volumes of earth that could potentially lead to structural instability. Only small samples of drill rock or rock chips would be removed and sampled. There would be no impact to geology and mineral resources from the Proposed Action; therefore, geology and mineral resources is not further analyzed in this EA.

4.1.6 Noxious Weeds, Invasive and Non-native Species

The strategy for noxious weed management is to, "prevent and control the spread of noxious weeds through local and regional cooperative efforts to ensure maintenance and restoration of healthy ecosystems on BLM managed lands". Noxious weed control would be based on a program of "prevention, education, detection and rapid response and control of small infestations." New surface disturbance from the Proposed Action would increase the potential for and promote the spread and establishment of noxious weeds, invasive and non-native species. These impacts would be minimal based on implementation of the environmental protection measures outlined in Section 2.1.11.

4.1.7 Land Use and Realty

The Proposed Action would result in minor temporary changes to land use in the Project Area with regard to recreation and grazing. Public safety would be maintained throughout the life of the Project as described in the environmental protection measures (Section 2.1.11), which state that all equipment and other facilities would be maintained in a safe and orderly manner; all trenches, sumps, and other small excavations that pose a hazard or nuisance to the public, wildlife, or livestock would be adequately fenced to preclude inadvertent access; activities would be restricted to frozen or dry ground conditions where feasible; and in the event that any existing roads are severely damaged as a result of MMI activities, MMI would return the roads to their original condition.

MMI is not proposing any changes or alterations to existing access roads outside of the Project Area. In addition, activities associated with pine nut and Christmas tree sales would not be restricted and these uses would not be impacted by the Proposed Action. No impact to land use, access, or realty would result from the Proposed Action; therefore, land use and realty are not further analyzed in this EA.

4.1.8 Migratory Birds

The Proposed Action includes a pre-disturbance migratory bird survey as the measure to avoid impacts to nesting migratory birds as outlined in Section 2.1.11. Pre-disturbance surveys for migratory birds are only valid for 14 days and if the area surveyed is not disturbed within this timeframe, an additional survey would be conducted. Therefore, the destruction of active nests or disruption of breeding behavior of migratory bird species would not occur as a result of the Proposed Action. Project-related surface disturbance would result in the temporary loss of habitat for migratory birds in the Project Area. Reclamation activities would be conducted concurrently with exploration activities when it has been determined that exploration disturbance

is no longer needed. Reclamation would begin at the earliest practicable time within exploration areas considered inactive, without potential, or completed. Reclamation and reestablishment of vegetation would take place within three years of Project completion. Therefore, no long-term impacts to migratory bird habitat are likely to occur and the Proposed Action would have minimal direct impacts on migratory bird species.

4.1.9 Native American Religious Concerns

Various tribes and bands of the Western Shoshone have stated that federal projects and land actions can have widespread effects to their culture and religion as they consider the landscape as sacred and as a provider. Various locations throughout the BLM MLFO Battle Mountain administrative area host certain traditional, spiritual, and cultural use activities today, as in the past. Traditional Cultural Properties (TCPs), designated by the tribes, are not known to exist within the vicinity of the Project Area. The BLM continues to solicit input from local tribal entities.

For this Proposed Action, the BLM has committed to avoiding those eligible and unevaluated archaeological sites discovered and documented during cultural resources inventories. The BLM is currently in the process of attempting to identify (with the local tribes) any other sites, artifacts, or cultural, traditional, and spiritual use resources and activities that might experience an impact.

If any TCPs, tribal resources, sacred sites, etc. are identified within or in close proximity to the Project boundary, a protective “buffer zone” may be acceptable, if doing so satisfies the needs of the BLM, the proponent, and affected Tribe. The size of any “buffer zone” will be determined through coordination and communication between all participating entities.

The BLM Cultural Resource Specialists, accompanied by designated tribal observers, may periodically visit identified cultural resources sites within or near the exploration activity boundary. Native American Consultation and monitoring by the BLM and Tribal Cultural Resource Specialists can occur throughout the life of a project to ensure that any identified traditional cultural properties are not deteriorating.

If a development plan (plan of operations) is submitted to the BLM, as a result of an approval of this specific exploration proposal, the BLM would again initiate consultation with the local tribes and would utilize any data collected during this exploration proposal.

During the Project's activities, if any cultural properties, items, or artifacts (i.e., stone tools, projectile points, etc.) are encountered, it must be stressed to those involved in the proposed Project activities that such items are not to be collected. Cultural and archaeological resources are protected under the Archaeological Resources Protection Act (16 United States Code [U.S.C.] 470ii) and the FLPMA.

Though the possibility of disturbing Native American gravesites within most project areas is extremely low, inadvertent discovery procedures must be noted. Under the Native American Graves Protection and Repatriation Act (NAGPRA), section (3)(d)(1), it states that the discovering individual must notify the land manager in writing of such a discovery. If the discovery occurs in connection with an authorized use, the activity, which caused the discovery, is to cease and the materials are to be protected until the land manager can respond to the situation.

4.1.10 Paleontological Resources

Based on the review of the geologic setting of Project Area (Section 3.7), significant vertebrate fossils are not abundant within the geological formations mapped in the Project Area; therefore, no significant impacts to paleontological resources are anticipated. An abundance of invertebrate fossils are likely, some of which occur in exposed formations just to the north of the Project Area. The dispersed nature of the Project and the surficial nature of the disturbance would minimize potential impacts to paleontological resources. The Project also incorporates a protection measure for significant paleontological resources (Section 2.1.11) to further eliminate the potential impact to these resources. Therefore, paleontological resources are not further analyzed in this EA.

4.1.11 Rangeland Management

4.1.11.1 Livestock Grazing

The Project Area lies within the JD Grazing Allotment. The Proposed Action includes surface disturbance of approximately 125 acres of the 1,556-acre Project Area over a five-year period. Based on potential active use AUMs there are approximately 18 acres per AUM in the JD Grazing Allotment. Therefore, the Proposed Action has the potential to affect seven AUMs or approximately 0.005 percent of the total AUMs in the JD Grazing Allotment. The avoidance of direct impacts to springs would allow ranchers to continue to water their livestock within the Project Area during Project activities; therefore, the Proposed Action would have minimal impacts to grazing management. Further, surface water resources within the Project Area used by livestock would be protected by measures discussed in Section 2.1.11.

4.1.11.2 Rangeland Improvements

No fencing, cattle guards, or other rangeland improvements are present within the Project Area and therefore would not be impacted by the Proposed Action. Rangeland improvements are not further analyzed in this EA.

4.1.12 Recreation

There would be no impact to recreation from the Proposed Action because the current access roads would remain open to dispersed recreation in the area. Protection measures for public safety have been incorporated into the Proposed Action as stated in Section 2.1.11. Therefore, no impact to recreation would result from the Proposed Action; therefore, recreation is not further analyzed in this EA.

4.1.13 Socioeconomic Values

As many as 14 individuals at any given time would be contracted or employed to conduct the exploration activities. Personnel would be hired locally and brought in for the Project and would stay in motels in the town of Eureka, Nevada. Such personnel would be temporary and should not create a demand for additional public or private services. However, these individuals would support local businesses and provide income to the community through the purchase of goods and services. Activities associated with pine nut and Christmas tree sales would not be restricted

and income from these activities would not be affected. Therefore, impacts to socioeconomics would be short term and beneficial.

4.1.14 Soils

Surface disturbance associated with the Proposed Action would impact up to 125 acres of soils, or eight percent of the Project Area. Disturbance would be created incrementally and dispersed throughout the Project Area and would be reclaimed and revegetated. The soil associations in the Project Area vary from low to moderate for erosion hazard by water and erosion hazard by wind. Exploration activities associated with the Proposed Action would increase the wind and water erosion potential of disturbed soils until reclamation was successfully completed.

The potential impacts to soils would be reduced by the environmental protection measures incorporated in the Project design as described in Section 2.1.11 including BMPs (Appendix D in the PoO), and the concurrent reclamation of drill pads, sumps, trenches, and drill roads no longer needed for access. Following successful reclamation, which would include regrading, ripping, and revegetation of disturbed areas, soil loss due to the Proposed Action would be temporary and minimal.

4.1.15 Special Status Species

Several BLM sensitive raptor, bird, and bat species have been observed or are likely to occur in the Project Area. The Proposed Action includes measures to avoid nesting migratory birds and raptors (Section 2.1.11); therefore, the destruction of active nests or disruption of breeding behavior of sensitive bird species would not occur as a result of the Proposed Action. Disturbance would be created incrementally and dispersed throughout the Project Area and would be reclaimed and revegetated. Reclamation activities would be conducted concurrently with exploration activities when it has been determined that exploration disturbance is no longer needed. Reclamation would begin at the earliest practicable time within exploration areas considered inactive, without potential, or completed. Reestablishment of vegetation would take place within three years of Project reclamation. No long-term impacts to wildlife habitat are likely to occur and the Proposed Action would have minimal direct impacts on wildlife species. Therefore, minimal impacts to BLM sensitive raptor and bird species are anticipated.

Golden eagles are protected by the MBTA and the Bald and Golden Eagle Protection Act, both of which prohibit take. The Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance provides guidance to conduct informed impact analyses and mitigation during the NEPA process. Potential golden eagle nesting habitat (cliffs) is present in the Project Area (Figure 3.8.1). In order to avoid impacts to individual golden eagles and their habitat, implementation of the environmental protection measure outlined in Section 2.1.11 for migratory birds would ensure that prior to surface disturbance a nesting survey for migratory birds (including golden eagles) would be conducted and nests avoided.

Bat species would likely utilize the Project Area for roosting and foraging. Western small-footed myotis, California myotis, and long-eared myotis are crevise roosters and suitable habitat was detected in the Project Area. Little brown bat and long-legged myotis may roost in hollow trees within the Project Area. The Proposed Action includes approximately 125 acres of surface disturbance and could result in indirect impacts to bat roosting habitat. Areas within the Project Area may provide foraging habitat for all seven of the bat species listed above. As stated in the

environmental protection measures, impacts to surface water resources within the Project Area would be avoided (Section 2.1.11). The disturbance would be reclaimed and vegetated and reclamation would be conducted concurrently with exploration activities when feasible. Therefore, the Proposed Action would have minimal impacts to bats.

4.1.16 Vegetation

The Proposed Action would result in surface disturbance of up to 125 acres of piñon juniper woodland and sagebrush vegetation. The disturbance would be created incrementally and dispersed throughout the Project Area. Reclamation would begin upon completion of exploration activities using a BLM-approved seed mix of native or introduced species. In addition, the disturbance would be primarily linear (roads) or patchy (drill pads) in form, and therefore highly likely to be recolonized by surrounding vegetation.

4.1.17 Visual Resources

The Proposed Action would result in short-term visual impacts principally affecting the visual elements of line and color in areas designated as VRM Classes II and IV within the Project Area. Horizontal and shallow diagonal lines from drill roads would cause moderate, temporary line contrasts with the natural landscape, but these road features would be screened by trees. Disturbance of vegetation would cause moderate, temporary color contrasts. With successful reclamation of exploration roads and revegetation, long-term visual impacts would be minimized. The effects of the Proposed Action on visual resources would be consistent with BLM prescribed Class II and IV VRM objectives.

4.1.18 Wastes, Hazardous or Solid

The generation of wastes and the use of hazardous materials as a result of the Proposed Action may result in the release of these wastes or materials. Vehicles traveling on public roads in the Project Area would result in the presence of other hazardous materials and wastes (e.g., fuel, antifreeze, battery acid, lead tire weights, mercury switches, or catalytic converters) for the duration of travel. Section 2.1.9 of this EA outlines how these wastes and materials would be managed and how a spill would be addressed as included in MMI's Spill Contingency Plan, which is included as Appendix D in the PoO. Therefore, hazardous and solid wastes from the Proposed Action would have no impacts to the environment and are not further evaluated in this EA.

4.1.19 Water Quality

4.1.19.1 Surface Water

The Proposed Action is unlikely to degrade water quality. A Spill Contingency Plan is included in the PoO and would be implemented to control and manage drilling fluids and petroleum products. In addition, all containers of hazardous substances would be labeled and handled in accordance with the Nevada Department of Transportation (NDOT) and the MSHA regulations.

Impacts would be minimal due to the use of nontoxic drilling fluids and adherence to NAC 534.4369 and 534.4371. By implementing the environmental protection measures outlined in Section 2.1.11 including sedimentation control structures and BMPs for road and drill pad construction, impacts to surface water resources would be minimized and the project would

comply with the protection of waters of the state under the Clean Water Act. Any residual impacts would be temporary, lasting only until exploration roads and drill pads are successfully reclaimed and revegetated.

4.1.19.2 Ground Water

The Project design and environmental protection measures (Section 2.1.11) would ensure that the Proposed Action does not cause degradation of ground water quality in accordance with NAC 534.420 through NAC 534.425.

4.1.20 Wetlands and Riparian Zones

The Proposed Action would have no impacts to wetlands or riparian zones because MMI would avoid direct impacts to the springs and lotic reaches within the Project Area. BMPs would be used to prevent soil erosion and sedimentation of these resources (Section 2.1.11). Therefore, wetlands and riparian zones are not further analyzed in this EA.

4.1.21 Wild Horses

Due to the nature of the Proposed Action and the location of the Project Area outside of any HMAs, the management of wild horses and burros would not be impacted by the Project and, therefore, not further evaluated in this EA.

4.1.22 Wilderness

Wilderness Areas

No BLM designated Wilderness Areas are present within the Project Area or vicinity; therefore, there is no affect from the Proposed Action to this resource.

Wilderness Study Areas

MMI would survey and flag the boundary of the Roberts Mountains WSA where it bounds the Project Area to ensure that no surface disturbing activity is conducted within the WSA. No impact to the WSA would result from the Proposed Action; therefore, the WSA is not further analyzed in this EA.

Lands with Wilderness Characteristics (Wildlands)

Based on existing inventory data, no lands with wilderness character are present within the Project Area; therefore, there is not affect from the Proposed Action to this resource.

4.1.23 Wildlife

Direct impacts to wildlife would consist of temporary habitat loss and disturbance from human activity and noise. Up to 125 acres of existing wildlife habitat would be impacted by surface disturbance associated with exploration activities over a five-year period, with the actual length of time based on exploration results. Disturbance from human activity and noise generated from Project activities would impact localized areas around the drill rigs, staging areas, road

construction activities, and reclamation activities. The wildlife habitat impacted by noise and activity would exceed the actual footprint of surface disturbance associated with these activities.

Although no effects would be expected, wildlife, especially individual small mammals, displaced by Project-related disturbance or habitat loss into already saturated habitats might perish; however, additional habitat is located adjacent to the Project Area and wildlife could be expected to move into nearby similar habitat during Project activities. Construction of roads and drill pads and the operation of drilling equipment could disturb wildlife due to the presence of humans and by creating noise and dust. Wildlife foraging activities within the Project Area could continue to be dispersed because a maximum of three drill rigs would be operating at one time, allowing wildlife to move around and between Project activities. Reclamation activities would be conducted concurrently with exploration activities when it has been determined that exploration disturbance is no longer needed. Reclamation would begin at the earliest practicable time within exploration areas considered inactive, without potential, or completed. Reclamation and reestablishment of vegetation would take place within three years of Project completion. Therefore, no long-term impacts to wildlife habitat are likely to occur and the Proposed Action would have minimal direct impacts on wildlife species.

Indirect impacts to wildlife would occur as a result of short-term temporary loss of vegetation as a result of Project-related surface disturbance. Long-term improvement of habitat could occur in the Project Area as surface disturbance is reclaimed and revegetated and a greater amount of forb species became available for wildlife foraging.

Any disturbance to mule deer would likely be limited to temporary auditory or visual perturbation of individuals in or near the Project Area. Individual mule deer foraging in the Project Area during exploration activities would likely leave the immediate area, resulting in a temporary spatial redistribution of individuals or habitat-use patterns during the Project. Such redistribution would not have a long-term effect because undisturbed and suitable habitat exists around the Project Area. No long-term impacts are likely to occur because reclamation and reestablishment of vegetation would take place within three years of Project completion. The quality, quantity, and distribution of suitable mule deer habitat are not expected to be greatly altered by Project implementation. A minor increase in traffic would occur; however, the likelihood of deer-vehicle collision is considered low because vehicular traffic associated with the Proposed Action would be limited to drill crews and geologists traveling to and from the area.

4.2 No Action Alternative

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur. However, ongoing mineral exploration activities currently permitted in the Project Area and activities on private land, which are similar to those described for the Proposed Action, would result in impacts similar to but proportionally less than those associated with the Proposed Action (five acres of disturbance versus 125 acres).

4.2.1 Air and Atmospheric Values

The No Action Alternative would include surface disturbance of up to five acres on public land. Under the No Action Alternative, travel on dirt roads, drilling, and excavation activities would create fugitive dust, causing a minor impact to air resources. Fugitive dust would be controlled by minimizing surface disturbance. Speed limits on access roads would be observed, and travel

on roads within the Project Area would be conducted at prudent speeds. Reclamation of surface disturbance would gradually eliminate long-term impacts to air resources. MMI would continue to use water for dust control measures when using dirt access and roads within the Project Area during their exploration activities.

4.2.2 Cultural Resources

Under the No Action Alternative, there would be no impacts to cultural resources because previously mapped eligible or unevaluated cultural sites would be avoided as specified in the Decision Memo issued by the BLM for the Notice.

4.2.3 Environmental Justice

Under the No Action Alternative, no minority or low-income groups would be disproportionately impacted; therefore, there would be no impacts to environmental justice.

4.2.4 Fire Management

Under the No Action Alternative, there would be no impacts to fire management. As stipulated in the Notice issued for the exploration activities within the Project Area, MMI would coordinate with the Battle Mountain District Division of Fire Management for spring activities. In addition, MMI would conduct the Notice level activities in a similar fashion as the Proposed Action and therefore, would not have impacts to fire management activities.

4.2.5 Forestry and Woodlands

Under the No Action Alternative, there would be no impacts to forestry or woodland resources or management. The Notice level activities would be conducted in coordination with BLM specialists and therefore would no have impacts to forestry and woodlands.

4.2.6 Geology and Mineral Resources

Under the No Action Alternative, there would be no impacts to geology and minerals. The nature of the Notice level exploration activities is similar to the Proposed Action but just at a smaller scale and therefore would not have significant impacts to geology and minerals.

4.2.7 Noxious Weeds, Invasive and Non-native Species

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur; however, ongoing activities currently permitted in the Project Area would continue to occur and may result in impacts from noxious weeds, invasive and non-native species. Under the Notice level exploration activities, MMI would work with the BLM specialists to monitor and treat any noxious weed problems should they arise.

4.2.8 Land Use and Realty

Under the No Action Alternative which consists of Notice level exploration activities, MMI is not proposing any changes or alterations to existing access roads outside of the Project Area. In addition, activities associated with pine nut and Christmas tree sales would not be restricted and

these uses would not be impacted by the Proposed Action. No impact to land use, access, or realty would result from the No Action Alternative.

4.2.9 Migratory Birds

Under the No Action Alternative, there would be no impacts to migratory birds due to the protection measure stipulated in the Decision Memo issued by the BLM for the Notice.

4.2.10 Native American Religious Concerns

Under the No Action Alternative, MMI would continue their Notice-level mineral exploration activities. The BMD BLM has continual consultation with the local tribes with regards to ongoing and proposed projects and land management activities; therefore, no impacts to Native American Religious Concerns would result from the No Action Alternative.

4.2.11 Paleontological Resources

The No Action Alternative is similar to the Proposed Action, but a smaller scale and based on the discussion of the geologic formations present in the Project Area, under the No Action Alternative, there would be no significant impacts to paleontological resources.

4.2.12 Rangeland Management

4.2.12.1 Livestock Grazing

Under the No Action Alternative, less than one percent of the JD Grazing Allotment would be impacted. This impact is similar to but less than the Proposed Action.

4.2.12.2 Rangeland Improvements

Under the No Action Alternative, there would be no impact to rangeland improvements because the Notice level exploration activities would not impact existing roads, water sources, or fencing.

4.2.13 Recreation

Under the No Action Alternative, there would be no impact to recreation because the current access roads would remain open.

4.2.14 Socioeconomic Values

Under the No Action Alternative, ongoing mineral exploration activities currently permitted in the Project Area and activities on private land, which are similar to those described for the Proposed Action, would continue to result in impacts similar to but proportionally less than those associated with the Proposed Action.

4.2.15 Soils

Under the No Action Alternative, the construction and maintenance of access roads and drill pads would impact up to 4.99 acres of soils. The potential for wind and water erosion of disturbed soils would be increased until reclamation was successfully completed. The potential

impacts to soils would be reduced by measures incorporated in the Project design, including the use of waterbars and other BMPs, and the concurrent reclamation of drill pads, sumps, and drill roads no longer needed for access. Impacts associated with the No Action Alternative would be similar to but less than the Proposed Action.

4.2.16 Special Status Species

The No Action Alternative would have no impacts to special status plant or wildlife species based on the implementation of the protection measures outline in the Decision Memo for the Notice.

4.2.17 Vegetation

In the absence of any surface disturbing activities, impacts to vegetation resources from the Proposed Action would not occur; however, ongoing activities including five acres of surface disturbance currently permitted in the Project Area would continue.

4.2.18 Visual Resources

Under the No Action Alternative, impacts to visual resources including color and line would be similar, but less proportionately to the Proposed Action.

4.2.19 Wastes, Hazardous or Solid

The generation of wastes and the use of hazardous materials as a result of the No Action Alternative may result in the release of these wastes or materials. The No Action Alternative has proportionally less potential for spills because the scale of activities is less than the Proposed Action.

4.2.20 Water Quality

4.2.20.1 Surface Water

Potential water quality impacts as a result of this alternative could result due to the fact that this alternative does not implement the environmental protection measures identified in the Proposed Action. Potential impacts would include reduction of surface water quality from increased sedimentation. However, the BLM and NDEP would regulate impacts to surface water quality from the No Action Alternative. The five acres of disturbance under this alternative would be reclaimed and revegetated as soon as feasible following exploration activities resulting in no long-term impacts to water quality.

4.2.20.2 Ground Water

Under the No Action Alternative, there would be no impacts to ground water resources because all drill holes that encountered ground water would be plugged pursuant to NAC 534.420 through NAC 534.425.

4.2.21 Wetlands and Riparian Zones

Under the No Action Alternative, there would be no impacts to wetlands or riparian zones as no Notice level exploration activities are planned in the lotic reach areas within the Project Area.

4.2.22 Wild Horses

Under the No Action Alternative, the Notice level activities would not occur within a HMA and, therefore, there would be no impacts to wild horse management.

4.2.23 Wilderness

Under the No Action Alternative, the Notice-level exploration activities would not impact the Roberts Mountains WSA.

4.2.24 Wildlife

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur to wildlife; however, ongoing activities currently permitted in the Project Area would continue to occur, which would result in the temporary loss of up to five acres of wildlife habitat. Impacts to wildlife as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action.

5 CUMULATIVE EFFECTS

For the purposes of this EA, the cumulative impacts are the sum of all past, present (including proposed actions), and reasonably foreseeable future actions (RFFAs) resulting primarily from mining, commercial activities, and public uses. The purpose of the cumulative analysis in the EA is to evaluate the significance of the Proposed Action's contributions to cumulative impacts. A cumulative impact is defined under federal regulations as follows:

> "...the impact on the environment which results from the incremental impact of the action 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 CFR 1508.7).

As required under the NEPA and the regulations implementing NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Areas (CESAs), which could result from the implementation of the Proposed Action and No Action Alternative; past actions; present actions; and RFFAs. The extent of the CESA will vary with each resource, based on the geographic or biologic limits of that resource. As a result, the list of projects considered under the cumulative analysis may vary according to the resource being considered. In addition, the length of time for cumulative effects analysis will vary according to the duration of impacts from the Proposed Action on the particular resource.

For the purposes of this analysis and under federal regulations, 'impacts' and 'effects' are assumed to have the same meaning and are interchangeable. The cumulative impacts analysis was accomplished through the following three steps:

Step 1: Identify, describe and map CESAs for each resource to be evaluated in this chapter.

Step 2: Define time frames, scenarios, and acreage estimates for cumulative impact analysis.

Step 3: Identify and quantify the location of potential specific impacts from the Proposed Action and judge these contributions to the overall impacts.

5.1 Introduction

Environmental consequences of the Proposed Action were evaluated previously in Chapter 4 for the various environmental resources. Discussed in the following sections are the resources that have potential to be cumulatively impacted by the Proposed Action within the identified CESA. The discussions are based upon the previous analysis of each environmental resource. Based on the preceding analysis, the Proposed Action would not impact the following resources and would therefore not have cumulative impacts: Cultural Resources, Environmental Justice; Fire Management; Forestry and Woodlands; Geology and Mineral Resources; Land Use and Realty; Native American Religious Concerns or Traditional Values; Paleontological Resources; Recreation; Socioeconomic Values; Wastes (hazardous or solid); Wetlands and Riparian Zones; Wild Horses; and Wilderness. These resources are not discussed further in the cumulative impacts section.

The geographical areas considered for the analysis of cumulative effects vary in size and shape to reflect each evaluated environmental resource and the potential area of impact to each from

the Proposed Action as determined through the analysis in Chapter 4. The Hydrologic Unit Code 6 (HUC6) watershed encompasses approximately 33,482 acres and is the CESA for soils, surface water, vegetation, noxious weeds, invasive and non-native species. The CESA for wildlife, migratory birds, and special status species consists of approximately 805,422 acres and is defined by NDOW Hunt Units 143 and 155. The CESA for rangeland management is the JD Grazing Allotment, which includes approximately 145,914 acres. The CESA for air quality is the Pine Valley Hydrographic Basin and includes 640,587 acres. The visual resources CESA is comprised of the local viewshed and includes 4,441 acres. Table 5.1-1 outlines the CESA area by each resource. Figure 5.1.1 shows the CESA boundaries.

Table 5.1-1: Cumulative Effects Study Areas

Resource	Cumulative Effects Study Area (CESA)	Description of CESA	Size of CESA (acres)
Wildlife, Special Status Species, Migratory Birds	**Biology CESA**	**NDOW Hunt Units 143 and 155**	**805,422**
Air Quality	**Air Quality CESA**	**Pine Valley Hydrographic Basin**	**640,587**
Soils, Surface Water, Vegetation, Noxious Weeds, Invasive and Non-native Species	**Watershed CESA**	**HUC6 Watershed**	**33,482**
Rangeland Management	**Range Resources CESA**	**JD Grazing Allotment**	**145,914**
Visual Resources	**Visual Resources CESA**	**Local Viewshed**	**4,441**

5.2 Past and Present Actions

Past and present actions in the five CESAs include the following: livestock grazing and range improvements; wildland fires; wildlife and game habitat management; fire treatments; dispersed recreation; utility and other ROWs; mineral exploration (including approved exploration within the Project Area); and mining.

Livestock Grazing and Range Improvements

The JD Allotment represents the Range Resources CESA and also encompasses the Watershed CESA, and Visual Resources CESA. The Biology CESA includes the majority of the JD Allotment excluding the northern portion of the allotment. Detailed information regarding use areas and pastures within the JD Grazing Allotments and Range Resources CESA is included in Table 5.2-1.

Figure 5.1.1: Cumulative Effects Study Areas

Table 5.2-1: Allotment and Use Area Information for the Range Resources CESA

Allotment	Pasture/Use Area	Livestock #/kind	Begin	End	%PL	AUMs
JD	JD Pasture	224 Cattle	5/1	6/30	100	449
	JD Pasture	324 Cattle	10/1	1/31	100	1,310
	Roberts Mountain	200	5/1	6/30	100	401
	Roberts Mountain	*	*10/15	*12/31	100	*
	Gabel Canyon	200 Cattle	5/1	6/30	100	401
	Tonkin Summit	280 Cattle	5/1	6/30	100	562
	Rocky Hills	454 Cattle	7/1	9/30	100	1,373
	Pete Hanson	450 Cattle	7/1	8/31	100	917
	Willow Creek Seeding	49 Cattle	7/1	9/30	100	148
	Pete Hanson	300 Cattle	9/1	9/30	100	296
	Trail Canyon	579 Cattle	10/1	1/31	100	2,343

* Late fall/early winter use will be variable within the Roberts Mountain Pasture dependant on meeting utilization objectives, no livestock grazing within the LCT habitat and no livestock grazing in the hot season (July 1- October 15). Use within the Roberts Mountain Pasture will not exceed designated AUMs.

Wildland Fires

Although there have been no recorded wildland fires in the the Visual Resources CESA, a controlled treatment has recently burned approximately 35 acres of the Project Area. Also there has been disturbance associated with wildland fires in the Air Quality CESA, Biology CESA, Range Resources CESA, and Watershed CESA as shown on Figure 5.1.1. Table 5.2-2 summarizes the disturbance acres from historic wildland fires (1980-2009) and treatments in these five CESAs.

Table 5.2-2: Wildland Fire Disturbance Acres in the CESAs

CESA	Historic Fires (1981-2009) (Acres)
Biology CESA	81,243
Air Quality CESA	162,426
Watershed CESA	4,694
Range Resources CESA	13,230
Visual CESA	0

Wildlife and Game Habitat Management

Research and management of big game and wildlife are undertaken by the NDOW and the BLM which may include modification to existing habitat and rangeland facilities. The Project Area is located in NDOW Hunt Unit 143 as shown in Figure 5.1.1. However, cumulative impacts take into consideration Hunt Units 143 and 155. Deer harvest data was supplied by NDOW for 2009 for the hunt units. Hunt Unit 143 has 28 mule deer harvested and Hunt Unit 155 was 19 mule deer. These two hunt units comprise the Biology CESA and encompasses the Visual CESA, Watershed CESA. The majority of the Range Resources CESA CESAs with the exception of the northernmost portion is within this area and the northern half of the Air Quality CESA is outside of this area.

The Three Bars Sage-grouse PMU encompasses the Visual Resources CESA, Watershed CESA, and the majority of the Range Resources CESA and Biology CESA. Approximately one half of

the Air Quality CESA is within the PMU. Habitat improvement projects including invasive species removal and converting woodlands to sagebrush habitat are ongoing within this area.

Recreation

Historic recreational use in the vicinity of the Project Area includes hunting, Christmas tree cutting, pine nut collection, dispersed OHV use, and fishing in the Tonkin Springs reservoir. The Christmas tree cutting area and pine nut collection area are shown in Figure 5.1.1. Dispersed uses in the area have resulted in new trails, which are vulnerable to the introduction of noxious weeds or invasive and non-native species. The trails may have contributed to the loss of soils and vegetation and increased erosion.

Rights-of-Way

The LR2000 database was used to query the various types of ROWs that have been approved in the five CESAs by Section, Township, and Range, and include the following: irrigation and water facilities; telephone; federal aid for highways; material sites; railroad; federal roads; communication; powerlines; roads; geothermal development projects; other federal ROWs; and other (undefined) ROWs. The approximate acreage of each ROW within each CESA associated with these ROWs is listed in Table 5.2-3. The acreage of surface disturbance associated with these ROWs cannot be quantified; however, it is assumed that these types of ROWs and the construction and maintenance associated with these facilities would create a level of surface disturbance that would contribute to cumulative impacts to various resources. In addition, certain types of ROWs can fragment habitat or create barriers or hazards for wildlife passage. The LR2000 database was queried on July 27, 2010. Any new approved ROWs that have been added to the LR2000 database after July 27, 2010, are not included in this analysis.

Mineral Exploration and Mining

The LR2000 database was used to query the past and present mineral exploration or mining activities (authorized Notices, expired Notices, closed Notices, approved and closed plan of operations) that have been issued in the five CESAs by Section, Township, and Range. Past and present minerals activities in the five CESAs include historic exploration and mining operations. Table 5.2-4 is a summary of the past and present mineral activities within each CESA and are based on the LR2000 database used by the BLM. The LR2000 database was queried on July 27, 2010; therefore, any new approved ROWs that have been added to the LR2000 database after this date are not included in this analysis.

MMI has five acres of Notice-level activities for mineral exploration within the Project Area. Romarco Minerals US, Inc. also had 4.86 acres of Notice-level disturbance within Section 7, T23N, R50E. Hycroft Resources and Development, Inc. had 20 acres of surface disturbance approved under a plan of operations within Sections 7, 8, 17, and 18, T23N, R50E. These approved activities consist of similar types of surface disturbance activities as the Proposed Action. These approved disturbance acres fall within all five CESAs.

Table 5.2-3: Past and Present Rights-of-Way Acres in the CESAs

Rights-of-Way Type	CESA				
	Biology CESA (acres)	Watershed CESA (acres)	Range Resources CESA (acres)	Visual Resources CESA	Air Quality CESA (acres)
Water/Irrigation Facility	63	28	28	0	141
Telephone	1,667	0	0	0	1,626
Material Sites	1,739	0	180	0	428
Railroad	0	0	0	0	380
Roads/Highway	10,972	19	50	19	1,308
Communication	6	0.02	295	0	3
Power Line	15,722	123	3,022	0	3,400
Geothermal /Wind Energy Development	17,920	0	0	0	30,310
Other	496	0	0	0	3,995
TOTAL	**48,585**	**170**	**3,575**	**19**	**41,591**

Table 5.2-4: Past and Present Minerals Disturbance Acres in the CESAs

CESA	Authorization Status	Total Acres of Disturbance
Air Quality CESA	Closed Notices (165)	408.63
	Expired Notices (38)	86.00
	Authorized Notices (10)	15.55
	Approved and Closed Plans (15)	5,315.71
	Air Quality CESA Total	**5,825.88**
Biology CESA	Closed Notices (236)	426.75
	Expired Notices (45)	105.48
	Authorized Notices (24)	47.20
	Approved and Closed Plans (14)	1,842.20
	Biology CESA Total	**2,421.63**
Watershed CESA	Closed Notices (45)	96.46
	Expired Notices (5)	18.16
	Authorized Notices (3)	2.77
	Approved and Closed Plans (5)	1054.00
	Watershed CESA Total	**1,171.39**
Range Resources CESA	Closed Notices (115)	221.97
	Expired Notices (21)	62.78
	Authorized Notices (4)	3.07
	Approved and Closed Plans (6)	1,502.80
	Range Resources CESA Total	**1,790.62**
Visual Resources CESA	Closed Notices (11)	29.37
	Expired Notices (2)	9.76
	Authorized Notices (2)	2.06
	Approved and Closed Plans (6)	1,061.50
	Visual Resources CESA Total	**1,107.68**

5.3 Reasonably Foreseeable Future Actions

RFFAs in the Biology CESA include livestock grazing, fire management, wildland fire, wildlife and game habitat management including the 3-Bars Ecosystem and Landscape Restoration Project, ROW maintenance, mineral exploration and mining, oil and gas leases, and dispersed recreation.

RFFAs in the Watershed CESA include livestock grazing, fire management, wildland fire, wildlife and game habitat management including the 3-Bars Ecosystem and Landscape Restoration Project, mineral exploration and mining, ROW maintenance, oil and gas leases, land sale, and dispersed recreation.

RFFAs in the Range Resources CESA include livestock grazing, fire management, wildland fire, wildlife and game habitat management including the 3-Bars Ecosystem and Landscape Restoration Project, mineral exploration and mining, ROW maintenance, oil and gas leases, and dispersed recreation.

RFFAs in the Visual Resources CESA include livestock grazing, fire management, wildland fire, wildlife and game habitat management including the 3-Bars Ecosystem and Landscape Restoration Project, mineral exploration and mining, ROW maintenance, oil and gas leases, and dispersed recreation.

RFFAs in the Air Quality CESA include livestock grazing, fire management, wildland fire, wildlife and game habitat management including the 3-Bars Ecosystem and Landscape Restoration Project, ROW construction and maintenance, mineral exploration and mining, oil and gas leases, and dispersed recreation.

5.4 Impact Analysis

5.4.1 Air Quality

The CESA for air quality is the Pine Valley Hydrographic Basin, which includes 640,587 acres and is shown on Figure 5.1.1.

Past and Present Actions: Past and present actions that have the potential to impact air quality would have included livestock grazing, fire management, mineral exploration and mining, ROW construction and maintenance, and dispersed recreation that disturbed or impacted soils creating fugitive dust or that have the potential to generate emissions. Soil disturbance may also have been associated with wildland fires; however, fire rehabilitation and natural revegetation have likely occurred, stabilizing soil. There are no specific data that quantify impacts from grazing, roads, ROWs, or recreation.

Historic fires (1980-2009) have burned approximately 162,426 acres in the Air Quality CESA (25 percent of the CESA). Approved, closed or expired mineral exploration and mining Notices or Plans total 5,825.88 acres (0.9 percent of the CESA) of surface disturbance. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, have become naturally stabilized, and have naturally revegetated over time. Approximately 41,591 acres of ROWs were issued within the Air Quality CESA that had the potential to create fugitive dust or emissions. The CESA is located entirely within NDOW Hunt Units 143 and 155 and approximately 7,430 acres

of the Christmas tree cutting area and 8,455 acres of the pine nut collection area are located within the CESA. The impacts associated with these activities have the potential to create surface disturbance and contribute to soil erosion and degradation of access roads leading to fugitive dust. However, most of these impacts are temporary in nature, ceasing when road travel and other activities stop.

RFFAs: Livestock grazing, fire management, wildland fire, wildlife and game habitat management, ROW construction and maintenance, mineral exploration and mining, oil and gas leases, and dispersed recreation are likely to continue within the Air Quality CESA that have the potential to impact air quality.

5.4.2 Noxious Weeds, Invasive and Non-native Species

The CESA for Noxious Weeds, Invasive and Non-native Species is the HUC6 Watershed, which includes 33,482 acres and is shown on Figure 5.1.1.

Past and Present Actions: Past and present actions with impacts created from noxious weeds, invasive and non-native species include mineral exploration, wildland fires, ranching operations (grazing), road construction and maintenance, or dispersed recreation that could have disturbed vegetation and soils creating an opportunity for invasive plant colonization and introduced noxious weed seeds. Surveys did not locate noxious weeds in the Project Area; however, invasive non-native species (i.e., cheatgrass, musk thistle, and hoary cress) are present in the Watershed CESA.

Historic fires (1980-2009) have burned approximately 4,694 acres in the Watershed CESA (14 percent of the CESA). Approved, closed or expired mineral exploration and mining Notices or plans of operations total 1,171.39 acres (3.5 percent of the CESA) of surface disturbance. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, become naturally stabilized or have naturally revegetated over time. Approximately 170 acres of ROWs were issued within the Watershed CESA. These ROWs have the potential to create surface disturbance and introduce noxious weeds and invasive species. The CESA is located entirely within NDOW Hunt Units 143 and 155 and approximately 7,430 acres of the Christmas tree cutting area and 8,455 acres of the pine nut collection area are located within the CESA. The activities associated with hunting, tree cutting, and pine nut collection have the potential to create surface disturbance and associated off road vehicular traffic, which can introduce noxious weeds and invasive species. The majority of the Watershed CESA is located within the JD Grazing Allotment and livestock grazing and associated management contributes to the spread of noxious weeds and invasive species.

RFFAs: Potential impacts from noxious weeds, invasive and non-native species as a result of grazing, dispersed recreation including Christmas tree cutting, roads, ROWs, minerals activities, or loss of native vegetation associated with potential wildland fire could occur. There are no specific data on the potential impacts resulting from noxious weeds or invasive and non-native species due to dispersed recreation, grazing, or potential wildland fires. The 3-Bars Ecosystem and Landscape Restoration Project which will focus on improving vegetation conditions may reduce the spread of noxious weeds and treat existing populations, thereby creating a beneficial impact in the Watershed CESA.

5.4.2.1 Proposed Action

Cumulatively, the past and present actions and RFFAs in combination with the Proposed Action would result in potential impacts from noxious weeds or invasive and non-native species that would be limited to infestations following removal or disturbance of vegetation. The Proposed Action (125 acres) would impact less than one percent of the CESA. The past and present actions and RFFAs would impact an undetermined percentage of the Watershed CESA that is not readily quantifiable. The potential incremental impacts from the Proposed Action would be minimized due to the implementation of environmental protection measures outlined in Section 2.1.11. As a result, a minimal incremental impact from noxious weeds or invasive and non-native species in the Watershed CESA is expected.

5.4.2.2 No Action Alternative

Cumulatively, the past and present actions, and RFFAs would result in potential impacts from noxious weeds, invasive and non-native species limiting infestations to exposed soil following removal of vegetation. These impacts would be localized. Therefore, impacts from noxious weeds or invasive and non-native species as a result of this alternative would be proportionately less than the Proposed Action and in combination with past and present actions and RFFAs would be minimal.

5.4.3 Migratory Birds

The CESA for migratory birds is the Biology CESA, which includes 805,422 acres and is shown on Figure 5.1.1.

Past and Present Actions: Past and present actions that could impact migratory birds are livestock grazing and range improvements, wildland fires, wildlife and game habitat management, fire treatments, dispersed recreation, utility and other ROWs, mineral exploration, and mining. Impacts to migratory birds have resulted from the following: 1) destruction of habitat associated with road building and cutting trees; 2) disruption from human presence or noise from drill rigs, water trucks and four wheel drive pickups; or 3) direct impacts or harm to migratory birds that would result if trees containing viable nests were cut down or ground nests destroyed by construction or ranching equipment. There are no specific data that quantify impacts to migratory birds as a result of grazing or recreation. However, impacts to migratory birds from recreation activities would include destruction of native vegetation or nesting areas from off road vehicles that traveled off of established roadways. Impacts to migratory birds from grazing include trampling of vegetation or nesting areas near streams, springs, or riparian areas. Impacts from wildland fires would include total destruction of the existing habitat and alteration of the habitat thereafter.

Historic fires (1980-2009) have burned approximately 81,243 acres in the Biology CESA (ten percent of the CESA). Approved, closed or expired mineral exploration and mining Notices or plans of operations total 2,421.63 acres (0.3 percent of the CESA) of surface disturbance. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, become naturally stabilized or have naturally revegetated over time. Approximately 48,585 acres of ROWs were issued within the Biology CESA that had the potential to create surface disturbance and disturb migratory bird habitat and vegetation. Approximately 112,000 acres of the Christmas tree cutting area and 52,206 acres of the CESA are comprised of the NDOW Hunt Units 143 and 155, which

have the potential to create noise and disturbance to migratory birds, remove or alter habitat. The majority of the Biology CESA is located within the JD Grazing Allotment and livestock grazing and associated management contributes to the spread of invasive species which can have an indirect effect on migratory birds.

However, disturbance to migratory birds from past and present actions would have been reduced through reclamation and seeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed only a small portion of the CESA, approximately one percent.

RFFAs: Potential impacts to migratory birds from grazing, dispersed recreation, roads, ROWs, minerals activities, or loss of native vegetation associated with potential wildland fires could occur. There are no specific data on the potential impacts to migratory birds or their habitat as a result of dispersed recreation, grazing, or potential wildland fires. There are approximately 9,023 acres of pending minerals projects reported in LR2000 (including the 8,300-acre Mount Hope mine project) in the Biology CESA. These pending minerals projects are all required to incorporate protection measures for migratory birds and, therefore is not expected to directly harm migratory birds, but may result in habitat removal or alteration. The 3-Bars Ecosystem and Landscape Restoration Project will focus on improving vegetation conditions and avian habitat, thereby creating a beneficial impact on migratory birds in the Biology CESA.

5.4.3.1 Proposed Action

Impacts to migratory birds and their habitat from the Proposed Action would be limited to the removal of vegetation, or destruction of habitat (up to 125 acres), and noise associated with exploration. These impacts would be localized and minimized due to implementation of the environmental protection measures outlined in Section 2.1.11 and mitigation measures required by the BLM (e.g., migratory bird survey during nesting season to comply with the MBTA). The Proposed Action would affect approximately 0.025 percent of the Biology CESA.

Quantifiable past and present actions and RFFA disturbance for the Biology CESA is 92,687.63 acres, which is an impact to approximately 11 percent of the total Biology CESA (805,422 acres). Based on the above analysis and findings, incremental impacts to migratory birds as a result of the Proposed Action when added to the past and present actions and RFFAs are expected to be minimal.

5.4.3.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Biology CESA is 92,687.63 acres, which is an impact to approximately 11 percent of the Biology CESA. This alternative (five acres) would impact approximately 0.0006 percent of the CESA. Due to the small impact within the Biology CESA, the impacts to migratory birds or their habitat from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.4 Livestock Grazing

The Range Resources CESA consists of the JD Grazing Allotment, which includes 145,914 acres as shown on Figure 5.1.1. Authorized use in the CESA is 8,200 AUMs. Based on potential active use AUMs there are approximately 18 acres per AUM.

Past and Present Actions: Past and present actions that are likely to have impacts on grazing management include fire management, material storage sites, community gravel pits, mineral exploration, mining, ROW construction and maintenance, oil and gas leases, and dispersed recreation that may reduce forage or impact water sources.

Historic fires (1980-2009) have burned approximately 13,230 acres in the Range Resources CESA (nine percent of the CESA). Approved, closed, or expired mineral exploration and mining Notices or plans of operations total 1,790.62 acres (1.23 percent of the CESA). State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, become naturally stabilized or have naturally revegetated over time. Approximately 3,575 acres of ROWs were issued within the Range Resources CESA that have the potential to affect livestock movement and disturb forage habitat.

RFFAs: Potential impacts to range from fire management, mining activities, wildland fire, ROW maintenance, and dispersed recreation could occur. These activities could affect livestock dispersal and distribution within the CESA. In addition, the 3-Bars Ecosystem and Landscape Restoration Project will focus on improving vegetation conditions for native wildlife and sensitive species and may alter the quantity and type of forage in the Range Resources CESA.

5.4.4.1 Proposed Action

A total of the quantifiable past and present actions and RFFA disturbance within the Range Resources CESA is 15,021 acres, which is an impact to approximately ten percent of the total Range Resources CESA (145,914 acres). The Proposed Action (125 acres) would impact approximately 0.08 percent of the CESA and up to seven AUMs. Due to the small incremental impact within the CESA, the impacts to grazing management from the Proposed Action in combination with past and present actions and RFFAs would be minimal.

5.4.4.2 No Action Alternative

A total of the past, present, and RFFA disturbance within the Range Resources CESA is 15,021 acres, which is an impact to approximately ten percent of the Range Resources CESA. This alternative (five acres) would impact approximately 0.003 percent of the CESA. Due to the comparatively small impact within the CESA, the impacts to grazing management from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.5 Soils

The CESA for soils is the Watershed CESA, which includes 33,482 acres and is shown on Figure 5.1.1.

Past and Present Actions: Past actions that could impact soils would have included livestock grazing, fire management, mineral exploration and mining, ROW construction and maintenance, and dispersed recreation that disturbed or impacted soils, or that increased erosion or sedimentation. Soil disturbance may also have been associated with wildland fires; however, fire rehabilitation and natural revegetation have likely occurred, stabilizing soil loss. Impacts from these activities include loss of soils productivity due to changes in soil physical properties, soil fertility, soil movement in response to water and wind erosion, and loss of soil structure due to compaction. There are no specific data that quantify impacts from grazing, roads, ROWs, or recreation.

Historic fires (1980-2009) have burned approximately 4,694 acres in the Watershed CESA (14 percent of the CESA). Approved, closed or expired mineral exploration and mining Notices or plans of operations total 1,171.39 acres (3.5 percent of the CESA) of surface disturbance. As required by State and federal regulations some of the closed areas have been reclaimed, become naturally stabilized or have naturally revegetated over time. Approximately 170 acres of ROWs were issued within the Watershed CESA that had the potential to create surface disturbance. The CESA is located entirely within NDOW Hunt Units 143 and 155 and approximately 7,430 acres of the Christmas tree cutting area and 8,455 acres of the pine nut collection area are located within the CESA. The activities associated with these activities have the potential to create surface disturbance and contribute to soil erosion and degradation of access roads.

RFFAs: Potential impacts to soils could result from grazing, dispersed recreation, roads, wildfires, ROWS, and minerals activities. The 3-Bars Ecosystem and Landscape Restoration Project may have temporary impacts or disturbance to soils as this project is primarily focused on improving vegetation conditions for native wildlife species and may involve removing undesirable plant species. There are no specific data on the potential impacts to soils from dispersed recreation, grazing, vegetation improvement activities, or potential wildfires. Impacts associated with RFFAs would be similar to the impacts described for past and present actions.

5.4.5.1 Proposed Action

A total of the quantifiable past and present actions and RFFA disturbance within the Watershed CESA is approximately 5,866 acres, which is an impact to approximately 17.5 percent of the Watershed CESA (33,482 acres). The Proposed Action (125 acres) would impact approximately 0.36 percent of the CESA. Surface disturbance would increase the potential for erosion of soils. Impacts would be reduced with the implementation of environmental protection measures outlined in Section 2.1.11 and BMPs. Due to the comparatively small impact within the CESA, the incremental impacts to soils from the Proposed Action in combination with past and present actions and RFFAs would be minimal.

5.4.5.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Watershed CESA is 5,866 acres, which is an impact to approximately 17.5 percent of the Watershed CESA. This alternative (five acres) would impact approximately 0.013 percent of the CESA. Due to the comparatively small impact within the CESA, the impacts to soils from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.6 Special Status Species

The CESA for Special Status Species is the Biology CESA, which includes 805,422 acres as shown in Figure 5.1.1.

Past and Present Actions: Past and present actions that are likely to have impacts to special status species include livestock grazing, fire management, mineral exploration, mining, ROW construction and maintenance, oil and gas exploration, and dispersed recreation. These activities are likely to have impacts to water resources and wildlife habitat, or result in direct impacts to individuals in travel routes. Impacts to special status species from these activities include loss of forage, cover, and habitat as well as disturbance of mating and brood rearing practices. There are

no specific data that quantify impacts to special status species as a result of grazing or recreation; however, the greatest impact would be from off road use that destroyed habitat.

Historic fires (1980-2009) have burned approximately 81,243 acres in the Biology CESA (ten percent of the CESA). Approved, closed or expired mineral exploration and mining Notices or plans of operations total 2,421.63 acres (0.3 percent of the CESA) of surface disturbance. As required by State and federal regulations some of the closed areas have been reclaimed, become naturally stabilized or have naturally revegetated over time. Approximately 48,585 acres of ROWs were issued within the Biology CESA that have the potential to create surface disturbance and disturb habitat and vegetation. Approximately 112,000 acres of the Christmas tree cutting area and 52,206 acres of the CESA are comprised of NDOW Hunt Units 143 and 155, which have the potential to create noise and disturbance to special status wildlife species, remove or alter habitat. The majority of the Biology CESA is located within the JD Grazing Allotment and livestock grazing and associated management can likely contribute to the spread of invasive species and change of vegetation structure which can have an indirect effect on special status species.

However, disturbance to special status from past and present actions would have been reduced through reclamation and seeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed only a small portion of the CESA, approximately one percent.

RFFAs: Potential impacts to special status from grazing, dispersed recreation, roads, ROWs, minerals activities or loss of native vegetation associated with potential wildland fires could occur. There are no specific data on the potential impacts to sensitive species or their habitat as a result of dispersed recreation, grazing, or potential wildland fires. Approximately 9,023 acres of pending minerals projects (including the 8,300-acre Mount Hope mine project) were reported in the LR2000 database within the Biology CESA. These pending minerals projects all are required to incorporate protection measures and mitigation measures for special status species. The 3-Bars Ecosystem and Landscape Restoration Project will focus on improving vegetation conditions for sensitive wildlife species including the greater sage-grouse and will have a positive affect on particular sensitive species within the Biology CESA.

5.4.6.1 Proposed Action

Past and present actions and RFFA disturbance within the Biology CESA is 92,687.63 acres, which is an impact to approximately 11 percent of the total Biology CESA (805,422 acres). The Proposed Action (125 acres) would impact 0.015 percent of the CESA. Due to the small impact within the Biology CESA, the incremental impacts to special status species or their habitat from the Proposed Action in combination with past and present actions and RFFAs would be minimal. Impacts would also be reduced with the implementation measures outlined in Section 2.1.11.

5.4.6.2 No Action Alternative

A total of the past and present actions and RFFA disturbance within the Biology CESA is 92,687.63 acres, which is an impact to approximately 11 percent of the Biology CESA. This alternative (five acres) would impact approximately 0.001 percent of the CESA. Due to the small impact within the Biology CESA, the impacts to special status species or their habitat from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.7 Vegetation

The CESA for vegetation is the Watershed CESA, which includes 33,482 acres and is shown in Figure 5.1.1.

Past and Present Actions: Past actions that could impact vegetation would have included livestock grazing, fire management, mineral exploration and mining, ROW construction and maintenance, and dispersed recreation.

Historic fires (1980-2009) have burned approximately 4,694 acres in the Watershed CESA (14 percent of the CESA). Approved, closed or expired mineral exploration and mining Notices or plans of operation total 1,171.39 acres (3.5 percent of the CESA) of surface disturbance. As required by State and federal regulations some of the closed areas have been reclaimed, become naturally stabilized or have naturally revegetated over time. Approximately 170 acres of ROWs were issued within the Watershed CESA that have the potential to create surface disturbance. The CESA is located entirely within NDOW Hunt Units 143 and 155 and approximately 7,430 acres of the Christmas tree cutting area and 8,455 acres of the pine nut collection area are located within the CESA. The activities associated with hunting, tree cutting, and pine nut collection have the potential to create surface disturbance and vehicles can introduce invasive species and trample vegetation.

RFFAs: Potential impacts to vegetation could result from grazing, dispersed recreation, roads, wildfires, ROWs, and minerals activities. There are no specific data on the potential impacts to vegetation from dispersed recreation, grazing, or potential wildfires. Impacts associated with RFFAs would be similar to the impacts described for past and present actions. However, the 3-Bars Ecosystem and Landscape Restoration Project will focus on improving vegetation conditions and will have a positive affect on vegetation communities within the Watershed CESA.

5.4.7.1 Proposed Action

Past and present actions and RFFA disturbance within the Watershed CESA is 5,866 acres, which is an impact to approximately 17.5 percent of the Watershed CESA (33,482 acres). The Proposed Action (125 acres) would impact 0.36 percent of the CESA. Due to the small impact within the Watershed CESA, the impacts to vegetation from the Proposed Action in combination with past and present actions and RFFAs would be minimal. Impacts would also be reduced with the implementation measures outlined in Section 2.1.11.

5.4.7.2 No Action Alternative

A total of the past and present actions and RFFA disturbance within the Watershed CESA is 5,866 acres, which is an impact to approximately 17.5 percent of the Watershed CESA. This alternative (five acres) would impact approximately 0.015 percent of the CESA. Due to the small impact within the Watershed CESA, the impacts to vegetation from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.8 Visual Resources

The CESA for Visual Resources is the local viewshed which includes 4,441 acres as shown in Figure 5.1.1.

Past and Present Actions: Past actions that could impact visual resources would have included fire management, ROW construction and maintenance, mineral exploration and mining (including the Tonkin Springs Mine), and dispersed recreation. These actions have created changes in the line, form, color, and contrast within the CESA. There are no specific data that quantify impacts to visual resources from grazing, ROWs, or roads. Impacts to visual resources from the past and present activities are dependent upon the four categories of the BLM's VRM program, which allows minimal to major modifications of the landscape. Man-made features tend to be linear or rectangular in character, while natural events such as wildland fires or landslides tend to be patchy in character.

No wildland fires have burned since 1980 within the Visual Resources CESA; however, prescribed burns have been conducted within the Red Hills Project within this CESA. Approximately 1,108 acres of surface disturbance within the Visual Resources CESA was reported for approved, closed, or expired mineral exploration and mining Notices or plans of operations on LR2000. Approximately 19 acres of road ROWs were issued within the Visual Resources CESA that have the potential to create linear or unnatural forms and textures.

RFFAs: Potential impacts to visual resources from fire management, ROW maintenance, or loss of vegetative cover associated with potential wildland fires could occur.

5.4.8.1 Proposed Action

Project-related surface disturbance would result in short-term visual impacts principally affecting the visual elements of line and color. Horizontal and shallow diagonal lines from drill roads would cause moderate, temporary line contrasts with the natural landscape. Disturbance of vegetation would cause moderate, temporary color contrasts. The effects of the Proposed Action on visual resources would be consistent with BLM prescribed Class II and IV VRM objectives. With successful reclamation of exploration roads and revegetation the incremental cumulative visual impacts from the Proposed Action when considered with the impacts from the past and present actions and RFFAs would be minimal.

5.4.8.2 No Action Alternative

Project-related surface disturbance would result in short-term visual impacts principally affecting the visual elements of line and color. Horizontal and shallow diagonal lines from drill roads would cause moderate, temporary line contrasts with the natural landscape. Disturbance of vegetation would cause moderate, temporary color contrasts. With successful reclamation of exploration roads and revegetation the incremental cumulative visual impacts from this alternative would be proportionately less than the Proposed Action when considered with the impacts from the past and present actions and RFFAs and would be minimal.

5.4.9 Water Quality

The CESA for water quality (surface water) is the Watershed CESA, which includes 33,482 acres and is shown in Figure 5.1.1.

Past and Present Actions: Past actions that are likely to have impacts to surface water would have included livestock grazing, fire management, mineral exploration and mining, ROW construction and maintenance, and dispersed recreation.

Historic fires (1980-2009) have burned approximately 4,694 acres in the Watershed CESA (14 percent of the CESA). Although wildland fires have burned in the Watershed CESA, there are no specific data that quantify the amount of sedimentation. Approved, closed, or expired mineral exploration and mining Notices or plans of operations total 1,171.39 acres (3.5 percent of the CESA) of surface disturbance. As required by State and federal regulations some of the closed areas have been reclaimed, become naturally stabilized or have naturally revegetated over time decreasing the amount of sediment that reaches the waterways. Approximately 170 acres of ROWs were issued within the Watershed CESA that have the potential to create surface disturbance. The CESA is located entirely within NDOW Hunt Units 143 and 155 and approximately 7,430 acres of the Christmas tree cutting area and 8,455 acres of the pine nut collection area are located within the CESA. The activities associated with these activities have the potential to create soil erosion and sedimentation of surface water features.

RFFAs: Potential impacts to surface water quality could result from livestock grazing, fire management, wildland fires, ROW maintenance, and dispersed recreation. There are no specific data on the amount of sedimentation that could result from these activities. However, the mining activities would be required to have spill prevention plans, handle hazardous substances in accordance with NDOT and MSHA, adhere to NAC 534.4369 and 534.4371, and utilize BMPs, thus minimizing impacts to water quality.

5.4.9.1 Proposed Action

A total of the past and present actions and RFFA disturbance within the Watershed CESA is 5,866 acres, which is an impact to approximately 17.5 percent of the Watershed CESA (33,482 acres). The Proposed Action (120.01 acres) would impact approximately 0.36 percent of the CESA. Surface disturbance would increase the potential for erosion and sedimentation in the surface water system. Impacts would also be reduced with the implementation of environmental protection measures outlined in Section 2.1.11 and BMPs. Due to the comparatively small impact within the CESA, the incremental impacts to surface water quality from the Proposed Action in combination with past and present actions and RFFAs would be minimal.

5.4.9.2 No Action Alternative

A total of the past and present actions and RFFA disturbance within the Watershed CESA is 5,866 acres, which is an impact to approximately 17.5 percent of the Watershed CESA. This alternative (five acres) would impact approximately 0.015 percent of the CESA. Due to the comparatively small impact within the CESA, the impacts to surface water quality from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.10 Wildlife

The CESA for wildlife is the Biology CESA, which includes 805,422 acres as shown in Figure 5.1.1.

Past and Present Actions: Past and present actions that are likely to have impacts to wildlife include livestock grazing, fire management, mineral exploration, mining, ROW construction and maintenance, oil and gas exploration, and dispersed recreation. These activities are likely to have impacts to water resources and wildlife habitat, or result in direct impacts to individuals in travel routes. Impacts to wildlife and game animals from these activities include loss of forage, cover,

and habitat as well as disturbance of mating and brood rearing practices. There are no specific data that quantify impacts to wildlife as a result of grazing or recreation; however, the greatest impact would be from off road use that removed habitat.

Historic fires (1980-2009) have burned approximately 81,243 acres in the Biology CESA (ten percent of the CESA). Approved, closed, or expired mineral exploration and mining Notices or plans of operations total 2,421.63 acres (0.3 percent of the CESA) of surface disturbance. As required by State and federal regulations some of the closed areas have been reclaimed, become naturally stabilized or have naturally revegetated over time. Approximately 48,585 acres of ROWs were issued within the Biology CESA that had the potential to create surface disturbance and disturb habitat and vegetation. Approximately 112,000 acres of the Christmas tree cutting area and 52,206 acres of the CESA are comprised of NDOW Hunt Units 143 and 155, which have the potential to create noise and disturbance to wildlife, remove or alter habitat.

However, disturbance to wildlife and game species from past and present actions would have been reduced through reclamation and seeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed only a small portion of the CESA, approximately one percent.

RFFAs: Potential impacts to special status from grazing, dispersed recreation, roads, ROWs, minerals activities or loss of native vegetation associated with potential wildland fires could occur. There are no specific data on the potential impacts to sensitive species or their habitat as a result of dispersed recreation, grazing, or potential wildland fires. Approximately 9,023 acres of pending minerals projects (including the 8,300-acre Mount Hope mine project) were reported in the LR2000 database within the Biology CESA. These pending minerals projects all are required to incorporate environmental protection measures and mitigation measures for wildlife. The 3-Bars Ecosystem and Landscape Restoration Project and will focus on improving vegetation conditions and avian habitat, thereby creating a beneficial impact on wildlife in the Biology CESA.

5.4.10.1 Proposed Action

Past and present actions and RFFA disturbance within the Biology CESA is 92,687.63 acres, which is an impact to approximately 11 percent of the Biology CESA (805,422 acres). The Proposed Action (125 acres) would impact 0.015 percent of the CESA. Due to the small impact within the Biology CESA, the incremental impacts to wildlife or their habitat from the Proposed Action in combination with past and present actions and RFFAs would be minimal. Impacts would also be reduced with the implementation measures outlined in Section 2.1.11. Future projects in the Biology CESA would evaluate potential impacts to mule deer and their habitat and may require additional mitigation.

5.4.10.2 No Action Alternative

A total of the past and present actions and RFFA disturbance within the Biology CESA 92,687.63 acres, which is an impact to approximately 11 percent of the Biology CESA. This alternative (five acres) would impact approximately 0.0006 percent of the CESA. Due to the small impact within the Biology CESA, the impacts to wildlife or their habitat from this alternative in combination with past and present actions and RFFAs would be minimal.

6 CONSULTATION AND PUBLIC INPUT

This EA was prepared at the direction of the BLM, MLFO, Battle Mountain District, Nevada, by Enviroscientists, Inc., under a contract with MMI. The following is a list of individuals responsible for preparation of the EA.

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